WAMBO COAL
BIODIVERSITY MANAGEMENT PLAN

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Document Control

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Revisions

Rev No	Date	Description	By	Checked	Signature
0	March 2020	Original Draft for Consultation	WCPL/ELA	ND	
	May 2020	Revision following comments received from BCD. Included Summary of Commitments (Appendix N) and changed references to MOP – now MOP/Rehabilitation Management Plan (RMP). Reviewed Appendices F, K & L – minor changes only.	WCPL/ELA	ND	

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1.0 Introduction

1.1 Background

The Wambo Coal Mine (the Mine) is situated approximately 15 kilometres west of Singleton, near the village of Warkworth, New South Wales (

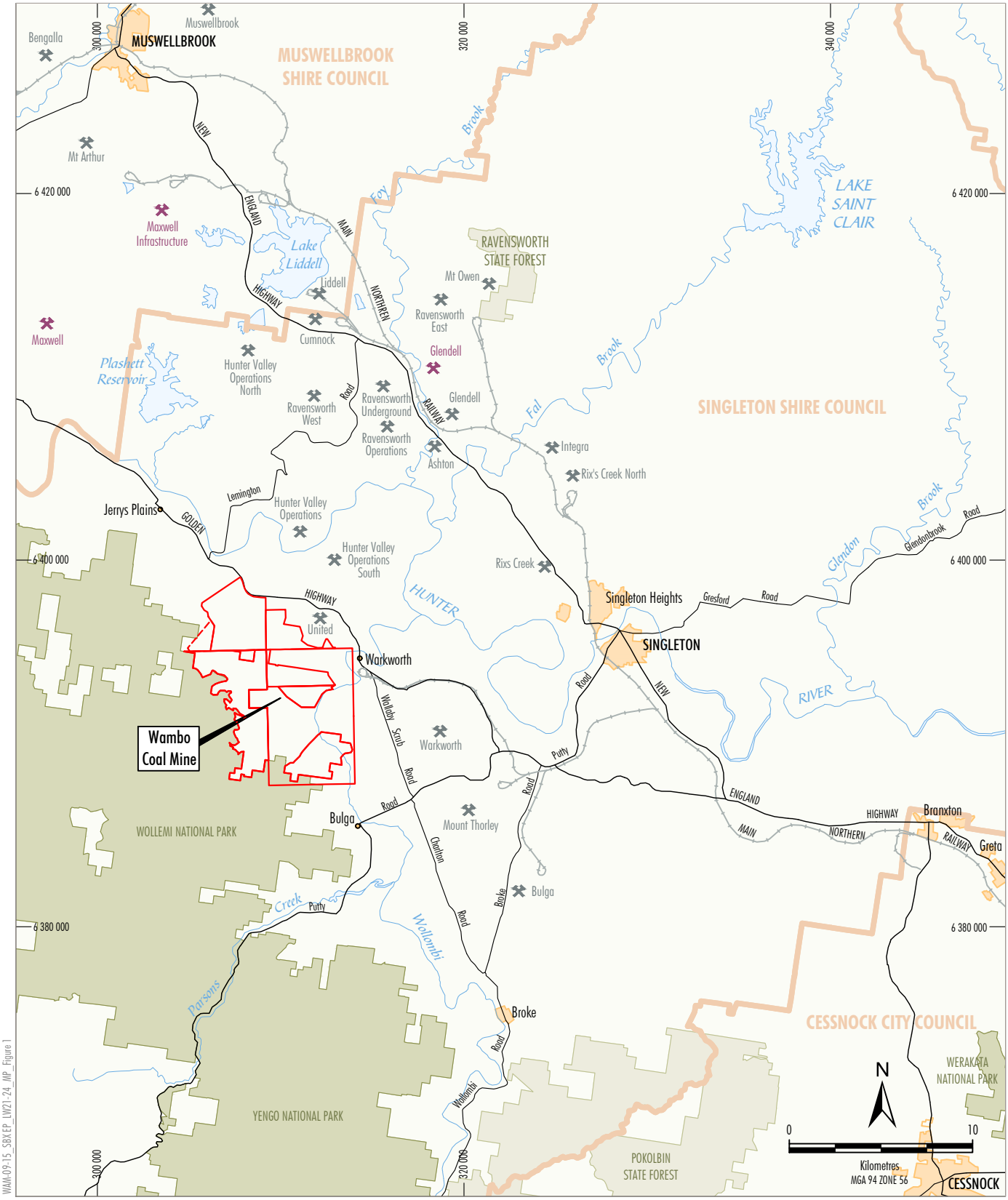
A range of open cut and underground mine operations have been conducted at WCPL since mining operations commenced in 1969. Mining under the current Development Consent (DA305-7-2003) commenced in 2004 and permits both open cut, underground operations and associated activities to be conducted.

The latest modification to DA305-7-2003 (Mod 16), approved by the Independent Planning Commission of NSW on 29 August 2019, requires development at Wambo Coal Mine to be undertaken in the following stages:

- Phase 1 - open cut mining operations at Wambo open cut mine, underground mining operations at Wambo underground mine and the operation of Wambo mine infrastructure (including minor upgrades to this infrastructure);
- Phase 2 - underground mining operations at Wambo underground mine, the operation of Wambo mine infrastructure and associated surface development; and
- Phase 3 - following the cessation of underground mining operations that includes mine closure.

The operation of WCPL's rail and coal loading infrastructure is undertaken in accordance with DA177-8-2204. The latest modification to DA177-8-2004 (Mod 3) was approved by the Independent Planning Commission of NSW on 29 August 2019.

The approved run-of-mine (ROM) coal production rate is 14.7 million tonnes per annum and all product coal is transported from WCPL by rail, in accordance with the development consents. A summary of the approved Wambo Coal Mine is provided in **Table 1**.



WAM-09-15_SBX EP_LW21-24_MP_Figure 1

LEGEND
- Mining and Coal Lease Boundary
- Mining Lease Application Boundary
- Local Government Boundary
- Mining Operation
- Proposed Mining Operation (Application lodged)

Source: NSW Department of Resources & Energy (2020); Geoscience Australia (2009)

Peabody

WAMBO COAL MINE

Regional Location

Figure 1

Table 1: Summary of the Approved Wambo Coal Mine

Component	Approved Wambo Coal Mine[1]
Life of Mine	Until 31 August 2042.
Open Cut Mining	Phase 1 – Open cut mining at a rate of up to 8 Mtpa of ROM coal from the Whybrow, Redbank Creek, Wambo and Whynot Seams until the commencement of Phase 2 of the United Wambo Open Cut Coal Mine Project.
	Phase 2 – ROM coal from the Wambo open cut mine may be received, processed and/or stockpiled onsite. No open cut mining may take place during Phase 2.
	Open cut mining operations under current approved Mining Operations Plan (MOP)/Rehabilitation Management Plan (RMP).
Underground Mining	Underground mining of up to 9.75 Mtpa of ROM coal from the Whybrow, Wambo, Woodlands Hill and Arrowfield Seams.
Subsidence Commitments and Management.	The subsidence impact performance measures listed in Schedule 2, Conditions B1 and B4 of the Development Consent (DA305-7-2003).
ROM Coal Production Rate	Up to 14.7 Mtpa of ROM coal from the Wambo Mining Complex and United Wambo open cut coal mine.
Waste Rock Management	Waste rock deposited in open cut voids and in waste rock emplacements adjacent open cut operations.
Coal Washing	Coal handling and preparation plant (CHPP) capable of processing approximately 1,800 tonnes per hour (tph).
Coal Transportation	A maximum of 15 Mt of coal transported from the United Wambo Mining Complex in a calendar year.
	A maximum of 8 laden trains may leave site in any 24hr period.
	Coal transportation may be carried out until 31 August 2042.
CHPP Reject Management	Coarse rejects and tailings would be incorporated, encapsulated and/or capped within open cut voids in accordance with existing Wambo management practices.
	Coal rejects may be transferred to the United open cut mine for emplacement during Phase 2.
Water Supply	Make-up water demand to be met from runoff recovered from tailings storage areas, operational areas, dewatering, licensed extraction from Wollombi Brook and Hunter River.
Mining Tenements	Coal Lease (CL) 365, CL374, CL397, Consolidated Coal Lease (CCL) 743, Mining Lease (ML) 1402, ML1572, ML1594, Mining Lease Application (MLA) 557, Authorisation (A) 444, Exploration Licence (EL) 7211.
Conservation Agreements (CAs)	Two CAs have been executed by WCPL and the Chief Executive of the OEH, one for the Remnant Woodland Enhancement Areas (RWEAs) A, B, C, D & D Extension and one for the RWEA Wambo Coal Terminal. WCPL has submitted a variation to the CA for the RWEAs A, B, C, D & D Extension to include RWEA E, which offsets the South Wambo Underground Mine Modification (DA 305-7-2003 MOD 12).
Biodiversity Conservation	Mine approval under Federal EPBC Act received on 23 November 2004. EPBC approval number 2003/1138. South Wambo Underground Mine extension approval under Federal EPBC Act received on 30 April 2017. EPBC approval number 2016/7636. Approval for South Bates Extension under Federal EPBC Act received on 3 December 2019. EPBC approval number 2016/7816.

Note: [1] Development Consent DA305-7-2003 (as modified and including MOD16).

Following approval of the United Wambo Joint Venture Project (Modification 16) in August 2019, the Department of Planning, Industry and Environment (DPIE) updated the entirety of the Development Consent (DA 305-7-2003). To avoid administrative complications, WCPL has prepared a new iteration of the Biodiversity Management Plan (BMP) (Version 0) and undertaken a full review and update. This iteration of the BMP builds upon the content in, and consultation undertaken for, the previous iteration of the BMP.

This BMP has been prepared to satisfy Condition B75 of DA305-7-2003. It also addresses the requirements within the Conservation Agreements prepared under Conditions B72 and B73 of DA305-7-2003, the requirements of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* approvals (EPBC 2003/1138, EPBC 2016/7636 and EPBC 2016/7816) and incorporates the Biodiversity Offset Strategy (required under Condition B69 of DA305-7-2003).

This BMP also addresses the requirements for a Biodiversity Management Plan under Condition B7(f) of DA 305-7-2003 in support of the Extraction Plans for South Bates Underground Mine Longwalls 11 to 16, South Bates Extension Underground Mine Longwalls 17 to 20 and South Bates Extension Underground Mine Longwalls 21 to 24.

The South Wambo Underground Mine Modification (DA 305-7-2003 MOD 12) was approved in December 2016. As part of this Modification, the biodiversity offset strategy was amended to include an additional Remnant Woodland Enhancement Area (RWEA), known as RWEA E. WCPL is required to secure RWEA E under a conservation agreement pursuant to section 69B of the *National Parks and Wildlife Act 1974* (or public positive covenant and/or restriction on the use of land) by 31 July 2018, or an alternate timeframe agreed with the Planning Secretary of DPIE.

Conservation agreements for the offset areas were drafted in consultation with the Office of Environment and Heritage (OEH) (now NSW Biodiversity and Conservation Division [BCD]) during 2015 and were registered in 2017. WCPL applied to revise the conservation agreements to include RWEA E in December 2017.

In February 2018, WCPL requested that the Department of Planning and Environment (now DPIE) approve an extension to the timeframe for entering into a conservation agreement on the basis that WCPL was in the process of varying the existing VCAs to include RWEA E, however it may take some time for the Biodiversity Conservation Trust to process the variation request. DPIE approved the request for an extension to 31 July 2018, based on advice provided by the Biodiversity Conservation Trust that this would be a reasonable completion date. The variation to the conservation agreements to include RWEA E has not yet been finalised.

Condition B75a of DA305-7-2003 requires the BMP to be prepared by a suitably qualified and experienced person. Mr Martin Sullivan was endorsed by DPIE on 28 February 2020 (refer to **Appendix B**) as the suitably qualified expert.

1.2 Purpose

The purpose of this BMP is to describe the management strategies, procedures, controls and monitoring programs required to manage flora and fauna at the Mine, including within the Remnant Woodland Enhancement Areas (RWEAs) and Open Cut Revegetation Areas.

This BMP has been developed to:

- Identify lands to be managed in accordance with this BMP;
- Provide a framework for the management of biodiversity in the RWEAs and Open Cut Revegetation Areas;
- Provide a clear, concise set of management actions and a schedule for the coordinated and effective delivery of biodiversity enhancement;
- Define realistic Completion Criteria for RWEAs and Open Cut Revegetation Areas that can be quantitatively evaluated through a seasonally based monitoring program;
- Define a seasonally based monitoring program suitable for determining management success (or otherwise);
- Provide suitable contingency measures and associated trigger action response plans (TARP) that adequately address any deviation from the Completion Criteria; and
- Define the responsibilities for implementing, reviewing and reporting on the BMP.

1.3 Scope

This BMP applies to all activities undertaken within WCPL's mining authorisations and approved mining areas (**Figure 2**) that may impact on biodiversity as well as biodiversity in WCPL's RWEAs and Open Cut Revegetation Areas (**Figure 9, Section 4.1**).

This BMP has been prepared to address the requirements detailed in WCPL's statutory approvals and Conservation Agreements (CAs) for biodiversity management and provides management actions for those areas identified in **Figure 9** (**Section 4.1**).

1.4 Relationship to WCPL's Other Environmental Management Plans

This BMP forms part of WCPL's Environmental Management System (EMS). Other environmental management plans relevant to biodiversity management at the Mine site include:

- Bushfire Management Plan;
- Water Management Plan; and
- Mining Operations Plan (MOP)/Rehabilitation Management Plan (RMP).

A detailed Bushfire Management Plan has been developed in consultation with the NSW Rural Fire Service (RFS) to specifically address bushfire management issues across WCPL landholdings, including the identification of assets, assessment of fire risk and identification of management strategies to reduce the risk of fire to people and property. This BMP includes specific information on bushfire management within the RWEAs, as detailed within WCPL's conservation agreements.

Aquatic ecosystem monitoring and associated triggers are included in the various components of WCPL's Water Management Plan, to satisfy the relevant conditions of DA305-7-2003. Details of the aquatic ecosystem monitoring program are also included in this BMP, to satisfy the requirements of Condition B66 of DA305-7-2003. Groundwater Dependent Ecosystems (GDEs) are monitored under this BMP. Monitoring data collected under the Water Management Plan can be used for correlation with GDE monitoring results if required.

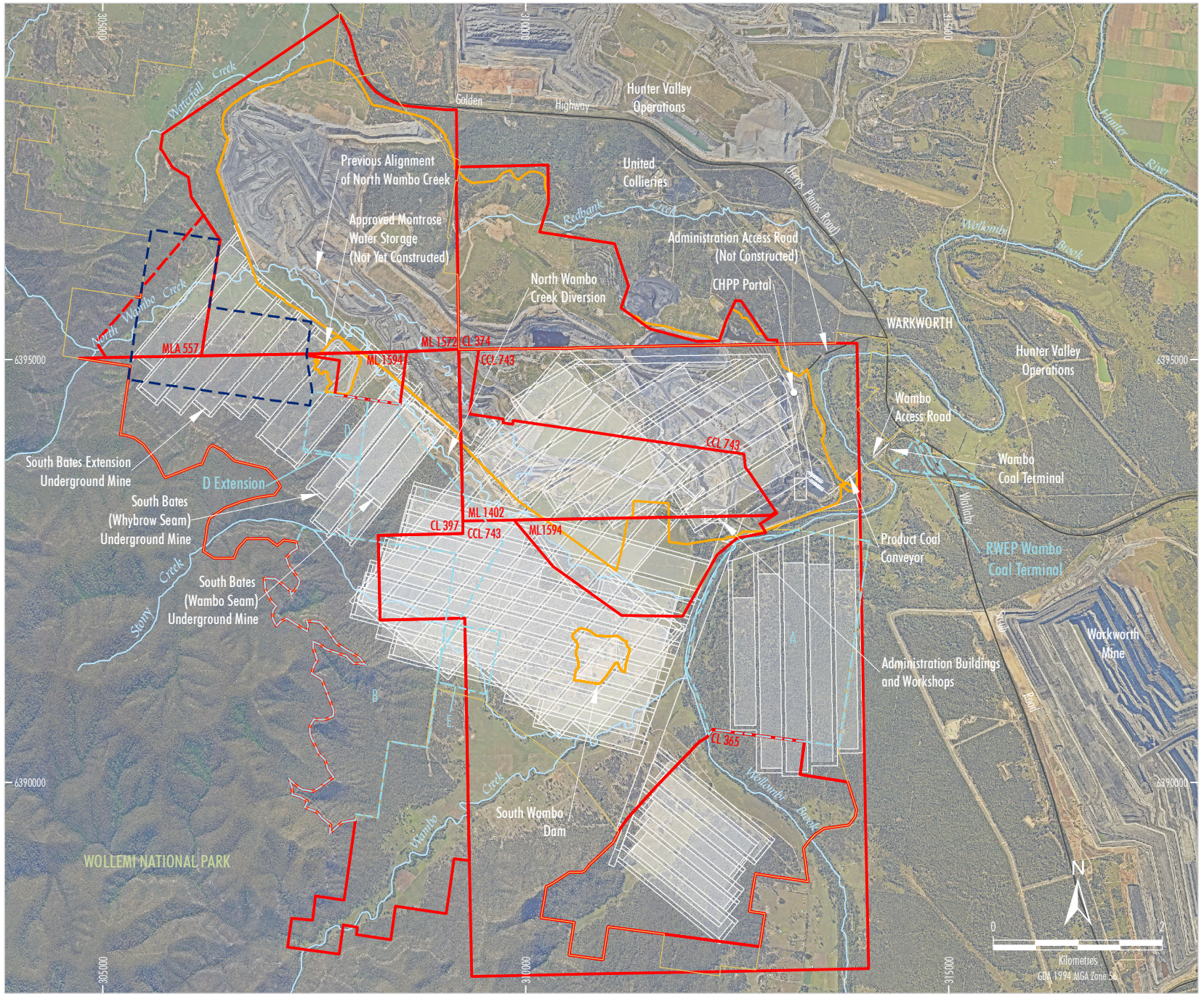
Detailed information on rehabilitation management and completion criteria is contained in the WCPL Mining Operations Plan (MOP)/Rehabilitation Management Plan (RMP). The MOP/RMP has been prepared to provide an efficient approach to the management of WCPL's mining operation whilst maintaining compliance with its regulatory approvals. The MOP/RMP also addresses WCPL's rehabilitation requirements, as identified by Condition B108 of DA305-7-2003. WCPL's Open Cut Woodland Revegetation Areas are one of the management domains described in this BMP, and as such, details relating to baseline data, completion criteria, monitoring and management activities are also included in this BMP. These details are consistent with those contained within the MOP/RMP and are updated following any updates to the MOP/RMP.

1.5 Summary of Approved Surface Disturbance

Approved disturbance associated with the Mine includes mining operations with the existing/approved Surface Development Area shown on **Figure 2** as well as the following disturbance activities outside the Surface Development Area:

- A rail spur, rail loop, coal reclaim area, product coal conveyor, train load-out bin and rail spur underpass beneath the Golden Highway.
- Realignment of the intersection between Wallaby Scrub Road and the Golden Highway (if required).
- New access roads.
- Dewatering boreholes and gas drainage infrastructure for underground mining operations.
- Four ventilation shafts and associated ancillary infrastructure for the South Wambo Underground Mine (in addition to the approved ventilation shaft within the Surface Development Area).
- Exploration activities as approved by the MOP/RMP or under the conditions of exploration licences.

Dewatering boreholes and gas drainage infrastructure for underground mining operations would be constructed generally in accordance with the approval documents referenced in the Development Consent (DA 305-7-2003).



LEGEND

- WCPL Owned Land
- Mining and Coal Lease Boundary
- Mining Lease Application Boundary
- Existing/Approved Surface Development Area
- Approved Underground Development
- Remnant Woodland Enhancement Program (RWEP) Area
- Proposed Wambo Offset Area under SSD 7142

Source: WCPL (2020); NSW Spatial Services (2019)
Orthophoto: WCPL (May 2019)

Peabody

WAMBO COAL MINE

Plan of Mining at Wambo and Surrounds

Figure 2

WAM-09-15_SBX EP_LW21-24_MP_BioMP_201D

2.0 Statutory Requirements

2.1 Approvals and Commitments

This BMP has been prepared to fulfil the requirements of WCPL's statutory approvals and commitments (**Appendix A**) where they relate to the management of flora and fauna.

A Summary of Commitments table has also been included in this version of the BMP (Version 1) – refer to **Appendix N**. This table summarises all of the commitments in this BMP, including those made in the associated appendices.

2.2 Legislation and Guidelines

Legislation and guidelines considered during the preparation of this BMP includes:

- Biodiversity Conservation Act 2016;
- Environmental Planning and Assessment Act 1979*;*
- Environment Protection and Biodiversity Conservation Act 1999;
- Mining Act 1992;
- Native Vegetation Act 2003;
- National Parks and Wildlife Act 1974;
- Threatened Species Conservation Act 1995 (replaced by Biodiversity Conservation Act 2016);
- Fisheries Management Act 1994;
- Rural Fires Act 1997;
- Pesticides Act 1999;
- Rural Lands Protection Act 1998;
- Rural Fire Service Bush Fire Environmental Assessment Code for New South Wales, (RFS, February 2006); and
- Hunter Valley Coal Mines - Best Practice Guidelines for Biodiversity Offset Management Plans (NSW Department of Environment and Planning (DPE) (now DPIE), January 2014).

2.3 Stakeholder Consultation

WCPL has undertaken consultation with NSW government agencies on previous iterations of the Flora and Fauna Management Plan and BMP as part of the Extraction Plan (EP) application process for the North Wambo and South Bates underground mining areas as well as in relation to conservation agreements for RWEAs. Consultation has also been undertaken with the WCPL CCC and members of the local community in relation to the EPs.

A table summarising stakeholder consultation undertaken on the previous iteration of the BMP is provided in **Appendix B.** Correspondence in relation to the BMP is also attached in **Appendix B**.

In accordance with Conditions B7(f) and B75(b) WCPL has consulted with the BCD during preparation of this iteration of the BMP (refer **Appendix B** for evidence).

3.0 Existing Environment

3.1 Landforms and Landuse

Landforms of the Upper Hunter region are characterised by gently sloping flood plains associated with the Hunter River and the undulating foothills, ridges and escarpments of the Mount Royal Range and Great Dividing Range. Local elevations range from approximately 60 metres (m) Australian Height Datum (AHD) at Wollombi Brook to approximately 650 m AHD at Mount Wambo within the Wollemi National Park to the south west.

Within WCPL mining tenements elevations range from 60 m to 200 m AHD, while narrow ridges to the south-east of Waterfall Creek and along the lower slopes of the Wollemi National Park landforms rise to above 200 m AHD.

Land use in the vicinity of the Mine is characterised by a combination of coal mining operations, agricultural land uses, areas of remnant vegetation and rural residential development at Warkworth. WCPL controlled lands that are not subject to WCPL's operations are utilised for the agistment of stock (primarily cattle).

3.2 Climate

A meteorological station that continuously records wind speed and direction, temperature, relative humidity, net solar radiation, rainfall and evaporation has operated at the Mine since March 1998. Long-term meteorological data recorded from the Jerrys Plains weather station is available from WCPL's database. The data indicates that regional temperatures are warmest from November through March and coolest from May through September. Average daily maximum temperatures peak in January at 31.7°C, while average daily minimum temperatures are lowest in July at 3.8°C.

The data also indicates that the regional rainfall is generally lowest from May through to September and highest December through March. The annual total rainfall is 645 mm for Jerrys Plains. The average annual evaporation recorded at Scone is 1,592 mm, with monthly evaporation highest in December (220 mm) and January (217 mm) and lowest in June (48 mm) and July (59 mm).

Wind roses for the WCPL meteorological station indicate that relatively strong winds from the west north-west are dominant during winter and spring, while winds for the south-east are more common during summer and autumn. Moderate south-easterly winds are common during the evening and night-time throughout spring, summer and autumn.

3.3 Geology

The Mine is situated within the Hunter Coalfield subdivision of the Sydney Basin, which forms the southern part of the Sydney-Gunnedah-Bowen Basin. The coal bearing rocks of the Sydney Basin are Permian in age (i.e. approximately 225 to 270 million years old) and are typically associated with low-lying gentle topography. The overlying rocks of Triassic age (i.e. approximately 180 to 225 million years old) cover large parts of the Sydney Basin and tend to form prominent escarpments where they outcrop.

3.4 Hydrology

The Mine is located within the catchment of the Hunter River, which drains some 22,000 km of central-eastern NSW to the Pacific Ocean at Newcastle. At a local level, the Mine is situated adjacent to Wollombi Brook, south-west of its confluence with the Hunter River. Wollombi Brook drains an area of approximately 1,950 km^2 and joins the Hunter River some 5 km north-east of the Mine.

North Wambo Creek drains the mid and eastern sections of the North Wambo Underground Mine development area and flows south-east into Wollombi Brook, approximately 600 m south of the Mine. North Wambo Creek has been highly disturbed by historic and present grazing activities.

Stony Creek drains from Mount Wambo in a north-east direction and meanders across the western boundary of coal lease (CL) 397 near the south-western boundary of the North Wambo Underground Mine and passes in a south-easterly direction through the existing underground development area of WCPL to join Wambo Creek. Earthworks have been conducted to re-contour the stream channel and banks to remediate subsidence effects from previous underground mining operations at the Mine.

3.5 Soils and Rural Land Use Capability

A soils, rural land capability and agricultural suitability assessment was conducted for the Project EIS and utilised information from previous soil surveys, the Department of Land and Water Conservation (DLWC) and NSW Agriculture mapping, aerial photography and field surveys.

Major soil types identified include alluvial soils along major drainage lines, siliceous sands to the east of Wollombi Brook, yellow podzolics and yellow solodic intergrades adjacent to the alluvials on lower slopes and undulating plains, soloths on moderately elevated slopes and lithosols along the eastern boundary of the Wollemi National Park.

A rural land capability assessment was conducted in accordance with the standard NSW eight class system (Cunningham et al., undated) which assesses biophysical soil properties and categorises land according to limitations such as erosion hazard, climate and slope. Seven of the eight classes were identified in the vicinity of the mine.

An agricultural suitability assessment was conducted in accordance with the five class system (Riddler, 1996), which classifies land according to its potential agricultural productivity. Based on the NSW Agriculture (2002) Agricultural Land Classification for the portion of the Singleton Local; Government Area (LGA) between Bulga and Jerrys Plains, Class 2, 3, 4 and 5 agricultural lands were identified within WCPL mining tenements.

The Soil Landscapes of the Singleton 1:250,000 Sheet (Kovac and Lawrie, 1991) identifies eight soil landscapes within the mine area e.g. Bulga, Benjang, Lees Pinch, Branxton, Jerrys Plains, Wollombi, Hunter and Warkworth. The landform characteristics, lithology, typical soils and limitations of these landscapes are summarised in **Table 2**.

Table 2: Soil Landscapes of the Mine Area

Landscape	Landform	Lithology	Dominant Soils	Limitations
Bulga	Smooth slopes forming undulating rises. Local relief is 20-40 m. Elevations range from 80-160 m. Slopes up to 10 %.	Narrabeen Group and Singleton Coal Measures.	Yellow soloths, Yellow solodic.	Minor to moderate sheet erosion. Low fertility. Moderate – high erosion hazard. High soil salinity. Moderate – high structural degradation hazard.
Benjang	Rolling hills, with large open valleys and some sandstone cliffs. Local relief is 80-120 m. Elevations 240-440 m. Slopes 10-25 %.	Singleton Coal Measures.	Yellow solodic, Red solodic.	Minor to severe sheet erosion on cleared hillslopes. Low fertility. High soil salinity. High to very high erosion hazard. High structural degradation hazard.
Lees Pinch	Rolling hills to steep mountains. Elevations range from 180-800 m. Slopes to 90 %.	Narrabeen Group.	Siliceous sands.	Minor to moderate sheet and rill erosion where disturbed. High structural degradation hazard. Low fertility.
Branxton	Undulating rises to low hills and creek flats. Local relief is 10-40 m. Elevations range from 50-80 m. Slopes range from 3-5 %.	Branxton Formation and Singleton Coal Measures.	Yellow podzolic, Yellow soloths, Red podzolic, Alluvials.	High soil salinity. Tunnel and gully erosion risk. Low fertility. High structural degradation hazard.
Hunter	Level plains and river terraces. Local relief is less than 10 m. Slopes range from 0-3 %.	Quaternary Alluvium.	Alluvials, Yellow solodic, Brown soils.	Minor stream bank erosion occurs with minor sheet and gully erosion on terraces. Moderate-high erosion hazard. High structural degradation hazard.
Jerrys Plains	Undulating low hills. Relief to 60 m. Elevation 80-180 m. Slopes range from 2-10 %.	Jerrys Plains subgroup of the Whittingham Coal Measures.	Yellow soloths and solodic soils.	Poorly to imperfectly drained. Low fertility. High soil salinity. Up to very high erosion hazard.
Wollombi	Valley Flats. Relief to 20 m. Elevation 60-140 m. Slopes < 3 %.	Narrabeen Group and Quaternary alluvium.	Alluvial soils and Earthy sands.	Potential for salting hazard. Low fertility. Flood hazard. Erosion hazard.
Warkworth	Linear sand dunes 1-3 m high on old river terraces. Generally aligned north-west to south-west.	Tertiary gravel and sandstone and Quaternary alluvium.	Siliceous sands.	Moderate flood hazard. Low fertility. Moderate erosion hazard. High structural degradation hazard.

Source: Kovac and Lawrie (1991)

3.6 Floristic and Fauna Habitat

3.6.1 Flora

Flora surveys of the Mine site and RWEAs were undertaken in 2003 by Orchid Research as part of the 2003 EIS. Follow up surveys were completed as part of the South Wambo Underground, South Bates Underground and South Bates Extension Underground in 2015 and 2016 by Flora Search. The findings of these surveys have been compiled in **Table 3** and shown in **Figure 3** below.

Table 3: Vegetation Communities

Common Name	Conservation Status	
	BC Act	EPBC Act
Bull Oak Grassy Woodland	No	No
Coast Myall Shrubland	Yes	Yes
Derived Grassland	No	No
Escarpment Shrubland	No	No
Forest Red Gum - Rough-barked Apple - River Sheoak Forest (Disturbed)	Yes	No
Forest Red Gum Floodplain Forest	Yes	No
Grey Box - Slaty Box Woodland	Yes	Yes
Grey Box - Slaty Box Woodland (Disturbed)	Yes	Yes
Melaleuca decora Low Forest	No	No
Narrow-leaved Ironbark - Grey Box Woodland	Yes	Yes
Narrow-leaved Ironbark - Grey Box Woodland (Disturbed)	Yes	Yes
Native Quince - Rusty Fig Dry Rainforest	No	No
River Oak Riparian Woodland	No	No
Rough-barked Apple - Coast Banksia Woodland	Yes	Yes
Sandstone Riparian Scrub	No	No
Spotted Gum - Narrow-leaved Ironbark - Grey Box Woodland	Yes	Yes
Weeping Myall Woodland	Yes	Yes

Threatened flora species and populations that have been recorded or have the potential to occur on site include:

- *Acacia pendula* (population in the Hunter Catchment Endangered Population).
- *Eucalyptus camaldulensis* (population in the Hunter Catchment Endangered Population).
- *Cymbidium canaliculatum* (population in the Hunter Catchment Endangered Population).
- *Eucalyptus glaucina* (no actual record).
- *Grevillea parviflora* subsp. *parviflora*.

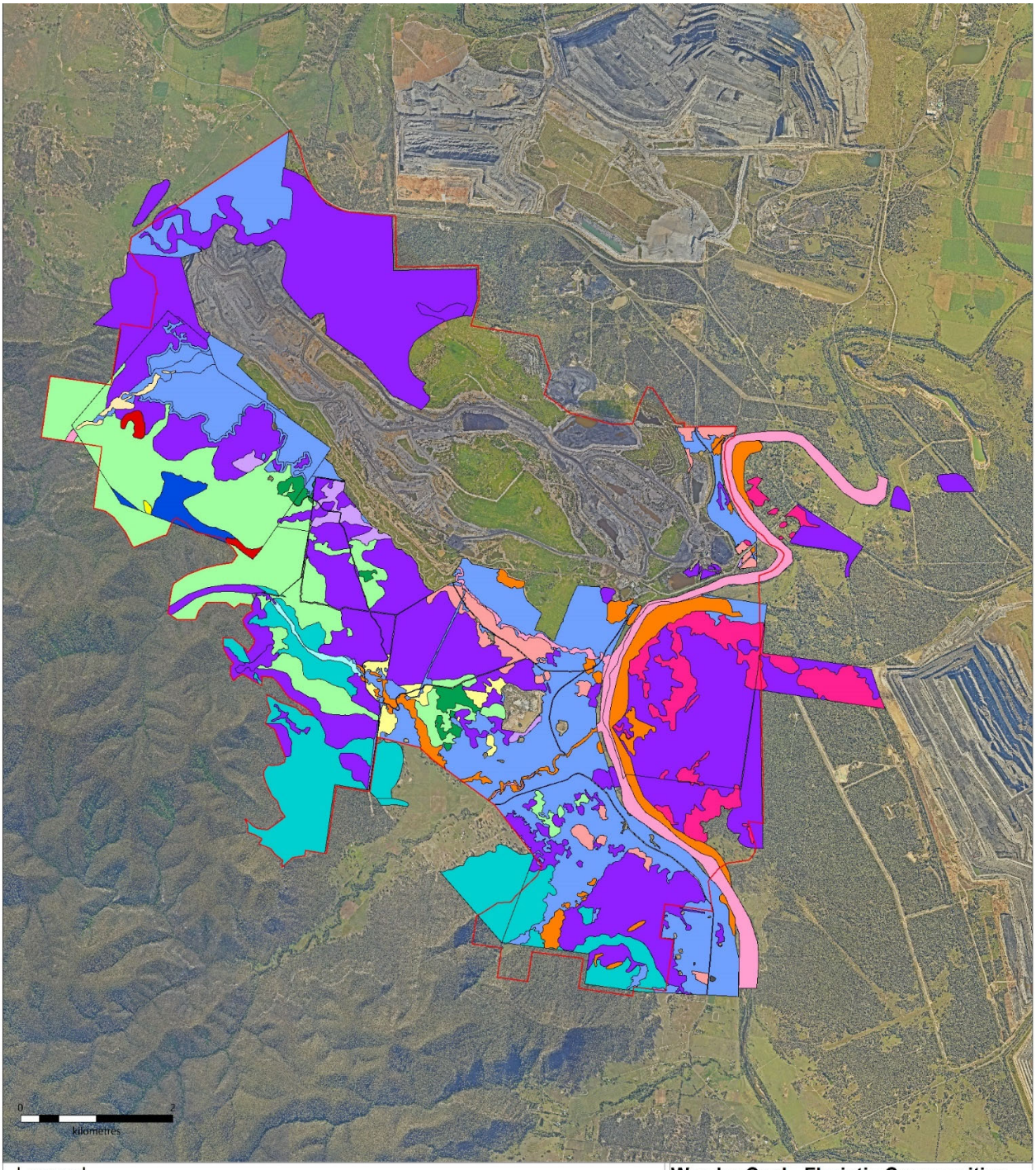


Figure 3: Floristic Communities

3.6.2 Fauna

Avifauna, mammals, reptiles and amphibians were surveyed at the Mine in 2003 (Mount King Ecological Surveys, 2003; Greg Richards and Associates, 2003), 2009 (RPS Harper Somers O'Sullivan [RPS HSO], 2009), 2010 (Biosphere Environmental Consultants, 2012), 2011 (Niche Environment and Heritage, 2012), 2014 (Niche Environment and Heritage, 2014) and 2015 (Eco Logical Australia, 2015) and 2016 (Eco Logical Australia, 2016, 2017).

Threatened and migratory fauna species known to or considered to have the potential to occur in the vicinity of the mine have been summarised in **Table 4**. The locations of species recorded in the vicinity of the mine are shown in **Figure 4**.

Table 4: Threatened Fauna Species with Potential to Occur in the Vicinity of the Mine

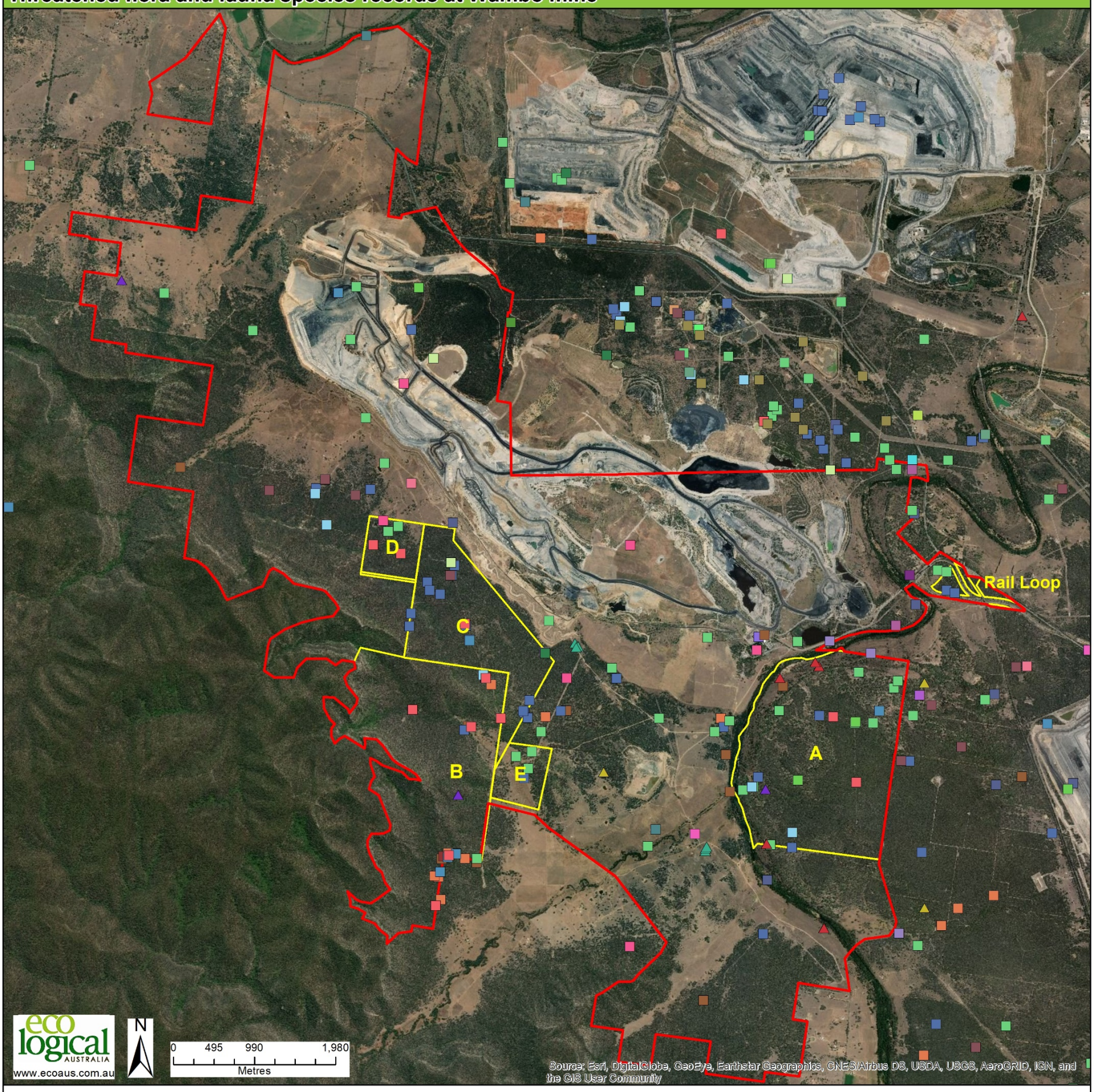
Scientific Name	Common Name	Conservation Status[1]	
		BC Act	EPBC Act
Amphibians			
Litoria littlejohni	Littlejohn's Tree Frog	V	V
Litoria aurea	Green and Golden Bell Frog	E	V
Litoria booroolongensis	Booroolong Frog	E	E
Reptiles			
Aprasia parapulchella	Pink-tailed Worm-lizard	V	V
Hoplocephalus bungarroides	Broad-headed Snake	E	V
Birds			
Artamus cyanopterus	Dusky Woodswallow	V	-
Calidris ferruginea	Curlew Sandpiper	E	CE, M
Falco subniger	Black Falcon	V	-
Numenius madagascarensis	Eastern Curlew	-	CE, M
Leipoa ocellata	Malleefowl	E	V
Botaurus poiciloptilus	Australasian Bittern	E	E
Pandion cristatus	Eastern Osprey	V	M
Lophoictinia isura	Square-tailed Kite	V	-
Circus assimilis	Spotted Harrier	V	-
Erythrotriorchis radiatus	Red Goshawk	CE	V
Hieraaetus morphnoides	Little Eagle	V	-
Rostratula australis	Australian Painted Snipe	E	E
Gallinago hardwickii	Latham's Snipe	-	M
Calyptorhynchus lathami	Glossy Black-cockatoo	V	-
Callocephalon fimbriatum	Gang-gang Cockatoo	V	-
Glossopsitta pusilla	Little Lorikeet	V	-
Neophema pulchella	Turquoise Parrot	V	-
Lathamus discolor	Swift Parrot	E	CE
Tyto tenebricosa	Sooty Owl	V	-
Tyto novaehollandiae	Masked Owl	V	-
Ninox strenua	Powerful Owl	V	-
Hirundapus caudacutus	White-throated Needletail	-	V, M
Apus pacificus	Fork-tailed Swift	-	M
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	-
Chthonicola saggitatus	Speckled Warbler	V	-

Scientific Name	Common Name	Conservation Status[1]	
		BC Act	EPBC Act
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-
Anthochaera phrygia	Regent Honeyeater	CE	CE
Grantiella picta	Painted Honeyeater	V	V
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	-
Petroica phoenicea	Flame Robin	V	-
Petroica boodang	Scarlet Robin	V	-
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	-
Daphoenositta chrysoptera	Varied Sittella	V	-
Pachycephala olivacea	Olive Whistler	V	-
Rhipidura rufifrons	Rufous Fantail	-	M
Monarcha melanopsis	Black-faced Monarch	-	M
Myiagra cyanoleuca	Satin Flycatcher	-	M
Stagonopleura guttata	Diamond Firetail	V	-
Mammals			
Petaurus australis	Yellow-bellied Glider	V	-
Petaurus volans	Greater Glider	-	V
Pseudomys oralis	Hastings River Mouse	E	E
Dasyurus maculatus maculatus	Spotted-tailed Quoll (SE mainland population)	V	E
Phascolarctos cinereus	Koala	V	V
Phascogale tapoatafa	Brush-tailed Phascogale	V	-
Petaurus norfolcensis	Squirrel Glider	V	-
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Mormopterus norfolkensis	Eastern Freetail-bat	V	-
Miniopterus australis	Little Bentwing-bat	V	-
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	V	-
Nyctophilus corbeni	Corben's Long-eared Bat (south-eastern form)	V	V
Chalinolobus dwyeri	Large-eared Pied Bat	V	V
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-
Myotis macropus	Southern Myotis	V	-
Scoteanax rueppelli	Greater Broad-nosed Bat	V	-
Vespadelus troughtoni	Eastern Cave Bat	V	-
Pseudomys novaehollandiae	New Holland Mouse	-	V

1) V = Vulnerable; E = Endangered; CE = Critically Endangered; M = Migratory.

2) Conservation status listed under the BC Act and the EPBC Act, current at February 2020.

Threatened flora and fauna species records at Wambo mine



Legend

- WCPL Land
- RWEAs

Threatened Flora

- Acacia pendula
- Cymbidium canaliculatum
- Eucalyptus camaldulensis
- Eucalyptus glaucina

Threatened Fauna

- Barking Owl
- Black Falcon
- Brown Treecreeper
- Brush-tailed Phascogale
- Brush-tailed Rock-wallaby
- Diamond Firetail
- Dusky Woodswallow
- Eastern Bentwing-bat
- Eastern Cave Bat
- Eastern False Pipistrelle
- Eastern Freetail-bat
- Eastern Osprey
- Flame Robin
- Gang-gang Cockatoo
- Giant Burrowing Frog
- Glossy Black-Cockatoo
- Greater Broad-nosed Bat
- Greater Glider
- Grey-crowned Babbler
- Grey-headed Flying-fox
- Hooded Robin
- Koala
- Large-eared Pied Bat
- Little Bentwing-bat
- Little Eagle
- Little Lorikeet
- New Holland Mouse
- Painted Honeyeater
- Powerful Owl
- Regent Honeyeater
- Scarlet Robin
- Sooty Owl
- Southern Myotis
- Speckled Warbler
- Spotted Harrier
- Spotted-tailed Quoll
- Squirrel Glider
- Swift Parrot
- Turquoise Parrot
- Varied Sittella
- White-bellied Sea-Eagle
- White-throated Needletail
- Yellow-bellied Glider
- Yellow-bellied Sheathtail-bat

Datum/Projection:
GDA 1994 MGA Zone 56 Date:14/05/2020

Figure 4: Threatened Flora and Fauna Species Records at Wambo Mine

3.6.3 Pest Fauna Species

Eleven introduced species were recorded by the 2003 EIS surveys, consisting of:

- House Sparrow (*Passer domesticus*)
- Common Starling (*Sturnus vulgaris*)
- Common Mynah (*Sturnus tristis*)
- House Mouse (*Mus musculus*)
- Black Rat (*Rattus rattus*)
- Cat (*Felis catus)*
- Dog (*Canis familiaris*)
- Red Fox (*Vulpes vulpes*)
- Brown Hare (*Lepus capensis*)
- European Rabbit (*Oryctolagus cuniculus*)
- Cattle (*Bos taurus*).

3.6.4 Aquatic Ecosystems

Aquatic macroinvertebrate, fish and water quality sampling was conducted for the Wambo Development Project EIS. The sampling sites displayed considerable variation in terms of stream structure (e.g. pool/run sequence or isolated pools), stream flow and the condition of the riparian zone. The sampling found North Wambo Creek to represent minimal fish habitat with two native and one introduced fish species recorded from North Wambo Creek during the sampling (Resource Strategies, 2003).

Currently Stony, Wambo, Waterfall, Wollombi Creeks and the North Wambo Creek Diversion are monitored as part of the annual monitoring program.

3.6.5 Landscape Function Analysis

Landscape Function Analysis (LFA) is a monitoring procedure developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Tongway and Hingley, 2004). It provides a rapid, reliable and easily applied method for assessing and monitoring landscape restoration or rehabilitation. It uses simple indicators that assess how well a landscape works as a system. Completion criteria has been developed for LFA assessment purposes (**Section 5.3**). Details of the monitoring methodology for LFA are provided in **Section 7.1.1.** The LFA monitoring program is described in **Section 7.2** and shown on **Figure 14.**

LFA monitoring plots were established at the Mine in 2006, in areas of woodland and pasture rehabilitation. Monitoring plots were also established in riparian rehabilitation areas along the North Wambo Creek in 2008. Additional plots were added in 2015 in the North Wambo Creek Diversion and Wambo Creek. An additional pasture rehabilitation plot was also added in 2017.

Established plots were monitored on an annual basis using the method for Landscape Organisation Index and Soil Surface Assessment (SSA) (refer **Section 7.1.1** for details). Baseline LFA monitoring data for the period 2006 – 2018 is included in **Appendix C**. Averages for the monitored LFA monitoring program for selected plots are shown graphically in **Figures 5-8.** These averages are compared to the LFA completion criteria (**Section 5.3**) to compare rehabilitation and regeneration areas with reference sites throughout the course of the monitoring program (**Section 7.2**).

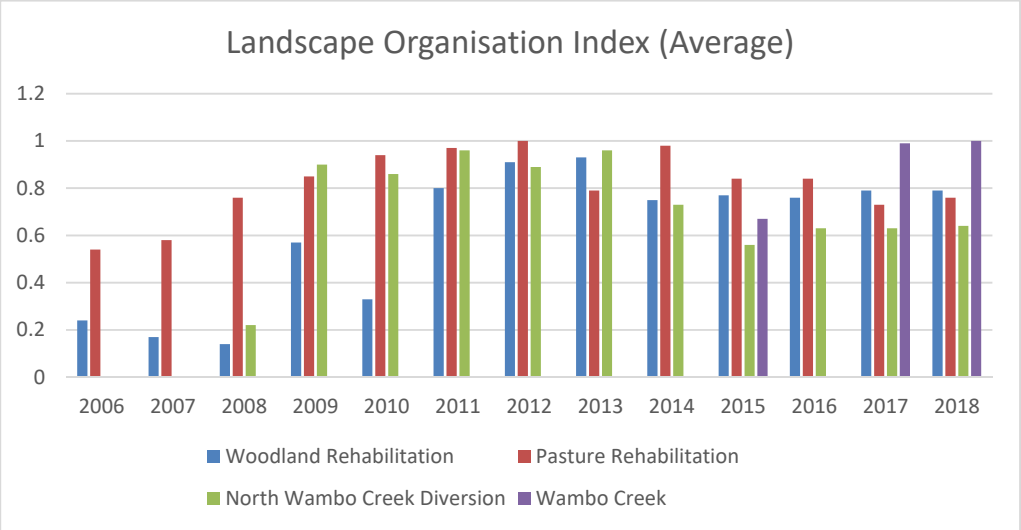


Figure 5: Landscape Organisation Index (Average) 2006-2018

The Landscape Organisation Index (LOI) value for woodland rehabilitation is considerably lower in the first three years of monitoring, being 0.24, 0.17 and 0.14 respectively. The Pasture Rehabilitation values for the first two years are approximately half that of subsequent years, being 0.54 and 0.58. Data was not collected in the first two years for the North Wambo Creek Diversion, however the 2008 data is significantly lower than that of subsequent years, being 0.22. The LOI for the Wambo Creek has increased since monitoring commenced, from 0.67 in 2015 to 1 in 2018. For woodland, pasture and the North Wambo Creek Diversion, the trend has been a steady improvement in LOI followed by a plateau and then fluctuating values around the plateau.

As LOI refers to the percentage of transect covered by patches and the rehabilitation understory is considerably sparse with a covering of leaf litter, this may reflect the development of a leaf litter layer. However this should be incrementally increasing (unless leaf drop suddenly increased). A number of factors may be at play in the variation in data, including the use of multiple data collectors over time or climatic factors such as drought periods or large rainfall events.

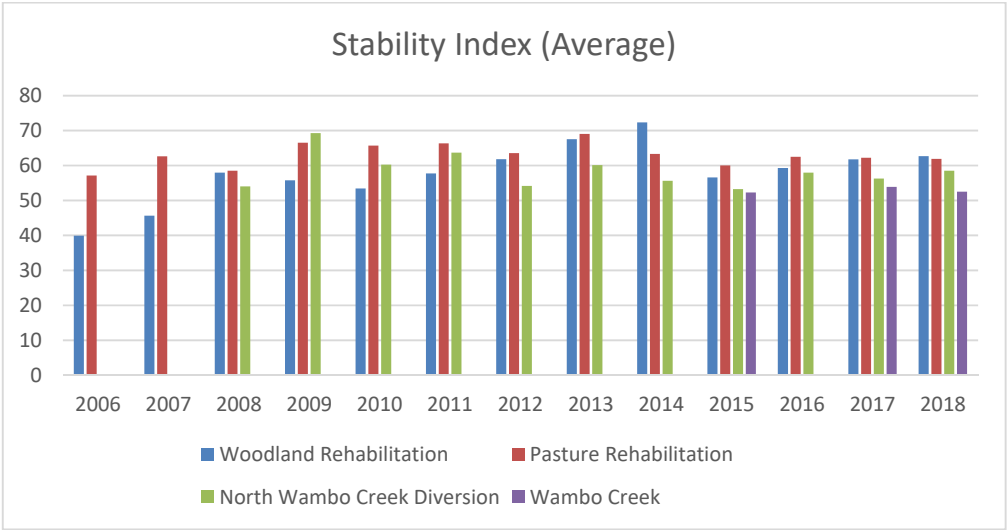


Figure 6: Stability Index (Average) 2006-2018

Overall there is not a huge amount of variation in the data collected over the 13 year period. The Woodland Rehabilitation site was initially low, at 39.95 and 45.65, however the average over the following 11 year period is generally around 60. It is difficult to ascertain why there is this variation and as discussed previously could be attributed to a number of factors such as multiple data collectors over time or climatic factors such as drought periods or large rainfall events.

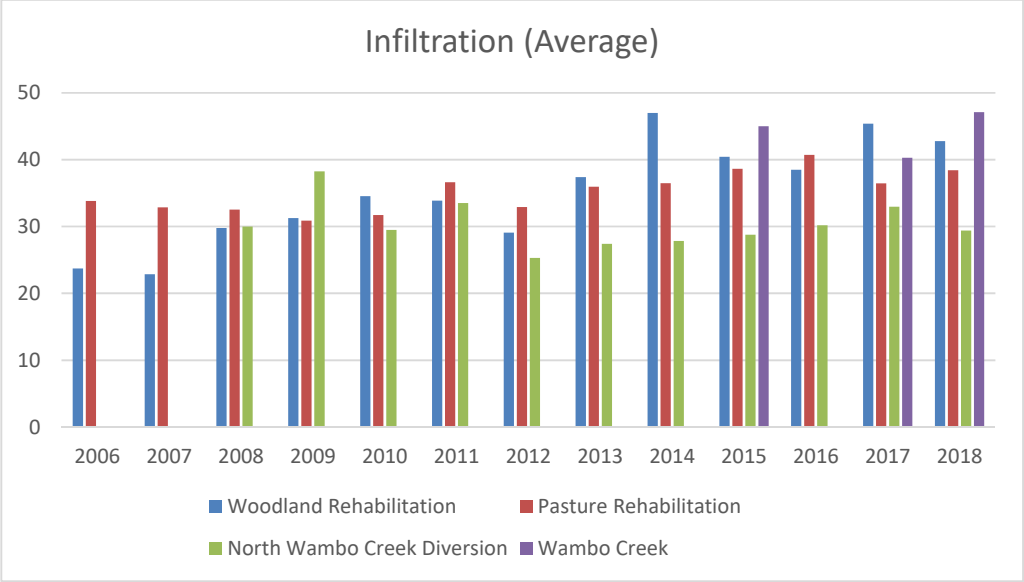


Figure 7: Infiltration (Average) 2006-2018

Pasture Rehabilitation sites are quite stable in terms of infiltration capacity and there has been little variation over time. This may be attributed to the high cover of pasture species that allows infiltration to occur consistently over this 13 year period. There is variability in the infiltration capacity of the woodland sites, with the first two years sitting at 23.73 and 22.88, however this has increased over the following six years with a peak in 2014 of 47.00 and a decrease the following year to 40.43. The North Wambo Creek Diversion site has remained relatively consistent with a peak in 2009 of 38.25 and a decrease in 2012 to 25.30. Infiltration rates at the Wambo Creek site are generally good, with average infiltration above 40 for all monitoring rounds. Infiltration rates are likely to be affected by factors such as percentage of groundcover i.e. leaf litter, groundcover growth. No clear patterns can be drawn from the results and it is likely that variation in data, including the use of multiple data collectors over time or climatic factors such as drought periods or large rainfall events may be attributed to the variation in results.

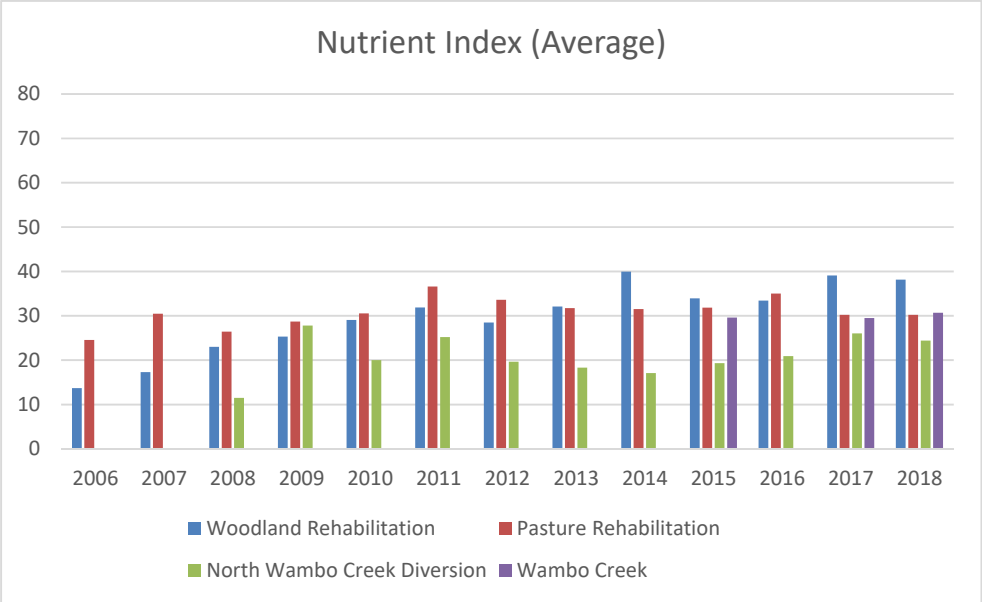


Figure 8: Nutrient Index (Average) 2006-2018

The nutrient index at Woodland Rehabilitation sites has seen consistently increasing results since 2006 with one slight decrease in 2012 and a peak in 2014. Overall the nutrient index of the woodland sites is improving and may be attributed to the development of a more complex natural system i.e. increased ground layer, leaf litter etc. The Pasture Rehabilitation sites have varying results with slight decreases and peaks occurring throughout the 13 year period. Generally these are not large variations with the lowest score being 24.55 and the highest score 36.59 and an overall average of 30.88. There is large variability in the results for the North Wambo Creek Diversion sites with the lowest score being 11.5 and the highest score being 27.8 in the following year. The nutrient index at the Wambo Creek site has been consistent, at around 29-30, since monitoring commenced in 2015. Overall there is a trend of improvement in nutrient index, particularly with woodland and pasture rehabilitation sites, while the North Wambo Creek experienced an initial peak in improvement followed by a smaller reduction then has plateaued and remained fairly constant.

As discussed previously it is likely that variation in data, including the use of multiple data collectors over time or climatic factors such as drought periods or large rainfall events may be attributed to the variation in results.

3.6.6 BioMetric Vegetation Monitoring

BioMetric is a terrestrial biodiversity Native Vegetation Assessment Tool that assesses losses of biodiversity from proposed clearing and calculates gains in biodiversity from proposed offsets (OEH, 2016). The BioMetric method (Gibbons et al 2009) is proposed as the model for determining meaningful, quantitative, biodiversity focused Completion Criteria (**Section 5.1**). BioMetric, a NSW Government endorsed biodiversity assessment method (developed for the NSW BioBanking Assessment Methodology), provides a useful decision making framework founded on a standardised repeatable measurement method readily applicable to a monitoring program. BioMetric is a quantitative method developed to comparatively assess the condition of vegetation and habitat values of native vegetation against pre-defined benchmarks (i.e. pre European settlement). Further detail on the methodology is included in **Section 7.1.2.**

Baseline biometric monitoring was undertaken in the RWEAs in October 2015, in accordance with the methods described in **Sections 5.1** and **7.1.2.** A total of 9.4mm of rain was recorded during the two week monitoring period (16-19th and 19-29th October) and the average temperature was 29-30°C. Data was collected from 34 locations previously surveyed by Niche (2014a) and RPS (2010). Baseline biometric monitoring data for this monitoring event is included in **Appendix C.**

3.6.7 Photo Point Monitoring in RWEAs

A number of photo monitoring points were established in the RWEAs in October 2014 in accordance with the requirements of the Conservation Agreements and as part of WCPL's Biodiversity Monitoring Program (**Section 7.0**). Maps showing the Photo Monitoring Point locations are included in **Appendix D.**

Baseline photos of these monitoring points are included in **Appendix E**, along with notes describing the monitoring sites and dominant species present at each site. A description of baseline conditions at each of the sites is provided in **Table 5** below.

Table 5: Description of Baseline Conditions at Photo Monitoring Points in RWEAs

RWEA	Photo Point	Baseline Condition
A	A1	Vegetation is predominately River Red Gum Woodland on fertile sandy alluvial soils. The site is dominated by native tree and shrub species. However, the understorey has a high cover of introduced herbaceous species and accordingly is in 'low' condition. It is noted that native parrots nest at this site.
	A2	Vegetation has been identified as Coast Banksia / Rough-barked Apple / Blakely's Red Gum Forest (Warkworth Sands Woodland EEC). The understorey is dense, with groundcover consisting predominately of Bracken Fern (*Pteridium esculentum*), typical of Warkworth Sands EEC, reaching a height of 1 m. The overstorey is dominated by Rough-barked Apple (*Angophora floribunda*) and Coast Banksia (*Banksia integrifolia*). Trees at this site are on average 6 m or higher in height. Flora species are mostly native, however, some exotic species (including Prickly Pear [*Opuntia species*], Flatweed [*Senecio madagascariensis*], and Greater Beggars Ticks [*Bidens subalternans*]), have been recorded.
	A3	Vegetation is River Oak / Rough-barked Apple Forest on fertile sandy alluvial soils. Groundcover at this site consists mostly of Casuarina foliage, with some large woody debris. Trees at this site are on average 20 m or higher in height. Five exotic flora species have been noted at this site, with the most abundant exotic species being Wandering Jew (*Tradescantia flumensis*) and Panic Veldtgrass (*Ehrharta erecta*).
	A4	Vegetation is predominately Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest. The groundcover consists mostly of leaf litter, small woody debris and large woody debris (fallen trees). The site is prone to waterlogging and is therefore subject to dieback as a result of extended wetness. However, a number of young Bulloak (*Allocasuarina luehmannii*) trees and a naturally sparse cover of foliage have been observed at this site, indicating healthy regeneration from historical disturbance. Trees at this site are on average 6 m or higher in height. Limited exotic flora species have been recorded at this site.
B	B1	Vegetation is White Mahogany / Rough-barked Apple Forest, with shrubs reaching 2 m in height. Ground cover consists of short grasses and sparse tussock grasses. This site consists almost entirely of native flora species and very limited exotic flora has been identified at this site.
	B2	Vegetation is Spotted Gum / Narrow-leaf Ironbark / Bulloak / Paperbark Forest. Groundcover consists mostly of leaf litter and woody debris. Active regeneration of eucalypts is present, and most trees at the site are 6 m or higher in height. Very limited exotic flora species has been recorded at this site.

RWEA	Photo Point	Baseline Condition
C	C1	Vegetation is Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest. Groundcover consists mostly of leaf litter and woody debris, with a very sparce cover of long grasses and small shrubs. Trees at this site are on average 6 m or higher in height. Very limited exotic flora species has been recorded at this site.
	C2	Vegetation is Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest. Groundcover consists mostly of leaf litter and woody debris, with a very sparce cover of long grasses and small shrubs. Trees at this site are on average 6 m or higher in height. Tree hollows are present at this site, and evidence of fire has been recorded. Very limited exotic flora species has been recorded at this site.
D	D1	Vegetation is Slaty Gum / Narrow-leaf Ironbark / Bulloak / Paperbark Forest. There is this groundcover consisting of leaf litter, woody debris, rocks and live vegetation (small trees and shrubs). Very limited exotic flora has been recorded at this site.
Coal Terminal	CT1	Vegetation is a combination of Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest. This site has very little native or introduced ground cover owing to the dense Bulloak regeneration which suppresses ground cover development. , with an understorey of tussock grasses. Trees at this site are on average 6 m or higher, however many young pine trees (1 – 2 m tall) have been recorded. Vegetation is predominately native flora, however, Creeping Prickly Pear (*Opuntia humifusa*) and Fireweed (*Senecio madagascariensis*) have been recorded.
	CT2	The vegetation is Ironbark eucalypt dominated woodlands/forest, with a clear understorey. This site is transitional between Ironbark / Bulloak Forest and Warkworth Sands Woodland. It has shallow Aeolian sand deposited over Permian sediments. It is considered to be semi-cleared, and an old track runs through the site. A number of exotic flora species have been recorded at this site, namely including Creeping Pear (*Opuntia humifusa*), Blue Heliotrope (*Heliotropium amplexicaule*), Red Natal Grass (*Melinis repens*), Fireweed (*Senecio madagascariensis*) and Galenia (*Galenia pubescens*). Feral animals appear to be present at this site, as evidence of digging and scats, likely to be European Wild Rabbit (*Oryctolagus cuniculus*), has been recorded

4.0 Biodiversity Management Domains

4.1 Overview

The term 'Management Domain' has been used to identify a management area for the purpose of management action implementation and monitoring. A description of each Management Domain is provided below.

The Management Domains described in this BMP are:

1. RWEA - A, B, C, D and D Extension and RWEA Wambo Coal Terminal (RWEAs are also the designated Biodiversity Offset areas);
2. RWEA E (in the process of being secured);
3. Open Cut Woodland Revegetation Areas (land disturbed by mining);
4. North Wambo Creek Diversion Area (NWCD); and
5. Buffer/Grazing Areas.

Other areas mentioned in this BMP are approved disturbance areas. These areas are described in **Section 4.2.2.** Management of these areas is undertaken in accordance with the MOP/RMP.

Table 6 provides the land area of the management domains and **Figure 9** illustrates the domain boundaries. Non-shaded areas in **Figure 9** are assumed to be mining related and not under a management regime. Revegetation Areas and Buffer/Grazing Areas are subject to continual change and will be managed in accordance with this BMP.

Table 6: Biodiversity Management Domain Areas

Management Domain[1]	Area (ha)
RWEA A	424
RWEA B	454
RWEA C	211
RWEA D & D Extension	46 + 2
RWEA Wambo Coal Terminal	15.52
RWEA E	41.6
Open Cut Woodland Revegetation Areas[3]	270
North Wambo Creek Diversion Area (Stage 2 & 3)	23
Buffer/Grazing Areas[4]	1983

1. Should the Secretary determine that an additional offset is required under Condition B3, WCPL will be required to provide this offset in addition to the specified offsets (RWEAs) in **Table 6**. The size of any additional offset required shall be determined in consultation with the BCD and to the satisfaction of the Planning Secretary.
2. WCPL is required to secure RWEA E under a conservation agreement pursuant to section 69B of the National Parks and Wildlife Act 1974 (or public positive covenant and/or restriction on the use of land) by December 2017, or an alternate timeframe agreed with the Secretary of the DPE (now DPIE). Attempts by WCPL to contact BCT to finalise the agreement via emails dated 15 April, 3 May, 24 May, 19 July and 10 October 2019.
3. This area was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142.
4. Includes all areas of WCPL managed land not contained within other Management Domains as of June 2016 i.e. Peabody pastoral land holdings.

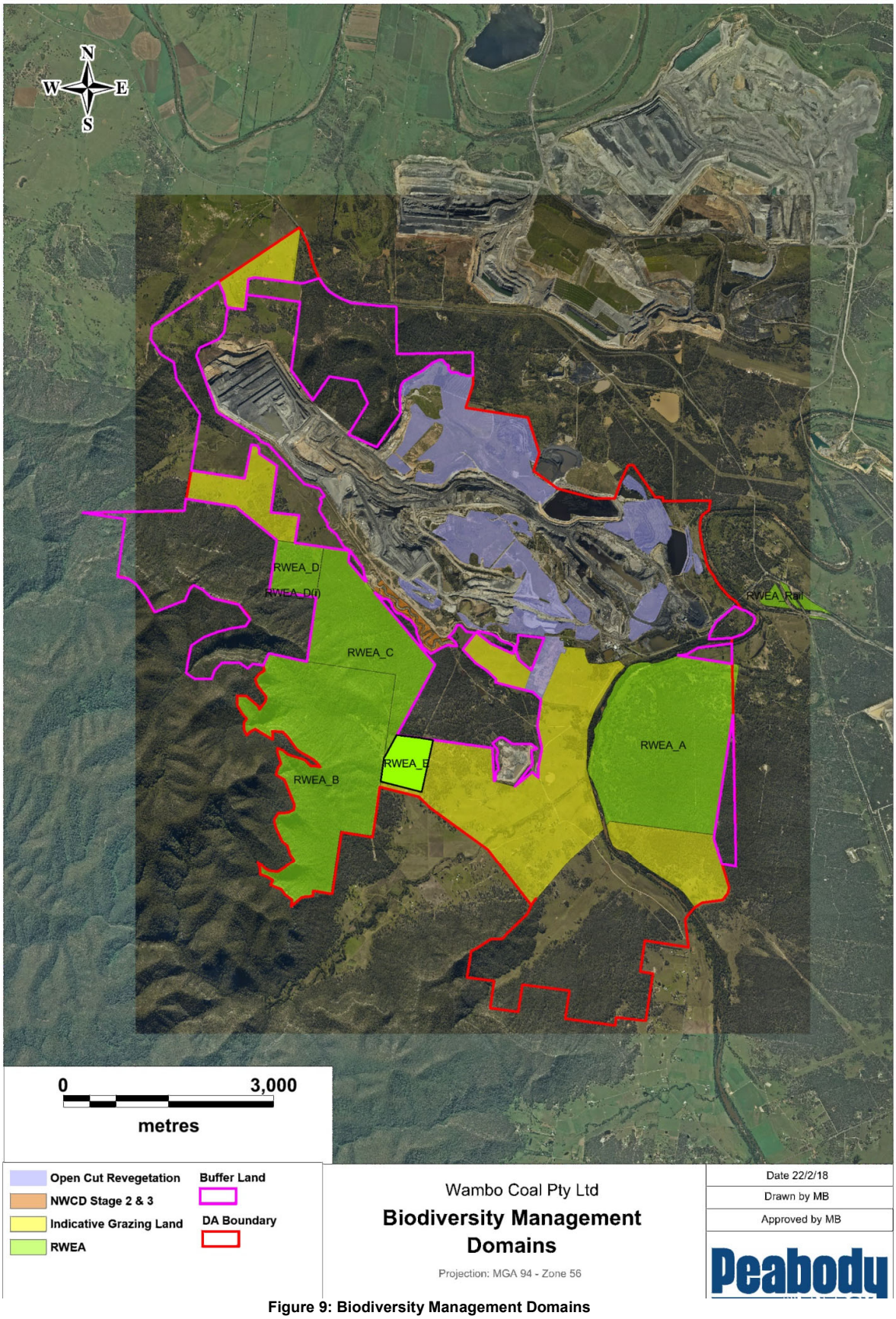


Figure 9: Biodiversity Management Domains

4.2 Management Domains

4.2.1 Remnant Woodland Enhancement Areas

The RWEAs (A, B, C, D & D Extension and Wambo Coal Terminal) have been established on areas of WCPL-owned land containing 1153 ha of remnant vegetation, as shown on **Figure 9.** The RWEAs are currently the subject of CAs, in accordance with Conditions B72 and B73 of DA 305-7-2003, with the NSW Minister responsible for administering the *National Parks and Wildlife Act 1974*. The CAs provide for the enhancement and conservation of existing remnant vegetation. Ongoing management and monitoring of the RWEAs is required to be undertaken in accordance with this BMP. WCPL is in the process of varying the CA for RWEAs A, B, C D & D Extension to include RWEA E.

The objective of the RWEA program is to assist in the conservation of regional biodiversity, whilst enhancing the habitat available to flora and fauna. In accordance with EPBC approval 2003/1138, the RWEA program will provide a strategy that gives protection in perpetuity for RWEA A and long-term protection of RWEAs B, C and D & D extension. The five RWEAs are shown on **Figure 9.** The RWEA enhancement strategies are detailed in **Section6.1.1.**

A Biodiversity Offset Strategy has been developed and incorporated into Conditions B69 and B70 of DA 305-7-2003. The Strategy incorporates the RWEAs and Open Cut Revegetation Areas. Ongoing management and monitoring of these areas is required to be undertaken in accordance with this BMP.

Surveys of the ecological communities which comprise the RWEAs A – D were undertaken during 2015 by Flora Search as part of the South Wambo Underground Mine Modification EIS (FloraSearch, 2016). The identified communities are summarised in **Table 7** and shown on **Figure 10**.

The Acacia sp. in Community 15 was identified as *Acacia anuera* in the Wambo Development Project EIS. This stand was subsequently re-identified as *Acacia pendula* in early 2004 by Terry Tame and Travis Peake. This stand of *Acacia pendula* was undermined by North Wambo Underground Longwall 4 with no obvious detrimental effect (RPS, 2012). Other stands of *Acacia pendula* have been subsequently identified at the Mine.

WCPL has investigated the inclusion of “Community 15” (the *Acacia pendula* stand) and the areas south of the existing RWEAs in the program. The area of “Community 15” is outside of areas used for grazing activities, and other areas of *Acacia pendula* have been subsequently identified. The southern areas are subject to ongoing exploration and resource assessment. On this basis, WCPL does not propose to include these areas in the RWEAs at this stage.

4.2.1.1 Conservation Values of RWEAs A-D

The following conservation values apply to RWEAs A-D:

- MU7 - Narrabeen Footslopes Slaty Box Woodland, Biometric Vegetation Type HU618. Also recognised as Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (listed as Vulnerable under the BC Act and Critically Endangered under the EPBC Act);
- MU10 - Central Hunter Box – Ironbark Woodland, Biometric Vegetation Type HU551. Also recognised as Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions (listed as Endangered under the BC Act and Critically Endangered under the EPBC Act);
- MU12 - Southern Hunter Escarpment Spotted Gum Woodland;

- MU13 - Hunter Floodplain Red Gum Woodland Complex, Biometric Vegetation Type HU599 95% cleared within the Hunter-Central Rivers CMA. Also recognised as Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions (listed as Endangered under the BC Act);
- MU14 - Warkworth Sands Woodland (Warkworth Sands Woodland in the Sydney Basin Bioregion listed as an EEC under Schedule 2 of the BC Act EEC and Critically Endangered under the EPBC Act);
- MU17 - Central Hunter Paperbark Soak Woodland (HU564 Biometric Vegetation Type - 80% cleared within the Hunter-Central Rivers CMA);
- MU22 - Wollombi Alluvial Red Gum – Apple Forest;
- MU30 - Hunter Valley River Oak Forest;
- 8 - Native Olive-Scrub Wilga Woodland; and
- G - Secondary Native Grassland.

The Conservation Area contains habitat suitable for fauna species listed as Endangered (10 species), Vulnerable (42 species) and Critically Endangered (two species), respectively under the BC Act plus nine species listed only under the EPBC Act (refer **Table 4**).

The Conservation Area contains extensive registered Aboriginal sites, including open artefact sites, grinding grooves, isolated finds and potential archaeological digs.

The Conservation Area is adjacent to remnant bushland areas (i.e. Wollemi National Park). Wollemi National Park is part of the Greater Blue Mountains World Heritage Area, which covers approximately 1 million ha and supports an exceptional number of threatened flora and fauna species.

4.2.1.2 Conservation Values of RWEA E

The following conservation values apply to the RWEA E:

- The RWEA E contains:
    - Forest Redgum Lowland Forest. Also known as Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions (listed as Endangered under the BC Act).
    - Spotted Gum – Narrow-leaved Ironbark – Grey Box Woodland. Also known as Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions (listed as Endangered under the BC Act) and Central Hunter Valley Eucalypt Forest and Woodland (listed as Critically endangered under the EPBC Act).
    - Grey Box – Slaty Box Woodland. Also known as Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (listed as Vulnerable under the BC Act) and as Central Hunter Valley Eucalypt Forest and Woodland (listed as Critically endangered under the EPBC Act).
- The Conservation Area contains habitat suitable for fauna species listed as Endangered (10 species), Vulnerable (42 species) and Critically Endangered (two species), respectively under the BC Act plus nine species listed only under the EPBC Act (refer **Table 4**).

- The RWEA E contains registered Aboriginal sites (three Isolated Finds [AHIMS 37-5-0656, AHIMS 37-5-0748 and AHIMS 37-5-0761] and one Scatter [AHIMS 37-5-0761]).
- RWEA E is adjacent to land already subject to Conservation Agreement and managed by WCPL.

4.2.1.3 Conservation Values of RWEA Coal Terminal

The following conservation values apply to the RWEA Coal Terminal:

- The RWEA Coal Terminal contains:
    - MU10 - Central Hunter Box – Ironbark Woodland (Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions listed as an EEC under Schedule 2 of the BC Act) and Critically Endangered under the EPBC Act) (also HU551 Biometric Vegetation Type);
    - MU14 – Warkworth Sands Woodland (Warkworth Sands Woodland in the Sydney Basin Bioregion listed as an EEC under Schedule 2 of the BC Act, also listed by the Commonwealth as CEEC; and
    - G - Secondary Native Grassland.
- The RWEA Coal Terminal contains habitat suitable for fauna species listed as Endangered (10 species), Vulnerable (42 species) and Critically Endangered (two species), under Schedules 1of the BC Act plus nine species listed only under the EPBC Act (refer to **Table 4**).
- The RWEA Coal Terminal contains registered Aboriginal sites, (open artefact sites 37-6-1131 and 37-6-0594).
- The RWEA Coal Terminal is adjacent to remnant bushland areas (i.e. Wollemi National Park). Wollemi National Park is part of the Greater Blue Mountains World Heritage Area, which covers approximately 1 million ha and supports an exceptional number of threatened flora and fauna species.

Table 7: Flora Communities within RWEAs A - E and RWEA Rail

Offset Area	Community	EEC name	Threatened[1]
RWEA A	River Oak Riparian Woodland	N/A	No
	Forest Red Gum Floodplain Forest	Hunter Floodplain Red Gum Woodland	Yes
	Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Rough-barked Apple - Coast Banksia Woodland	Warkworth Sands Woodland (listed by Commonwealth as a Critically Endangered Ecological Community (CEEC))	Yes
	Derived Grassland	N/A	No
RWEA B	Forest Red Gum Floodplain Forest	Hunter Lowland Redgum Forest	Yes
	Rusty Fig - Native Quince - Native Olive Dry Rainforest	N/A	No
	Spotted Gum - Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Ironbark—Spotted Gum—Grey Box Forest (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Narrow-leaved Ironbark - Grey Box Woodland (Disturbed)	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Sandstone riparian scrub	N/A	No
	Grey Box - Slaty Box Woodland	Hunter Valley Footslopes Slaty Gum Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Derived Grassland	N/A	No
RWEA C	Forest Red Gum Floodplain Forest	Hunter Lowland Redgum Forest	Yes
	Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Bull Oak Grassy Woodland	N/A	No
	Melaleuca decora Low Forest	N/A	No
	Grey Box - Slaty Box Woodland	Hunter Valley Footslopes Slaty Gum (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Grey Box - Slaty Box Woodland (Disturbed)	Hunter Valley Footslopes Slaty Gum (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Derived Grassland	N/A	No
RWEA D	Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Grey Box - Slaty Box Woodland	Hunter Valley Footslopes Slaty Gum (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Grey Box - Slaty Box Woodland (Disturbed)	Hunter Valley Footslopes Slaty Gum (part of Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Derived Grassland	N/A	No
RWEA E	Forest Red Gum Lowland Forest	Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	Yes
	Narrow-leaved Ironbark – Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions (part of the Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Grey Box – Slaty Box Woodland	Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (part of the Commonwealth listed Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
RWEA Rail	Narrow-leaved Ironbark - Grey Box Woodland	Central Hunter Grey Box—Ironbark Woodland (part of Commonwealth Central Hunter Valley Eucalypt Forest and Woodland CEEC)	Yes
	Rough-barked Apple - Coast Banksia Woodland	Warkworth Sands Woodland (listed by Commonwealth as a Critically Endangered Ecological Community (CEEC))	Yes
	Secondary Native Grassland	N/A	No

Note
1. Listed as a Threatened Ecological Community or Critically Endangered Ecological Community under the NSW Threatened Species Conservation Act 1995 or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999

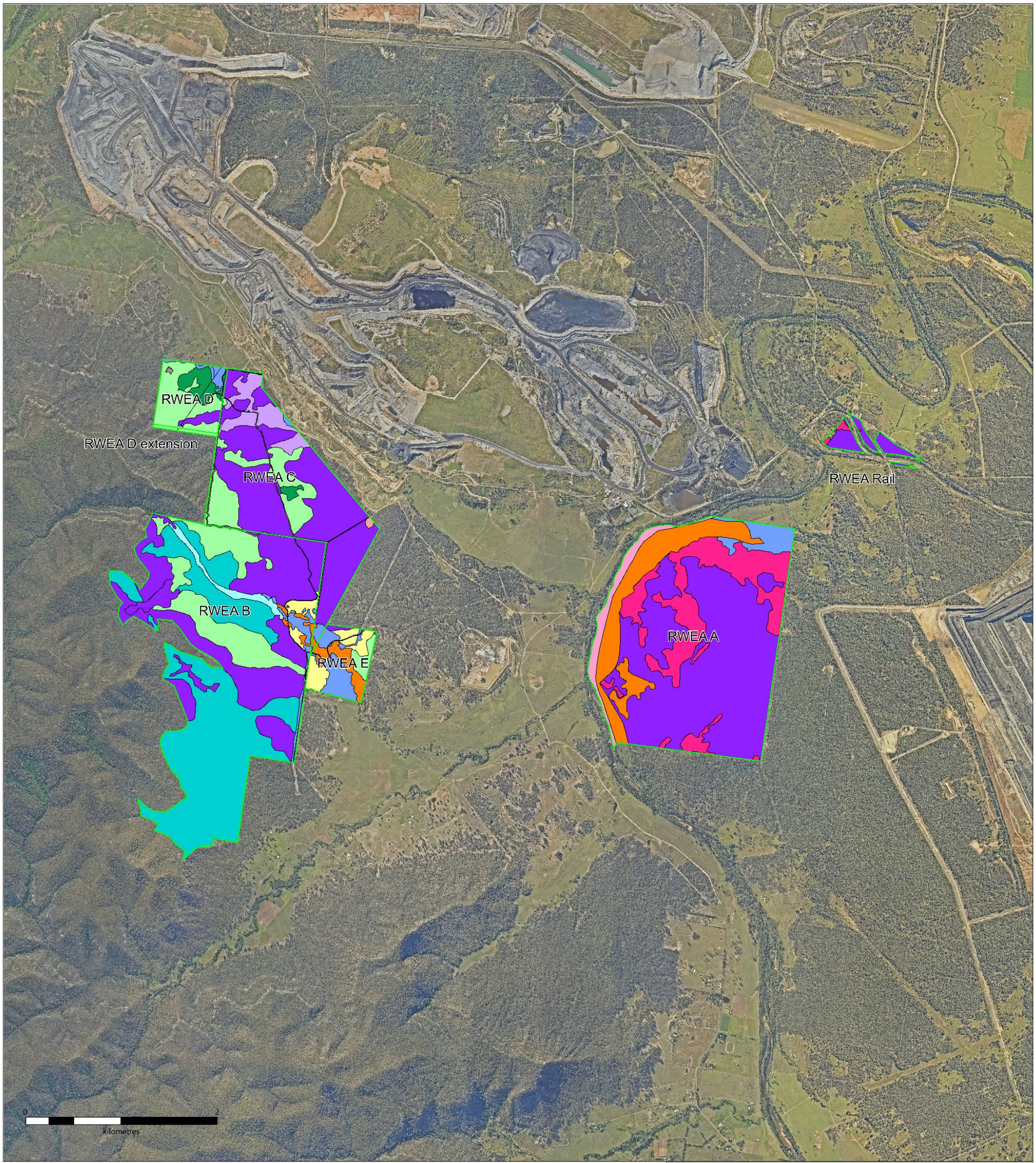


Figure 10: Flora Communities within the RWEAs

4.2.2 Remnant Woodland Disturbance Areas

Disturbance areas include areas within remnant woodland areas to be disturbed for future infrastructure such as dewatering bores and exploration drill holes and pads. These areas will include up to 12.6 ha of disturbance.

4.2.3 Open Cut Woodland Revegetation Areas

The approved disturbance area for the Mine includes active and future mining areas and infrastructure areas. Rehabilitation and revegetation of areas disturbed by mining and infrastructure are undertaken progressively in accordance with the approved MOP/RMP. The revegetation program for Project rehabilitation areas provides for a combination of woodland and pasture outcomes. Further detail on the establishment of suitable PCTs within woodland rehabilitation areas is provided in **Sections 5.1** and **6.1.2**.

As of the September 2019 approximately 683.8 ha of completed landforms have been rehabilitated.

4.2.4 North Wambo Creek Diversion Area

The ephemeral North Wambo Creek has been diverted around the active Bates South Open Cut Pit. The North Wambo Creek Diversion (NWCD) is located adjacent to the finishing (i.e. north-eastern) ends of the proposed underground longwall panels SBU LWs 14-16 and is partially located above panels SBU LWs 11-13.

The NWCD has been constructed within the natural surface soils, with the heights of the banks typically ranging between 3 to 5 metres.

4.2.5 Buffer/Grazing Areas

Peabody pastoral land holdings are subject to individual farm management agreements and action plans, as well as this BMP. Refer to **Section 6.3** for general land management strategies applicable to buffer/grazing areas.

5.0 Completion Criteria

WCPL has developed measurable, quantitative Completion Criteria that will support the agreed final land use for the Mine. Completion Criteria have been developed to ensure that progress can be quantitatively assessed and that progress towards overall mine closure objectives is occurring. A monitoring program (**Section 7.0**) will be implemented to monitor the Mine's progress against the developed Completion Criteria.

WCPL's Completion Criteria and monitoring program has been developed based on the Biometric (Gibbons et al 2009) and LFA methodologies for assessing ecosystem function and landform establishment success respectively (**Section 7.1**).

5.1 Biometric Assessment

A green, yellow, orange and red colour system has been developed to rank each measured attribute according to the performance and management actions required. This colour ranking system is shown in **Table 8.** The number of hollow-bearing trees and length of fallen logs have been presented as a measure of fauna habitat attributes. However no performance criteria has been set for these attributes in remnant vegetation, as in some cases it may take many years (50+) for a suitable density of hollows and logs to form naturally.

Table 8: Colour Ranking System for Floristic Attributes and Performance Targets

Site Attribute	Red (needs greater improvement)	Orange (in need of improvement)	Yellow (Not meeting target but values still acceptable)	Green (Excellent – within target range)
Native Plant Species Richness (NPS)	0-10%	>10-<50% of target range	50-<100% of target range	≥ target range
Native Overstorey Cover (NOS)	0-10% or >200% of target range	>10-<50% or >150-200% of target range	50-<100% or >100-150% of target range	Within target range
Native Midstorey Cover (NMS)	0-10% or >200% of target range	>10-<50% or >150-200% of target range	50-<100% or >100-150% of target range	Within target range
Native Ground Cover – grasses (NGCG)	0-10% or >200% of target range	>10-<50% or >150-200% of target range	50-<100% or >100-150% of target range	Within target range
Native Ground Cover – shrubs (NGCS)	0-10% or >200% of target range	>10-<50% or >150-200% of target range	50-<100% or >100-150% of target range	Within target range
Native Ground Cover – other (NGCO)	0-10% or >200% of target range	>10-<50% or >150-200% of target range	50-<100% or >100-150% of target range	Within target range
Proportion of native overstorey species regenerating (OR) in vegetation zone	0	0-0.5	0.5-1	1
Exotic plant cover (EPC)	>66%	33-66%	5-33%	0-5%

Completion criteria for seven Plant Community Types (PCT) present within the RWEAs has been developed considering both the baseline data collected during the 2014/2015 monitoring program (refer **Appendix C**) and OEH (now BCD) benchmark values for each PCT (**Section 3.6.6**). This criterion is included within **Table 9**, along with the average value calculated from the site value scores for each monitoring plot within the PCT (refer **Appendix C**).

Community condition benchmarks (developed by OEH [now BCD] for each PCT) have been modified to provide realistic, ambitious but achievable performance criteria for each plant community. Monitoring results can then be compared to these performance criteria to determine if management actions are likely to be required.

The following PCTs are considered most appropriate for the establishment of woodland vegetation within rehabilitation areas at the Mine, given the post mining landscape and surrounding vegetation:

- PCT 1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter;
- PCT 1604: Narrow-leaved Ironbark - Grey Box - Spotted Gum shrub - grass woodland of the central and lower Hunter; and
- PCT 1176: Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion.

Based on the above, completion criteria have been developed for older woodland rehabilitation areas with a canopy of Sugar Gum and rehabilitated areas of Narrow-leaved Ironbark – Bull Oak - Grey Box open forest (**Table 10**).

As existing woodland rehabilitation areas have been designed and implemented applying old techniques that do not reflect the current best practice of utilising species of local provenance, performance criteria for these older rehabilitation areas has been developed by modifying condition benchmarks for Grey-Box-Slaty Box shrub-grass woodland on sandstone slopes of the upper Hunter and Sydney Basin, which is expected to have a similar vegetation structure, albeit different species composition, to the mature rehabilitated woodland community.

Table 9: Floristic Performance Criteria for Plant Community Types in RWEAs

Plant Community Type (PCT)		NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
PCT 42: River Red Gum / River Oak riparian woodland wetland in the Hunter Valley	Average Value	14.3	15.3	14.5	28.9	1.1	6.9	38.3	1	0	14.9
	Range	10-19	0.5-27	0-34	12-64	0-2	0-38	0-54	1	0	0-35
	Benchmark Value	38	10-50	10-50	20-60	1-5	10-30	<5	1	0.1	10
	Completion Criteria	**>20**	**10-50**	**10-50**	**20-60**	**1-5**	**5-30**	**<10**	**1**	**-**	**-**
PCT 1658: Rough barked Apple – Narrow leaved Ironbark-Blakely's Red Gum-Bull Oak–Coast Banksia woodland on sands of the Warkworth area	Average Value	27	11.8	10.8	19.5	3.5	31	10.4	1	1	13.9
	Range	23-31	3.5-17	5.5-17.5	10-28	2-4	14-60	0-32	1	0-2	4-34
	Benchmark Value	26	13-40	10-50	4-15	5-30	5-25	0	1	0.8	20
	Completion Criteria	**>20**	**10-40**	**10-50**	**4-20**	**5-30**	**5-35**	**<10**	**1**	**-**	**-**
PCT 1603: Narrow leaved Ironbark – Bull Oak - Grey Box shrub- grass open forest of the central and lower Hunter	Average Value	29	13.8	9.2	26	7.4	4	0.2	1	0.7	26.35
	Range	12-41	7-22.5	0-14	4-56	2-30	0-18	0-2	1	0-3	4-60
	Benchmark Value	41	15-40	5-10	30-50	5-10	20-40	<5	1	3	5
	Completion Criteria	**>25**	**10-40**	**5-10**	**15-50**	**5-10**	**5-40**	**<5**	**1**	**-**	**-**
PCT1604: Narrow leaved Ironbark – Grey Box - Spotted Gum shrub - grass of the central and lower Hunter	Average Value	35	22.5	7.2	34	8	5.3	0	1	0	35.3
	Range	36-42	14.5-23	7.5-12	22-52	6-16	0-12	0	1	0	38-45
	Benchmark Value	41	15-40	5-20	30-50	5-10	20-40	<5	1	3	5
	Completion Criteria	**>35**	**15-40**	**5-20**	**30-50**	**5-15**	**5-40**	**<5**	**1**	**-**	**-**
PCT1176: Slaty Box – Grey Gum shrubby	Average Value	31	12.1	11.6	23.5	3	6	0	1	0	26

Plant Community Type (PCT)		NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion	Range	27-33	12-12.5	10.5-13.5	6-36	0-2	0-6	0	1	0	17-40
	Benchmark Value	21	19-42	6-24	5-20	0-25	2-10	<5	1	1	30
	Completion Criteria	**21**	**15-40**	**5-30**	**5-30**	**0-25**	**2-10**	**<5**	**1**	**-**	**-**
PCT 1584: White Mahogany – Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley (Plot V13 – B1 only)	Average Value	50	10.5	19	70	16	8	0	1	0	25
	Benchmark Value	51	22-45	5-40	5-25	10-20	5-20	<5	1	1	20
	Completion Criteria	**>45**	**15-45**	**5-40**	**5-40**	**10-20**	**5-20**	**0**	**1**	**-**	**-**
PCT 1603: Narrowleaved Ironbark – Bull Oak - Grey Box shrub -grass open forest of the central and lower Hunter *	Average Value	39	5.5	25.7	40.7	6.7	12.6	4	1	0	12.6
	Range	30-47	6.5-9	10.1-17	46-52	4-16	8-22	0-2	1	0	6-25
	Benchmark Value	41	15-40	5-10	30-50	5-10	20-40	<5	1	3	5
	Completion Criteria	**>30**	**5-40**	**5-40**	**30-50**	**5-10**	**10-40**	**<5**	**1**	**-**	**-**

* *Bench mark values for PCT 1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter, however this vegetation may be derived from more than one community or from a transition zone between plant communities*

Table 10: Performance Targets for Older Woodland Areas and Rehabilitation Sites

	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	FL
Average Value (2019)	10	16	0.13	3.5	0	0	0	0	6.38
Range (2019)	7-17	8-22.5	0-0.5	0-10	0-0	0-0	0-0	0-0	0-25.5
Older Woodland Rehabilitation on areas with a canopy of Sugar Gum	>15	15-40	5-40	5-15	5-10	5-15	<20	1	5
Rehabilitated areas of Narrow-leaved Ironbark – Bull Oak - Grey Box open forest	>20	10-40	5-10	15-50	5-10	5-40	<20	1	-

5.2 CA Requirements

Whilst specific criteria have not been established for the RWEAs in the CAs, Annexure C of the CAs (Item 1) requires that WCPL "aim" for an exotic plant cover within the Conservation Areas that does not exceed the percentages described in **Table 11** below.

Table 11: Conservation Agreement Aims

RWEA	Aim	Timing
Coal Terminal	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 5% of the foliage cover at monitoring site CT1*; and - 15% of the foliage cover at monitoring site CT2*.	In Year 1 (2016)
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 5% of the foliage cover at monitoring site CT1*; and - 10% of the foliage cover at monitoring site CT2*.	Years 2-5 (2017-2020)
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 5% of the foliage cover at monitoring site CT1*; and - 5% of the foliage cover at monitoring site CT2*.	Years 6-10 (2021-2025)
RWEAs A, B, C and D	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 70% of the foliage cover at monitoring site A1 within Area A; - 20% of the foliage cover at monitoring site A2 within Area A; - 30% of the foliage cover at monitoring site A3 within Area A; - 10% of the foliage cover at monitoring site A4 within Area A; - 5% of the foliage cover at monitoring site B1 within Area B; - 5% of the foliage cover at monitoring site B2 within Area B; - 5% of the foliage cover at monitoring site C1 within Area C; and - 5% of the foliage cover at monitoring site D1 within Area D,	In Year 1 (2016)
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 60% of the foliage cover at monitoring site A1 within Area A; - 15% of the foliage cover at monitoring site A2 within Area A; - 20% of the foliage cover at monitoring site A3 within Area A; - 5% of the foliage cover at monitoring site A4 within Area A; - 5% of the foliage cover at monitoring site B1 within Area B; - 5% of the foliage cover at monitoring site B2 within Area B; - 5% of the foliage cover at monitoring site C1 within Area C; and - 5% of the foliage cover at monitoring site D1 within Area D,	Years 2-5 (2017-2020)
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 40% of the foliage cover at monitoring site A1 within Area A; - 10% of the foliage cover at monitoring site A2 within Area A; - 15% of the foliage cover at monitoring site A3 within Area A; - 5% of the foliage cover at monitoring site A4 within Area A; - 5% of the foliage cover at monitoring site B1 within Area B; - 5% of the foliage cover at monitoring site B2 within Area B; - 5% of the foliage cover at monitoring site C1 within Area C; and - 5% of the foliage cover at monitoring site D1 within Area D,	Years 6-10 (2021-2025)
RWEA E#	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 10% of the foliage cover at monitoring site E1	In Year 1
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 5% of the foliage cover at monitoring site E1	Years 2-5
	Exotic plant cover within the Conservation Area must not be permitted to exceed: - 5% of the foliage cover at monitoring site E1	Years 6-10

* Monitoring locations are shown on **Figure 13**.
# Targets for RWEA to be confirmed upon execution of the Conservation Agreement for this area.

Actions to address the Conservation Area aims in **Table 11** are included in the Management Strategy (**Appendix G**).

5.3 Landscape Function Analysis

A colour system was devised to highlight the performance of each LFA site (**Table 12**). This was applied to the average score from all the LFA sites within each rehabilitation area.

Table 12: Colour system devised to highlight the performance of each LFA site

Green	Yellow	Orange	Red
Area is generally meeting, or exceeding, target values and values do not show trend of decline over time – where monitoring sites are meeting targets and values are relatively consistent, reduce monitoring to infrequent LFA when changes in landscape or management practices occur i.e. fire or grazing)	Area generally falls below target values but within 75% of targets or appears to be on a trajectory of improvement without the need for management intervention – further monitoring required	Area generally falls between 75% and 50% of target values or shows little sign of improvement over several monitoring events – further monitoring and possibly management actions required	Area falls below 50% of target and is unlikely to improve without management actions or shows trend of decline which is unlikely to improve without management actions

Target scores were developed to provide quantitative measures that can be used to compare rehabilitation areas with reference sites throughout the course of the monitoring program (**Section 7.0**). These scores were developed using the baseline data (**Section 3.6.5**) and data from nearby sites within relatively undisturbed riparian habitat. Target scores are provided in **Table 13**, along with the average scores from the 2018 baseline monitoring program (showing the current condition).

Table 13: LFA Target Scores versus 2018 Average Scores and Range

Site Type		LOI	SI	INFI	NI
Woodland Rehabilitation	Average Score	0.79	62.67	42.77	38.17
	Range	0.68-0.92	59.7-63.7	34.6-55.1	28.7-47.1
	Target Score	**>0.87**	**>59**	**>43**	**>36**
Pasture Rehabilitation	Average Score	0.76	61.9	38.43	30.23
	Range	0.47-0.97	49.1-68.8	24.9-46.6	23.6-38.8
	Target Score	**>0.93**	**>61**	**>29**	**>25**
North Wambo Creek Diversion	Average Score	0.64	58.5	29.4	24.4
	Range	0.45-0.81	50.3-66.7	22.1-39.4	18.7-30.7
	Target Score	**>0.84**	**>62**	**>41**	**>37**
Wambo Creek (Reference site: 14R)	Score	1.0	52.5	47.1	30.7
	Target Score	**>0.84**	**>62**	**>41**	**>37**

The ongoing use of LFA will be result-based, with achievement of a self-sustaining stable landform no longer requiring further monitoring. Incremental improvement toward target scores is anticipated in each successive monitoring season. Failure to progress towards completion criteria for three consecutive years will trigger further investigation (**Section 8.0**).

5.4 Subsidence Impact Performance Measures and Indicators

Biodiversity performance measures and indicators have been developed to assess the impact of subsidence relating to longwall mining upon ecological communities located within the RWEAs. These performance measures and indicators are detailed in relevant longwall extraction plans and are outlined in **Table 14.**

WCPL will report on progress against these performance indicators in the Annual Review (**Section 11.2**). In the event that a complaint is received relating to biodiversity, it will be

handled in accordance with the complaints management protocol (**Section 10.0**). Contingency plans for unpredicted biodiversity impacts are discussed in **Section 8.0**.

Table 14: Subsidence Impact Performance Measures and Indicators

Biodiversity	Monitoring Methods	Performance Indicator[1]	Relevant Management and Contingency Measures
Wollemi National Park Negligible subsidence impacts and environmental consequences.	Visual observations of cliffs associated with the Wollemi National Park escarpment. for signs of recent rock fall and/or instability (high definition video/photos recorded via an unmanned aerial vehicle [UAV]).	The performance indicators will be considered to have been exceeded if conventional vertical subsidence exceeds 20 millimetres (mm) or the limit of survey accuracy (whichever is greater) at the base of the Wollemi National Park escarpment. The performance indicators will be considered to have been exceeded if visual inspections identify cliff or rock face instability at the Wollemi National Park escarpment.	Consider whether the performance measure has been exceeded. If the performance measure has been exceeded, implement a Contingency Plan, which may include: • Implementation of erosion and sediment control measures and stabilisation techniques. • Scaling/dislodgement/removal of remaining loose rock. • Measures to improve the aesthetic values if cliff instability occurs (e.g. planting of endemic native vegetation at the base of the escarpment). • Additional monitoring (e.g. increase in monitoring frequency). • Consideration of changes to longwall extraction geometry in consultation with relevant regulatory authorities. • Offset in accordance with Condition B3 of the Development Consent (DA 305-7-2003).
Warkworth Sands Woodland Community Minor cracking and ponding of the land surface or other subsidence impacts. Negligible environmental consequences.	Annual data is collected from flora and bird monitoring sites within the Warkworth Sands Woodland Community: • Flora sites V5-B1, V5-B2, V5-B3, V5-B4 • Bird sites BP24 This data will provide a baseline to inform development of performance indicators prior to any extraction under Warkworth Sands Woodland Community.	The Warkworth Sands Woodland Community is absent from the South Bates Underground Mine area and the South Bates Extension Underground Mine area. On this basis, monitoring of environmental consequences against performance indicators and measures relating to the Warkworth Sands Woodland Community are not considered necessary for the South Bates Underground Mine or the South Bates Extension Underground Mine. Monitoring relevant to the Warkworth Sands Woodland Community will be addressed in future revisions of the BMP prior to any extraction under the Warkworth Sands Woodland Community.	

Table 14: Subsidence Impact Performance Measures and Indicators (Continued)

Biodiversity	Monitoring Methods	Performance Indicator[1]	Relevant Management and Contingency Measures
Central Hunter Valley Eucalypt Forest and Woodland Ecological Community Minor cracking and ponding of the land surface or other subsidence impacts. Negligible environmental consequences.	Annual surveys at flora monitoring sites and bird monitoring sites. Data collected above longwalls 17 to 20 within Central Hunter Valley Eucalypt Forest and Woodland Ecological Community: • Flora sites V10-A1, V10-A2 • Bird sites BP25 and BP26 Monitoring methods are described in detail in **Section 7**. Annual subsidence walk-through inspections of RWEA D. The inspection will: • Identify any isolated surface disturbances; • Assess the level of disturbance to native vegetation and the condition of the vegetation (e.g. health and vigour of species and communities); and • Assess any changes in drainage lines or watercourses (that may be attributable to subsidence).	The performance indicator will be considered to have been exceeded if annual monitoring at flora monitoring sites or bird monitoring sites above Longwalls 17 to 20 indicate a statistically significant downward trend or change between monitoring periods not observed at analogue/reference sites. The performance indicator will be considered to have been exceeded if the walk-through inspection identifies subsidence that is causing notable environmental consequence, such as: • damage to or death of multiple trees or large shrubs; • damage to understorey plants beyond the immediate vicinity of the subsidence cracking; and • presence of large subsidence cracks which present an entrapment hazard to native fauna.	Consider whether the performance measure has been exceeded. If the performance measure has been exceeded, implement a Contingency Plan, which may include: • Filling of minor cracks with appropriate material (e.g. soil or mulch) to avoid the creation of drainage channels. • Re-grading of isolated depressions or highpoints and revegetation. • Re-grading of slopes to minimise the potential for erosion. • Remediation of creek beds to minimise bank and headwater erosion. • Revegetation with monitoring in accordance with the MOP/RMP. • Additional monitoring (e.g. increase in monitoring frequency). • Offset in accordance with Condition B3 of the Development Consent (DA 305-7-2003).
White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community Minor cracking and ponding of the land surface or other subsidence impacts. Negligible environmental consequences.	The White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community is absent from the South Bates Underground Mine area and the South Bates Extension Underground Mine area. On this basis, monitoring of environmental consequences against performance indicators and measures relating to the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community are not considered necessary for the South Bates Underground Mine or the South Bates Extension Underground Mine. Monitoring relevant to the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community will be addressed in future revisions of the BMP prior to any extraction under the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Community.		

Table 14: Subsidence Impact Performance Measures and Indicators (Continued)

Biodiversity	Monitoring Methods	Performance Indicator[1]	Relevant Management and Contingency Measures
Conservation Areas (including the proposed Wambo offset area under SSD 7142) Negligible reduction to previously identified biodiversity credits.	Annual data is collected from flora and bird monitoring sites within RWEAs A, B, C, D, D Extension and E. Monitoring methods are described in detail in **Section 7**.	The performance indicator will be considered to have been exceeded if annual monitoring at flora monitoring sites or bird monitoring sites within RWEAs A, B, C, D, D Extension or E indicate a statistically significant downward trend or change between monitoring periods not observed at analogue/reference sites.	Consider whether the performance measure has been exceeded. If the performance measure has been exceeded, implement a Contingency Plan, which may include: • Filling of minor cracks with appropriate material (e.g. soil or mulch) to avoid the creation of drainage channels. • Re-grading of isolated depressions or highpoints and revegetation. • Re-grading of slopes to minimise the potential for erosion. • Remediation of creek beds to minimise bank and headwater erosion. • Revegetation with monitoring in accordance with the MOP/RMP. • Additional monitoring (e.g. increase in monitoring frequency). • Offset in accordance with Condition B3 of the Development Consent (DA 305-7-2003).
	An assessment of the biodiversity credits provided by the proposed Wambo offset area under SSD 7142 will be undertaken by an accredited assessor within two years of the completion of subsidence at the South Bates Extension Underground Mine.	The performance indicator will be considered to be exceeded if the assessment identifies a reduction to previously identified biodiversity credits.	Consider whether the performance measure has been exceeded. If the performance measure has been exceeded, implement a Contingency Plan, which may include: • Filling of minor cracks with appropriate material (e.g. soil or mulch) to avoid the creation of drainage channels. • Re-grading of isolated depressions or highpoints and revegetation. • Re-grading of slopes to minimise the potential for erosion. • Remediation of creek beds to minimise bank and headwater erosion. • Acquisition of sufficient additional biodiversity credits in accordance with the *Biodiversity Conservation Act, 2016*.

[1] Excludes impacts and consequences of mining operations that occurred prior to 28 February 2011, in accordance with Condition B1, Schedule 2 of DA305-7-2003.

6.0 Biodiversity Management Measures and Strategies

The biodiversity management measures and strategies within this section provide the framework for protecting and enhancing the biodiversity values of the site, which include known or potential habitat for a high diversity of threatened species, populations and communities (**Section 3.6)**. Implementation of the following measures and strategies provides for the management of potential impacts on these values.

6.1 Management Measures for Management Domains

6.1.1 Remnant Woodland Enhancement Area A – E and Rail Loop Strategies

The RWEA strategies include the conservation and enhancement of areas of remnant woodland adjacent to Wollemi National Park and Warkworth Sands. Conservation and enhancement of these areas will strengthen the linkages to be developed between Wollemi National Park, existing remnant woodland and woodland rehabilitation areas.

The CAs have been registered pursuant to section 69F of the *National Parks and Wildlife Act 1974*. Where OEH (now BCD) has advised in writing that it is of the view that any such offset area or part of such an area should not be subject to a CA for a period of time, then WCPL shall by the same date cause to be registered against the land title(s) of the area/s a public positive covenant and/or restriction on the use of the land, in favour of the Planning Secretary, requiring WCPL to implement and observe all obligations under the conditions of DA305-7-2003 in relation to the management of these areas. The CA or the public positive covenant and/or restriction on the use of land, as the case may be, shall remain in force in perpetuity in relation to the area.

The management measures for the RWEAs were agreed with OEH (now BCD) as part of the development of the CAs. These enhancement measures were developed on the basis of a habitat assessment of the RWEAs, with the outcomes of the baseline habitat assessment documented in the Annexures to the CAs.

6.1.1.1 Conservation Agreements

WCPL has entered into CAs for the RWEAs pursuant to section 69B of the *National Parks and Wildlife Act 1974*. WCPL has two CAs covering all offset areas listed in Table 9 (Condition B70) of DA305-7-2003 with the exception of RWEA E. These areas are listed in **Table 6** and shown on **Figure 9.**

Once finalised, the CAs will be registered pursuant to section 69F of the *National Parks and Wildlife Act 1974*. Where OEH (now BCD) has advised in writing that it is of the view that any such offset area or part of such an area should not be subject to a CA for a period of time, then WCPL shall by the same date cause to be registered against the land title(s) of the area/s a public positive covenant and/or restriction on the use of the land, in favour of the Secretary, requiring WCPL to implement and observe all obligations under the conditions of DA305-7-2003 in relation to the management of these areas. The CA or the public positive covenant and/or restriction on the use of land, as the case may be, shall remain in force in perpetuity in relation to the area.

Conditions of the CAs relevant to this BMP are included in **Appendix A.** The outcomes of the CAs will be reported in the Annual Review (**Section 11.2**).

6.1.1.2 Conservation Bond

Condition B78 requires that within six months of the approval of the BMP, a Conservation Bond is to be lodged with DPIE to ensure that the Biodiversity Offset Strategy is implemented. The calculation of the Conservation Bond must be submitted to DPIE for approval at least two months prior to lodgement of the bond.

6.1.1.3 Non Permitted Activities

The following activities are not permitted within the RWEAs unless provided for under the CA (see **Section 6.1.1.3**) or with prior written consent of the Chief Executive (BCD):

- The sowing or planting of trees, grasses or other plants;
- The introduction of any non-indigenous plants or non-indigenous fauna;
- The entry of domestic animals including pets (except for the Owner's domestic pets, and only if kept under control/on a leash) and domestic livestock;
- The use or application of fertilizers or pesticides;
- The use of trail bikes, four wheel drive vehicles or any other vehicle off any formed road (except for management purposes, research, firefighting and/or any emergency requirements);
- Any works, especially any revegetation work, or any development which has the potential to adversely impact on any of the Conservation Values;
- The removal of any biological or inorganic component of the RWEAs;
- Any works which will adversely affect the natural flows of water;
- Grazing of domestic livestock;
- Any act or omission that may harm any native fauna, native plants, their habitats, cultural heritage or geo-heritage in the RWEAs or the Conservation Values;
- The construction of any new road, access track, trail, building or internal fencing; and
- Subdivide the RWEAs.

6.1.1.4 Permitted Activities

WCPL will not undertake any mining operations (except approved underground mining operations) or other activities within RWEAs, other than:

- Activities approved in this BMP;
- Environmental management, environmental monitoring or other monitoring required by DA305-7-2003 or under an approved management plan or monitoring program; and
- Rehabilitation activities under an approved Extraction Plan (see **Section 6.1.4**).

6.1.1.4.1 Control of Pests and Non-Indigenous Fauna

WCPL have implemented a biannual pest control program in the RWEAs and adjacent grazing land to control the occurrence of pests. Depending upon annual requirements the pest control program may consist of the following:

- Monitoring:
    - observations and/or hearing calls
    - the use of standard remote infra-red camera traps

- the use of non-poisoned “bait stations”
- scat counts
- other quantitative techniques which can be designed in discussion with BCD or Local Land Services (LLS)

- Controls:
  - shooting
  - trapping
  - use of poisonous baits consistent with advice from BCD and LLS.

All control methods must be identified as ‘humane’ as defined in the NSW Codes of Practice and Standard Operating Procedures for Humane Pest Vertebrate Control (Control Capture and Destruction of Feral Animals in Australia) as developed by the then NSW Department of Primary Industries.

Additionally, WCPL will participate in community pest animal control programs, and encourage neighbours to implement pest animal control programs.

6.1.1.4.2 Fencing, Tracks and Trails

Uncontrolled stock access to woodland vegetation can limit the regeneration of plants and reduce middle and understorey vegetation. The perimeters of the RWEAs are fenced to exclude livestock which will allow the natural regeneration of native flora species. WCPL will:

- Maintain all existing fences within the RWEAs;
- Maintain existing access tracks in the RWEAs to a maximum width of 2m;
- Maintain existing access trails in the RWEAs to a maximum width of 4m with 1m either side permissible for clearing; and
- Construction of any new internal fence, access track or trail only with prior written approval from BCD or DPIE (excluding cases of emergency, e.g. bushfire risk/control).

6.1.1.4.3 Bushfire Management

A detailed Bushfire Management Plan has been developed in consultation with the NSW Rural Fire Service (RFS) to specifically address bushfire management issues across WCPL landholdings, including the identification of assets, assessment of fire risk and identification of management strategies to reduce the risk of fire to people and property.

A bushfire risk analyses has been undertaken for the RWEAs. Suitable fire access tracks are maintained within/around the RWEAs. The standard protocols outlined in the Bushfire Management Plan will be followed in the event of a bushfire, including contacting the NSW RFS regarding all fires at the Mine.

Fire management activities that are permitted in the RWEAs include:

- Using fire hazard reduction burns and controlled burning which take into account the recommended fire intervals given in the Bush Fire Environmental Assessment Code for New South Wales (Rural Fire Service February 2006) and the guidelines contained in the Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code or equivalent replacements.

  Current recommendations are:

  - In the Warkworth Sands Woodland in the Sydney Basin Bioregion EEC, no fire more than once every 10 years and no slashing, trittering or tree removal relating to mechanical forms of hazard reduction.
  - In general, at least 50% of the EEC/CEEC within each LGA must exist in a state that has been burnt less frequently than the minimum fire interval.
  - Both live and dead trees with hollows should be protected from burning to preserve nesting habitat for hollow dwelling animals.

- Lighting a fire, or causing a fire to be lit on the RWEA if it complies with the NSW *Rural Fires Act 1997*, and:
  - The lighting of the fire is for the purposes of controlled burning and is carried out in accordance with any fire guidelines for controlled burning as provided for in Annexure C to the CA; or
  - The lighting of the fire is a necessary component of bush fire hazard reduction work carried out in accordance with a notice served on the Owner under the NSW *Rural Fires Act 1997* or other applicable legislation; or
  - Life or property is in immediate threat by bush fire and the lighting of the fire is reasonably necessary to protect life or property; or
  - The fire is a camp fire, subject to the compliance with the NSW *Rural Fires Act 1997*, or
  - The Chief-Executive (BCD) gives prior written consent to the lighting of the fire.

WCPL will also implement one hazard reduction burn during low risk fire season in consultation with NSW Rural Fire Services. This burn must take into account the recommended fire intervals given in the *Bush Fire Environmental Assessment Code for New South Wales* (Rural Fire Service February 2006) and the guidelines contained in the *Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code* or equivalent replacements.

In the case of bushfire emergency and under the direction of the NSW RFS, emergency isolated clearing of vegetation may be required and undertaken within RWEAs.

6.1.1.4.4 Use of Timber

WCPL may harvest fallen non-hollow wood in amounts necessary for heating WCPL's dwellings on the Land and camp fires on the Conservation Area and for fencing the Conservation Area.

6.1.1.4.5 Threatened Species

WCPL is permitted to:

- Implement any measures included in recovery plans for any threatened species, population or ecological communities which are or may be found in the RWEAs; and
- Implement other specific management advice from BCD for any threatened species, populations or ecological communities which are or may be found in the RWEAs.

In addition to the above WCPL must follow current best practice advice regarding the management of threatened species when carrying out any activities within the Conservation area as advised. This advice may be provided by BCD, LLS or subsequent NSW authority.

6.1.1.4.6 Restoration of Indigenous Vegetation

WCPL may restore native vegetation in the RWEAs using a preferred method of encouraging and retaining natural regeneration. Preferred methods include:

- Bush regeneration
- brush mulching; and/or
- direct seeding.

WCPL will undertake all revegetation using indigenous plants to maintain the vegetation structure in keeping with the identified vegetation community, using species produced from material sourced locally and without fertilisers, where the ability to regenerate naturally within a reasonable time frame has been lost, or to prevent soil erosion.

6.1.1.4.7 Seed Collection

Collection of seed is permitted within the RWEAs provided it is for non-commercial use in accordance with the Guidelines and Codes of Practice as given in the Florabank guidelines (http://www.florabank.org.au), and the following limitations and permissions:

- Collect seed in the RWEAs only if seed of the particular species and genotype is not available elsewhere, or if the seed collected is intended for seedlings that will be planted within the RWEAs or adjacent to the RWEAs;
- Seeds may be collected from within endangered ecological communities;
- Seeds may not be collected from species individually listed in Schedules 1or 2 to the BC Act without prior written approval from the Chief-Executive (BCD), or under a licence granted under section 132C of the NPW Act or section 91 of the BC Act;
- Seeds may be collected from any protected species listed in Schedule 13 to the NPW Act; and
- Seeds may be collected from any other native species.

6.1.1.4.8 Approved Surface Disturbance

WCPL may undertake surface disturbance associated with underground mining within RWEA A – E only (up to 12.6 ha) including but not limited to surface gas drainage, exploration, dewatering boreholes and associated access tracks approved under the EP&A Act to be undertaken in areas to be determined in consultation with BCD and the Secretary of DPIE, consistent with the requirements of this BMP.

Approximately 0.09 ha of Grey Box-Slaty Box Woodland re-growth has been approved for disturbance for exploration drilling of Gas18_6 in RWEA B (refer to **Figure 11**). Drilling will allow for the collection of further information on the gas content in the approved South Wambo Underground Mine areas. The activity was approved in MOP Amendment A (approved 9 April 2019) and then by DPIE in correspondence dated 14 October 2019 (refer to **Appendix B**). The site for Gas18_6 was selected by WCPL in an area of previous disturbance to minimise the impacts of exploration activities in the RWEAs.

Existing access tracks will be utilised and no clearing will be required to access to Gas18_6. Trimming of overhanging branches will be necessary to enable access by the drill rig. Part of the access track is located within Spotted Gum – Narrow-leaved Ironbark – Grey Box Woodland. Approximately 200 regenerated saplings which have established on the access track will be removed for the exploration activity.

Gas18_6 has been identified as a suitable location for future mine dewatering. The BMP will be updated as required if dewatering proceeds.

WCPL has developed a Remnant Woodland Enhancement Area Exploration Drilling Procedure (WA-ENV-PRO-506.3, **Appendix F**), which details the methodology and management strategies that will be implemented for undertaking drilling activities within the RWEAs. General strategies to avoid and minimise impacts of exploration are incorporated into the procedure, such as undertaking activities within existing cleared or disturbed areas and micro-siting to avoid significant features such as hollow-bearing trees, burrows and nests.

Following completion of any approved exploration activity within a RWEA, the extent of actual disturbance is to be documented. This area is to be added to a cumulative total in relation to the permitted 12.6 ha.

If required, WCPL will review and revise the BMP to include the following:

- Strategies to avoid clearing of Warkworth Sands Endangered Ecological Community and minimise the extent of clearing in other ecological communities for gas drainage infrastructure in the RWEAs prior to development of any gas drainage infrastructure in the RWEAs; and/or
- Strategies for the minimisation of impacts of exploration activity in the RWEAs, prior to any further disturbance for exploration activities in the RWEAs (i.e. in addition to Gas18_6).

In accordance with Condition 1 of EPBC 2003/1138, WCPL will not undertake any clearance within RWEA A without the approval of the Commonwealth Minister for the Environment.

6.1.1.4.9 Thinning of Indigenous Vegetation

Thinning of regenerating indigenous species is permitted (with prior written approval from the Chief-Executive (BCD)) if the species is altering the structure of the vegetation in the RWEA and/or reducing the Conservation Values.

6.1.1.4.10 Cultural Heritage

Recording and management of any newly identified Aboriginal Objects within the RWEAs will be undertaken in consultation with BCD (and the Aboriginal community where applicable).

6.1.1.4.11 Visitation and Research

Visitation, research and community use is permitted in the RWEAs provided it does not adversely impact on the Conservation Values. Research projects will be discussed with BCD before being carried out.

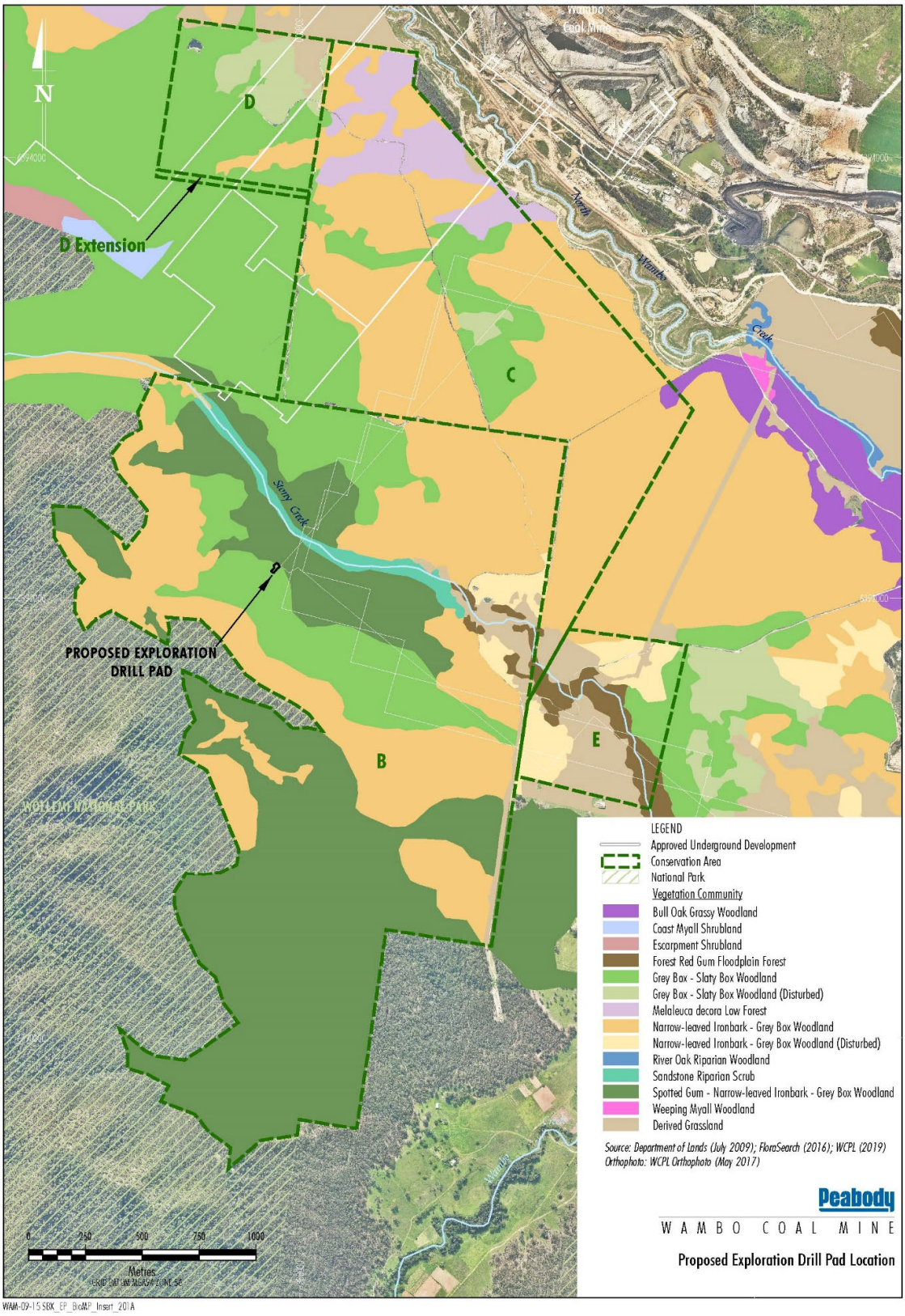


Figure 11: Proposed Exploration Drill Pad Location

6.1.1.4.12 Development

Carrying out any development as described in the Conservation Agreement and maintaining development (including existing fire trails, access trails and infrastructure), with the following conditions:

- Clear a corridor not greater than 3 metres wide during construction or for maintenance for the installation of fences or other agreed rural structures;
- Construct and maintain fences to ensure they are stock proof;
- Move fallen timber and any other obstructions to maintain access;
- Undertake underground mining beneath the RWEA within CL 743 and ML 1594;
- Where clearing is necessary, undertake all works in a manner that minimises disturbance to soil and hydrological characteristics; and
- Remove old fences and close unwanted tracks within the RWEAs and facilitate restoration of native vegetation by allowing natural regeneration.

6.1.2 Open Cut Woodland Rehabilitation Areas

As per the approved Mining Operations Plan, WCPL will rehabilitate identified open cut mining areas in compliance with the Mixed Pasture/Woodland (Domain D) and Woodland Corridor (Domain E) rehabilitation objectives. These rehabilitation objectives are consistent with the establishment of appropriate PCTs across rehabilitation areas, given the post mining landscape and surrounding vegetation. PCTs considered most appropriate for the establishment of woodland vegetation within rehabilitation areas at the Mine are:

- PCT 1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter;
- PCT 1604: Narrow-leaved Ironbark - Grey Box - Spotted Gum shrub - grass woodland of the central and lower Hunter; and
- PCT 1176: Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion.

Management measures that will be implemented within these Domains to improve biodiversity values are discussed below.

6.1.2.1 Woodland Corridor Revegetation

Rehabilitation initiatives will aim to increase the continuity of vegetation in the region through the establishment of woodland corridors. Accordingly, the rehabilitation program has been designed to establish linkages between the rehabilitation areas, existing remnant vegetation and Wollemi National Park.

Revegetation of woodland areas includes the use of endemic plant species which are characteristic of the vegetation communities to be disturbed within the open cut operations area. Where possible, seed collection and propagation activities will contribute to revegetation associated with the rehabilitation of WCPL disturbance areas.

Provisional revegetation species lists are presented in **Appendix H**. **Table 15** below provides an indication of the flora species (from **Appendix H**) that are present within each of the three PCTs mentioned above.

Table 15: Flora Species (from Appendix H) that are present in PCTs

PCT	Flora Species Present
1603: Narrow-leaved Ironbark - Bull Oak - Grey Box shrub - grass open forest of the central and lower Hunter	• *Eucalyptus crebra* • *Eucalyptus moluccana* • *Allocasuarina luehmannii* • *Cymbopogon refractus* • *Lomandra multiflora* Note: *Aristida ramosa* found in PCT, species list contains *Aristida vagans* which is considered equivalent.
1604: Narrow-leaved Ironbark - Grey Box - Spotted Gum shrub - grass woodland of the central and lower Hunter	• *Eucalyptus crebra* • *Eucalyptus moluccana* • *Corymbia maculata* • *Cymbopogon refractus* • *Lomandra multiflora* • *Austrodanthonia* sp. Note: *Aristida ramosa* found in PCT, species list contains *Aristida vagans* which is considered equivalent.
1176: Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion	• *Eucalyptus dawsonii* • *Eucalyptus punctata* • *Eucalyptus moluccana* • *Eucalyptus crebra* • *Eucalyptus fibrosa* • *Brachychiton populneus* • *Allocasuarina luehmannii* • *Cymbopogon refractus* • *Lomandra multiflora* Note: *Aristida ramosa* found in PCT, species list contains *Aristida vagans* which is considered equivalent. A number of Acacia species present in this PCT include *Acacia doratoxylon, A. linearifolia* and *A. salicina. A. filicifolia, A. implexa, A. decora* and *A. decurrens* are present within the species list and whilst not specifically within the PCT flora list, they are known to occur in the Hunter region.

6.1.2.2 Grazing and Stock Management

Domestic stock may be introduced to rehabilitation areas dependent on future monitoring results showing achievement of relevant completion criteria. In this instance ongoing monitoring and management will occur to ensure sustainable grazing practices are implemented.

The following mitigation measures will be undertaken to manage the impacts of grazing by domestic stock:

- Stock grazing will not be undertaken in areas of high biodiversity values.
- Where livestock are being used to remove vegetation by crash grazing the following principles will be considered:
    - Allow the stock to feed intensively in a defined area only for short periods
    - Undertake crash grazing between autumn and mid-spring
    - Manage the movement of livestock using fencing (temporary or permanent)

- Monitor feed levels so that overgrazing does not occur.

- Where possible ground cover will be maintained towards 100%
- The grazing pressure from other herbivores (e.g kangaroos, wallabies, rabbits and hares) is to be reviewed in the context of the domestic stocking rate that can be utilised.

6.1.2.3 Habitat Augmentation

Habitat augmentation involves the establishment of habitat structures within Management Domains. This includes the relocation of surplus trees and rock removed from the Mine footprint for relocation as habitat structures within the Management Domains.

Procedures and recording requirements will be developed for the re-establishment of logs and rock within Management Domains.

6.1.2.4 Assisted Natural Regeneration

Natural regeneration is reliant upon seedlings germinating from seed naturally distributed from existing remnant vegetation. This approach will be utilised in areas where there is a viable seed bank of native species is present within the topsoil of cleared areas.

6.1.2.5 Direct Seeding

Direct seeding will be utilised on freshly shaped or existing rehabilitation areas that are not believed to have an adequate natural seed bank within disturbed topsoil to meet LFA completion criteria.

Application of seed by hand or machinery will follow preparation of the surface which may consist of scarification and ameliorates to allow successful establishment of applied seed.

6.1.2.6 Tubestock Planting

Tubestock planting will be utilised where it is considered natural regeneration of native species is unlikely to occur in a timely manner. This will be determined on a case by case basis. Species composition and rates for tubestock planting will be reflective of the adjacent and pre-clearing vegetation community type with seedlings propagated from local provenance seed stock where possible.

6.1.3 North Wambo Creek Diversion Area

The North Wambo Creek Diversion (NWCD) was constructed in accordance with the approved North Wambo Creek Diversion Plan (WCPL, 2013). Ongoing management of the NWCD will be consistent with the Domain 7 management actions and objectives as outlined in the MOP/RMP.

The North Wambo Creek Diversion Plan also includes detailed management measures for the NWCD. Monitoring of riparian vegetation and creek bed stability along the NWCD is detailed in **Section 7.2.3.**

6.1.4 Buffer/Grazing Areas

Aside from ongoing weed and pest management and maintenance of fencing, no active management is proposed in buffer/grazing areas.

6.2 Subsidence Management

FloraSearch (2015a) recorded one endangered ecological community (EEC) listed under the then NSW *Threatened Species Conservation Act, 1995* in the South Bates Underground Mine area, namely the Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions EEC.

FloraSearch (2017) recorded one critically endangered ecological community (CEEC) listed under the EPBC Act (Central Hunter Valley Eucalypt Forest and Woodland) and two endangered ecological communities (EECs) listed under the BC Act (Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions and the Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions) above the South Bates Extension Underground Mine.

The impacts of subsidence monitoring within the RWEAs and along the Wollemi National Park Cliff line will be undertaken as part of the annual fauna and flora monitoring program as detailed in **Section 7.0**. Identified impacts will be assessed as detailed in **Section 5.4.** Measures to manage identified impacts may consist of:

- Species, Populations or Communities (including the Central Hunter Valley Eucalypt Forest and Woodland Community):
    - Filling of minor cracks with appropriate material (e.g. soil or mulch) to avoid the creation of drainage channels.
    - Re-grading of isolated depressions or highpoints and revegetation.
    - Re-grading of slopes to minimise the potential for erosion.
    - Remediation of creek beds to minimise bank and headwater erosion.
    - Revegetation with monitoring in accordance with Section 4.1 of the BMP.
    - Additional monitoring (e.g. increase in monitoring frequency).
    - Offset in accordance with Condition B3 of the Development Consent (DA 305-7-2003).
- Wollemi National Park:
    - Implementation of erosion and sediment control measures and stabilisation techniques.
    - Scaling/dislodgement/removal of remaining loose rock.
    - Measures to improve the aesthetic values if cliff instability occurs (e.g. planting of endemic native vegetation at the base of the escarpment).
    - Additional monitoring (e.g. increase in monitoring frequency).
    - Consideration of changes to longwall extraction geometry in consultation with relevant regulatory authorities.
    - Offset in accordance with Condition B3 of the Development Consent (DA 305-7-2003).

6.3 General Land Management Strategies

WCPL will implement a range of management actions throughout the various Management Domains. WCPL has identified those actions as being required and likely to be effective using risk management principles and with consideration to the practicality of implementing such actions.

6.3.1 Fencing, Gates and Signage

Boundary fence integrity will be inspected during a fenceline audit completed every three years (next audit scheduled for 2022). Periodic fence line inspections will continue and maintenance will be conducted as required.

New fencing erected within or on the boundary (including repairs to existing fence lines where required) of the RWEAs will use post and two or three strand non-barbed (plain) wire only. If required boundary fences to these areas may use a top barbed wire (or electric fencing) to protect the fence from neighbouring grazing cattle.

In order to reduce the risk of injury to native fauna, existing fencing within the boundaries of the Domains will be removed in areas where it is providing no benefit to revegetation outcomes.

6.3.2 Seed Collection and Propagation

WCPL has implemented a native seed collection and propagation program, to ensure that the genetic integrity, structure and composition of local vegetation types are maintained.

The collection of locally sourced native seed will be carried out annually by a licensed provider with the Florabank guidelines (Florabank 1999 and 2000) used to guide the seed collection process.

The seed collection program will take into account seasonality of seed availability and the specific target seed lists required to establish the various vegetation classes onsite.

6.3.2.1 Progressive Rehabilitation

Rehabilitation of the mine waste rock emplacements and other areas of disturbance will be conducted progressively over the life of the mine and will be scheduled to minimise the disturbed area at any point in time.

Revegetation of open cut mining disturbed areas will be undertaken in accordance with the approved WCPL MOP/RMP.

6.3.2.2 Weed Management

WCPL's weed management program utilises an adaptive management approach with an overarching weed management plan and an annual weed treatment plan. The annual weed treatment plan is updated based on the management actions undertaken and results of monitoring and inspections from the previous year. The key aspects of the program include:

- Weed control activities undertaken by a qualified and experienced bush regeneration contractor in accordance with the annual weed treatment plan;
- Annual inspections and floristic monitoring of the RWEAs and Revegetation Areas during biodiversity monitoring;
- An annual weed survey (if required);
- An annual weed management report documenting the weed control activities undertaken during that year, prepared by a qualified bush regeneration contractor;
- Updates to the annual weed treatment plan based on the results of monitoring, inspections and surveys.

In addition to this, an annual routine weed management program will be implemented whereby herbaceous weed species are treated to prevent further spread. Treatment of all weeds will be undertaken by suitably qualified and experienced personnel.

6.3.2.3 Vertebrate Pest Management

A variety of vertebrate pest species have been identified within WCPLs RWEA and rehabilitation areas. These have primarily consisted of feral pigs, rabbits, foxes and dogs.

The WCPL operated pest control program, as detailed in **Section 6.1.1.4.1** and the Management Strategy (**Appendix G**), is complemented by a year round WCPL agister-managed pest control program. The agister-managed program primarily targets feral pigs on grazing and buffer lands surrounding WCPLs open cut mine site.

The agister-managed program utilises WCPL-owned night vision cameras to monitor the movement of pest species. Humane trapping and shooting practices are employed to capture and euthanize targeted feral species.

6.3.3 Waste Management

Routine inspections of the RWEAs and Revegetation Areas will include monitoring of potential waste management issues, including illegal dumping of waste, and removal of waste if/when required. All waste removed from these areas will be managed in accordance with WCPL's Waste Management Plan.

6.3.4 Erosion, Sedimentation and Soil Management

Routine inspections of the RWEAs and Revegetation Areas will include monitoring of potential erosion, sedimentation and soil management issues. All erosion and sediment control works will be carried out in accordance with WCPL's Erosion and Sediment Control Plan.

6.3.5 Nest Boxes

In response to recommendations made in the 2015 Independent Environmental Audit (Umwelt 2015), a total of 50 nest boxes were installed across five locations across the Mine site in December 2018 (**Figure 12**). Details of the nest boxes (including target species) are provided in **Table 16**. Nest boxes will be monitored every second year to record data on their usage and identify any maintenance required to ensure they continue to provide potential habitat.

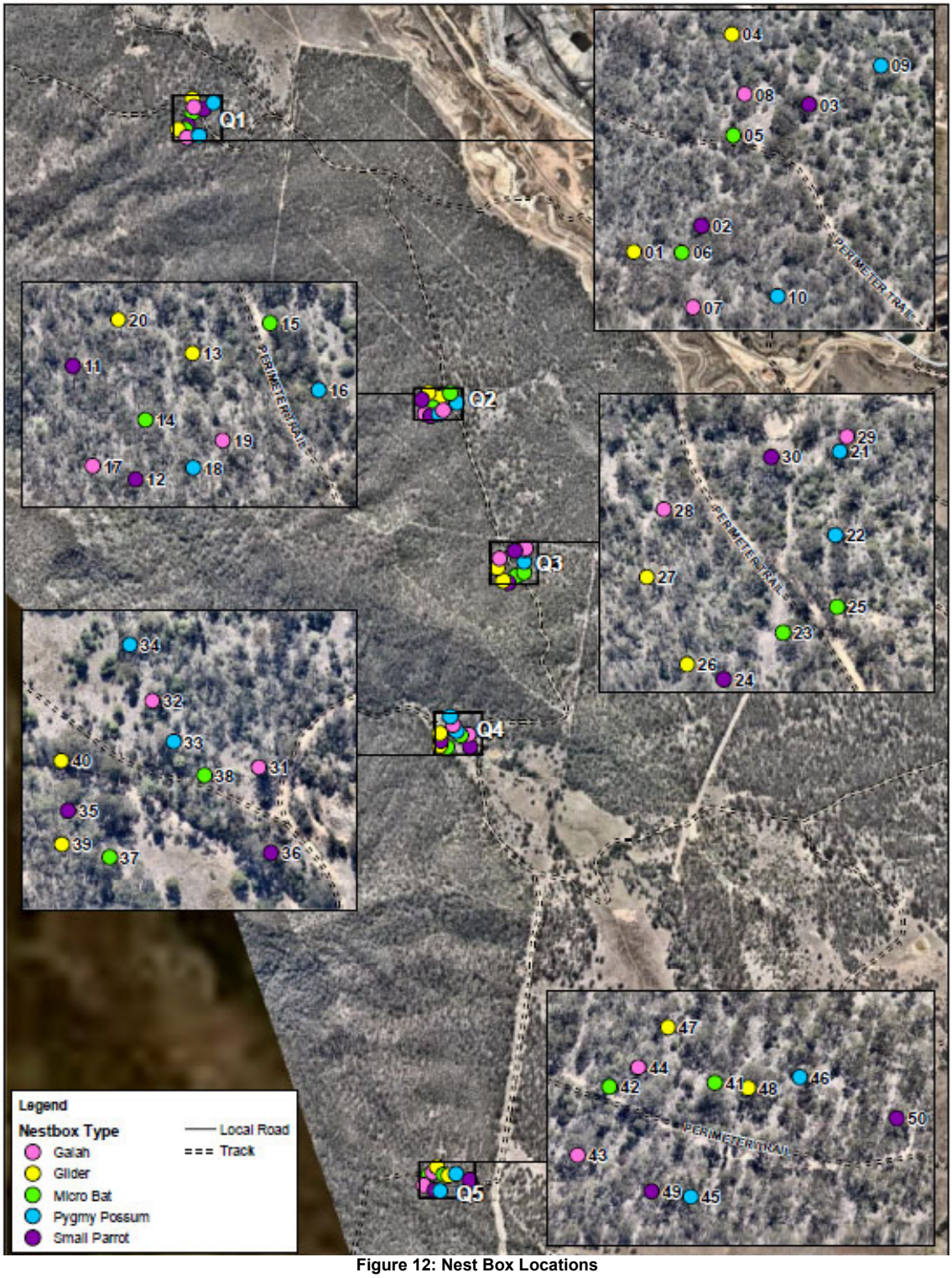


Figure 12: Nest Box Locations

Table 16: Nest Box Details

Location	Box ID	Target Species	Tree Species	Height (m)	Aspect	Northing	Easting
Q1	1	Glider	Slaty Gum	3.5	NW	6394218	307696
	2	Small Parrot	Slaty Gum	3.5	W	6394231	307730
	3	Small Parrot	Slaty Gum	3.5	SE	6394292	307785
	4	Glider	Ironbark	4	NW	6394328	307746
	5	Microchiropteran Bat	Slaty Gum	4.5	S	6394277	307747
	6	Microchiropteran Bat	Slaty Gum	5	N	6394217	307720
	7	Galah	Slaty Gum	5	W	6394189	307726
	8	Galah	Slaty Gum	4	NW	6394298	307752
	9	Pygmy Possum	Ironbark	3	S	6394312	307822
	10	Pygmy Possum	Slaty Gum	3	SW	6394195	307769
Q2	11	Small Parrot	Ironbark	3.5	NW	6393256	308564
	12	Small Parrot	Ironbark	3.5	W	6393198	308596
	13	Glider	Grey Box	3	E	6393262	308624
	14	Microchiropteran Bat	Ironbark	5	S	6393229	308601
	15	Microchiropteran Bat	Ironbark	5.5	W	6393278	308664
	16	Pygmy Possum	Grey Box	3	S	6393244	308689
	17	Galah	Ironbark	5	W	6393205	308574
	18	Pygmy Possum	Ironbark	3	W	6393204	308625
	19	Galah	Ironbark	5.5	W	6393218	308640
	20	Glider	Grey Box	3	E	6393279	308587
Q3	21	Pygmy Possum	Ironbark	3	SW	6392720.144	308929.7535
	22	Pygmy Possum	Ironbark	3	SW	6392677.618	308927.5625
	23	Microchiropteran Bat	Ironbark	5	NW	6392628.078	308900.8082
	24	Small Parrot	Ironbark	4.5	W	6392604.319	308870.7431
	25	Microchiropteran Bat	Ironbark	4.5	W	6392641.138	308928.2609
	26	Glider	Ironbark	3.5	N	6392611.84	308852.1932
	27	Glider	Ironbark	3.5	W	6392656.146	308831.53
	28	Galah	Ironbark	5.5	W	6392690.699	308840.259
	29	Galah	Ironbark	5	SW	6392727.757	308933.458
	30	Small Parrot	Ironbark	5	S	6392717.479	308894.8705
Q4	31	Galah	Ironbark	5	NW	6392063.864	308729.8169
	32	Galah	Ironbark	5	W	6392097.766	308675.6424
	33	Pygmy Possum	Ironbark	3	W	6392077.009	308686.4636
	34	Pygmy Possum	Grey Box	3	E	6392126.496	308664.1049
	35	Small Parrot	Grey Box	4	SW	6392041.922	308632.579
	36	Small Parrot	Ironbark	4.5	E	6392020.609	308735.9045
	37	Microchiropteran Bat	Ironbark	5.5	W	6392018.259	308653.7852
	38	Microchiropteran Bat	Ironbark	3	W	6392060.005	308702.0957
	39	Glider	Spotted Gum	4	SW	6392024.782	308629.5272
	40	Glider	Spotted Gum	4	NW	6392067.371	308629.2738
Q5	41	Microchiropteran Bat	Spotted Gum	5	E	6390496.043	308641.5764
	42	Microchiropteran Bat	Spotted Gum	5	SW	6390494.126	308587.9093
	43	Galah	Grey Box	4	W	6390459.316	308571.5837
	44	Galah	Spotted Gum	5	W	6390503.947	308602.5551
	45	Pygmy Possum	Spotted Gum	3	W	6390438.016	308629.2639
	46	Pygmy Possum	Grey Box	3	SW	6390499.095	308684.988
	47	Glider	Ironbark	3	SW	6390524.537	308617.7454
	48	Glider	Spotted Gum	4.5	SW	6390493.483	308658.4315
	49	Small Parrot	Ironbark	4	W	6390440.739	308609.3075
	50	Small Parrot	Spotted Gum	5	W	6390478.191	308734.3984

6.4 Management Strategy

WCPL have developed a detailed management strategy which identifies the short, medium and long term measures to be undertaken to manage vegetation and fauna habitat at the site. The management strategy aligns to the requirements of WCPL's Conservation Agreements for the RWEAs. The management strategy includes measures for weed and pest control, fire hazard reduction burns, vehicle access, fencing and annual reporting on the monitoring program. This management strategy is included in **Appendix G.**

6.5 Management Protocols

6.5.1 Surface Disturbance Permit

WCPL has implemented a Surface Disturbance Permit (SDP) procedure and checklist. The SDP is implemented and approved by WCPL's Environmental Department prior to any land disturbance activities on undisturbed or rehabilitated land taking place. The SDP applies to WCPL owned land, mining leases and privately owned land where an agreement with the landowner is in place

The SDP aims to identify and manage any environmental restraints such as cultural heritage sites, flora and fauna communities, surface drainage, threatened species and permitting required prior to disturbance. Examples of management measures are:

- Erosion and sediment controls;
- Cultural heritage salvage;
- Disturbance delineation; and
- Timing of activities.

Approved surface disturbance activities are summarised in **Section 1.5**.

The SDP procedure is an internal WCPL procedure that has not been reviewed by DPIE. WCPL manages the SDP procedure in accordance with this BMP and generally in accordance with the activities approved by the Development Consent (DA 305-7-2003).

The SDP has been attached as **Appendix I.**

6.5.2 Vegetation and Burrow Clearance Protocol

A Vegetation and Burrow Clearance Protocol (VBCP) has been developed to minimise impacts on both non-threatened and threatened flora and fauna (as listed under the BC Act or the EPBC Act). The VBCP is applicable across all WCPL managed land. The key components of the VBCP are:

- Delineation of disturbance areas;
- Pre-clearance surveys;
- Clearing process and fauna management strategies;
    - Vegetation clearing; and
    - Wombat burrow clearing; and
- Habitat feature salvage.

Procedures in relation to the salvage of Aboriginal sites prior to vegetation clearance are detailed in the Wambo Development Project – Aboriginal Heritage Research Design and Study Plan (incorporating Salvage Programme) (Navin Officer Heritage Consultants, 2005).

An updated VBCP, which meets the requirements of EPBC Approval 2003/1138, is included as **Appendix K.**

6.5.3 Threatened Species Management Protocol

A Threatened Species Management Protocol (TSMP) has been developed to facilitate implementation of threatened species management strategies to minimise the potential impacts on threatened flora and fauna species. The key components of the TSMP are:

- Site observations/surveys;
- Threatened species management strategies;
    - Avoiding RWEAs;
    - Threat abatement;
    - Capture and release;
    - Relocation;
    - Reuse and provision of habitat resources; and
- Consulting and Reporting.

The TSMP, which meets the requirements of EPBC Approval 2003/1138 is included as **Appendix L**.

6.6 Inspections

Opportunistic inspections of Domains and RWEAs will be undertaken by an Environmental Representative in accordance with the Management Strategy (**Appendix G**). These inspections will identify potential fencing, access track, weed and pest management and maintenance requirements. Records of inspections will be maintained by the Environmental Representative and actions will be assigned to relevant personnel as required.

7.0 Biodiversity Monitoring Program

7.1 Monitoring Methodologies

7.1.1 Landscape Function Analysis

The LFA component of the WCPL monitoring program focuses on monitoring and providing quantitative assessment of the success of newly rehabilitated landscape establishment. Two separate assessments consisting of a varieties of measured site attributes make contribute to LFA as provided in Tongway and Hindley (2004), these are:

- Landscape Organisation Index (LOI); and
- Soil Surface Assessment.

Landscape Organisation Index is the initial LFA data acquisition step and collects information at the hill slope scale. It relates to the proportion of the transect occupied by patches of landscape elements that are relatively permanent and provide stable, resource accumulating structures, such as grassy tussocks and other ground cover, leaf litter and logs. LOI can vary from 0.0 (a totally bare site) to 1.0 (a site totally covered by vegetation).

Soil Surface Assessment results provide an index on stability, infiltration and nutrient cycling for all patch and inter-patch types for the whole of landscape (transect). The combined score from each patch type provides a stability, infiltration and nutrient cycling index.

Eleven Soil Surface Condition Indicators (SSCIs) (**Table 17**), each focusing on specific biological and/or physical processes, are used to develop three LFA indices: Stability Index (SI), Soil Infiltration (INFI) and Nutrient Cycling (NI).

Table 17: Soil Surface Condition Indicators

SSCI	Description	Relevant LFA Index		
		SI	INFI	NI
Soil Cover	Percentage cover of perennial vegetation to a height of 0.5 m. plus rocks > 2 cm and woody material > 1 cm in diameter or other long-lived, immoveable objects.	X		
Perennial Vegetation Cover	Percentage perennial vegetation cover.		X	X
Litter Cover	Percentage cover of annual grasses and ephemeral herbage (both standing and detached) as well as detached leaves, stems, twigs, fruit, dung, etc.	X	X	X
Cryptogam Cover	Percentage cover of algae, fungi, lichens, mosses, liverworts and fruiting bodies of mycorrhizas.	X		X
Crust Brokenness	Categorises soil crusts from 0-4 where 0 refers to 'no crust present' and 4 refers to an 'intact and smooth' soil crust.	X		
Erosion Type and Severity	Categorises the aerial extent and severity of various erosion types from 'Insignificant' to 'Severe'.	X		
Deposited Materials	Categorises the extent and depth of deposited alluvial material.			
Surface Roughness	Categorises the depth of surface depressions from 'smooth' to 'deep depressions'.	X	X	X
Surface Resistance to Disturbance	Categorises the soils capacity to resist disturbance based on the soils 'hardness' or 'brittleness'.	X	X	
Slake Test	Categorises the soils stability when exposed to water.		X	
Soil Texture	Categorises the soils water infiltration capacity from 'very slow' to 'high'.		X	

7.1.2 Biometric Vegetation Assessment

The BioMetric method (Gibbons et al 2009) is proposed as the model for determining meaningful, quantitative, biodiversity focused Completion Criteria. BioMetric, a NSW Government endorsed biodiversity assessment method (developed for the NSW BioBanking Assessment Methodology), provides a useful decision making framework founded on a standardised repeatable measurement method readily applicable to a monitoring program.

Management measures can be performance tested through the BioMetric process, thereby providing an appropriate evidence-based mechanism for optimising future management decisions. Evidence-based adjustments made to a predefined management regime are central to maximising the likelihood of a successful outcome.

BioMetric is a quantitative method developed to comparatively assess the condition of vegetation and habitat values of native vegetation against pre-defined benchmarks (i.e. pre European settlement). Vegetation and habitat condition is quantitatively evaluated by ten readily measurable 'site attributes' considered to reflect the relative health or level of disturbance of a specific vegetation class. These site attributes when measured against relative performance criteria provide meaningful ecological information used to inform management decisions. Site attributes measured in a BioMetric assessment are listed in **Table 18.**

Table 18: Biometric Site Attributes and Measurement Parameters

Site Attribute	Measurement parameter
Native Plant Species Richness (NPS)	Number of native plant Species within 400 m^2 plot (count)
Native Over-storey Cover (NOS)	Projected foliage cover above 10 m height along a 50 m transect (%) – measured every 5 m
Native Mid-storey Cover (NMS)	Projected foliage cover between 1 and 10 m height along a 50 m transect (%) – measured every 5 m
Native Ground Cover (grasses) (NGCG)	Cover below 1 m along a 50 m transect (%) – measured every metre
Native Ground Cover (shrubs) (NGCS)	Cover below 1 m along a 50 m transect (%) – measured every metre
Native Ground Cover (other) (NGCO)	Cover below 1 m along a 50 m transect (%) – measured every metre
Exotic Plant Cover (EPC)	Cover along a 50 m transect (%) – measured every metre
Over-storey Regeneration (OR) within vegetation zone	Overstorey canopy species <5 cm diameter at breast height (DBH) within a 1,000 m^2 plot (score 0 to 1)
Number Of Trees With Hollows (HBT)	Number of trees containing hollows within a 1,000 m^2 plot (count)
Total Length of Fallen Logs (FL)	Log length touching ground >10 cm diameter and >0.5 m in length within a 1,000 m^2 plot (metres)

7.2 Monitoring Program

A summary of WCPL's Biodiversity Monitoring Program is provided in **Table 19**. Monitoring locations are shown on **Figures 13-20.** Details on the monitoring program requirements and timing are provided in the following sections.

Implementation of the monitoring program is the responsibility of the Environmental Advisor (**Section 12.0**).

Table 19: Biodiversity Monitoring Program

Monitoring Type	Area	Site	Monitoring Frequency and Timing	Details
Biometric	RWEA A	V1-B1, V1-B2, V1-B3, V2-B1, V2-B2, V3-B1, V5-B1, V5-B2, V5-B3, V6-B1, V6-B2, V6-B3	Annually (Spring)	A number of permanent BioMetric quadrats have been established in the RWEAs and in rehabilitation areas to obtain quantitative data on plant species diversity and abundance and habitat values. BioMetric data will be collected at each of the quadrat monitoring sites. Note: Biometric monitoring in the Woodland Rehabilitation Areas will be undertaken at the same time as the LFA monitoring in the Woodland Rehabilitation Areas
	RWEA B	V9-B1, V9-B2, V10-B1, V13-B1, V14-B1, V14-B2		
	RWEA C	V6-A1c, V6-B1c, V6-B2c, V11-B1, V11-B2		
	RWEA D	V10-A1, V10-B3		
	RWEA E	V14-A1		
	Rail Loop	V5-B4, V6-B4		
	Reference Sites	V1-A1, V1-A2, V2-A1, V6-A3, V9-A1, V10-A2, two new sites to be established in 2020		
	Woodland Rehabilitation	3R, 4R, 6R & 8R		
	NWCD	Two new sites to be established in 2020		Permanent BioMetric quadrats will be established in the NWCD Extension area.
	Pasture Rehabilitation	Two new sites to be established in 2020		Permanent BioMetric quadrats will be established in Pasture Rehabilitation.
	South Bates Extension	Four new sites to be established in 2020		Permanent BioMetric quadrats will be established in the South Bates Extension area.
LFA	Woodland Rehabilitation	3R, 4R, 6R & 8R	Annually (Autumn or Spring)	LFA consists of a number of permanent transects being established in areas of revegetation, along with corresponding transects in adjacent undisturbed areas to provide reference/ analogue sites. LFA transects are monitored annually either in autumn or spring following the commencement of revegetation
	Pasture Rehabilitation	1R, 2R, 5R, 7R, 9R, 10R, 16R, 33R, 34R & 35R		
	NWCD	17R, 19R, 21R, 23R, 25R, 26R, 27R & 28R		
	Wambo Creek	14R		
Birds	RWEA A	BP1, BP2, BP3, BP4, BP5, BP6, BP17, BP18	Annually (Spring) Alternate Years (Winter)	Avifauna surveys are undertaken in spring each year, using sites established for the terrestrial fauna surveys. Additional avifauna surveys are undertaken in winter (alternate years) to target the Swift Parrot (*Lathamus discolor*) and the Regent Honeyeater (*Anthochaera phrygia*).
	RWEA B	BP7, BP8, BP9, BP10, BP11, BP12		
	RWEA C	BP13, BP14, BP16, BP19, BP20, BP21, BP22		
	RWEA D	BP25, BP26		
	Rail Loop	BP23, BP24		
	Reference Sites	BP15, two new sites to be established in 2020		

Monitoring Type	Area	Site	Monitoring Frequency and Timing	Details
	Woodland Rehabilitation	-		
	South Bates Extension	Four new sites to be established in 2020.		
Riparian Vegetation	North Wambo Creek (Diversion)	8A, 9A, 10A, 11A, 12A, 13A, 14A, 15A	Annually	Rapid Appraisal of Riparian Condition (RARC) index is made up of five sub-indices, each with a number of indicators: • Habitat continuity and extent • Vegetation cover and structure • Dominance of natives *versus* exotics • Standing dead trees, hollows, fallen logs and leaf litter • Indicative features Visual assessment of the impact of erosion and subsidence will also be included as part of an ongoing photographic record.
	South Wambo Creek	1B, 2B, 3B, 4B, 5B		
	Stony Creek	1C, 2C, 3C, 4C, 5C		
Freshwater Macroinvertebrate Monitoring	North Wambo Creek	1D, 2D, 3D, 12D	Every 5 years (2016, 2021, 2026 etc.)	Including assessment of SIGNAL A values. Water quality data to (EC, pH and temperature) to be sourced from scheduled surface water monitoring.
	South Wambo	4D, 5D, 13D		
	Waterfall Creek	6D		
	Wollombi Brook	7D, 8D, 9D, 10D, 11D,		
Groundwater Dependent Ecosystems	North Wambo Creek (upper reach) River Oak Riparian Tall Woodland GDE	Plot 3, Plot 4 Photo points M4, M5, M6, M7, M8 30 tagged River Oak *(Casuarina cunninghamiana)* trees	Annually	2 Biometric plots within each GDE. Photo monitoring points (4 photos at each point (bearing N, E, S, W)) Repeat measures of individual trees: Diameter at Breast Height (DBH), canopy extent (%) and photograph of each tree.
	Melaleuca decora Low Forest GDE	Plot 1, Plot 2 Photo points M1, M2, M3		
Nest boxes	RWEA B	Nest box # 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	Every second year	Inspect nest boxes and record species use and any maintenance requirements.
	RWEA C	Nest box # 11, 12, 13, 14, 15, 16, 17, 19, 20		
	RWEA D	Nest box # 1, 2 ,3, 4, 5, 6, 7, 8, 9, 10		

Monitoring Type	Area	Site	Monitoring Frequency and Timing	Details
Photo Point	RWEA A	A1 (SE bearing)	Annually	A photo is required to be taken at a number of photo monitoring points within the RWEAs every year. Photos must be taken from the exact location and bearing to allow subsequent comparison and assessment.
		A2 (SSE bearing)		
		A3 (NE bearing)		
		A4 (NW bearing)		
	RWEA B	B1 (SW bearing)		
		B2 (W bearing)		
	RWEA C	C1 (NE bearing)		
		C2 (E bearing)		
	RWEA D	D1 (SW bearing)		
	RWEA E	E1 (E bearing)		
	Coal Terminal/Rail Loop	CT1 (NE bearing)		
		CT2 (W bearing)		
Creek Bed and Bank Stability	North Wambo Creek, South Wambo Creek and Stony Creek	Various Cross Sections	Annually	Bed and bank stability monitoring is undertaken by surveying consultants who undertake replicate surveys of the three creeks to measure areas of significant erosion and identify changes related to creek bed condition and water flow.
Walk Through Assessment/ Specific Enhancement Initiatives	All RWEAs	NA	Annually	A walk through assessment will be undertaken during the monitoring event to record opportunistic sightings within the RWEAs including: • Fire events or management; • Weeds (including compiling a list of exotic species and recording new weed infestations including location and extent); • Pest animals (species and location must be recorded, including evidence of pest animals such as burrows, scats or disturbance); • Visitor impact and vehicle access (including evidence of any recent usage, and the presence of any new access tracks); • Rubbish dumping; • Natural regeneration of previously disturbed areas; and • Sightings of threatened species.

Monitoring Type	Area	Site	Monitoring Frequency and Timing	Details
Visual Monitoring	All Rehabilitation Areas	NA	Annually	Visual monitoring of revegetation will be undertaken to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed and animal pest control). Visual assessments allow for the rapid application of remedial actions where necessary.
Subsidence Inspection	Areas overlying existing underground workings or proposed underground mining areas	Those areas identified as being affected by subsidence	Annually	Areas overlying existing underground workings or proposed underground mining areas are subject to annual subsidence monitoring inspections. These inspections: • Identify any isolated surface disturbances; • Assess the level of disturbance to native vegetation and the condition of the vegetation (e.g. health and vigour of species and communities); and • Assess any changes in drainage lines or watercourses (that may be attributable to subsidence).

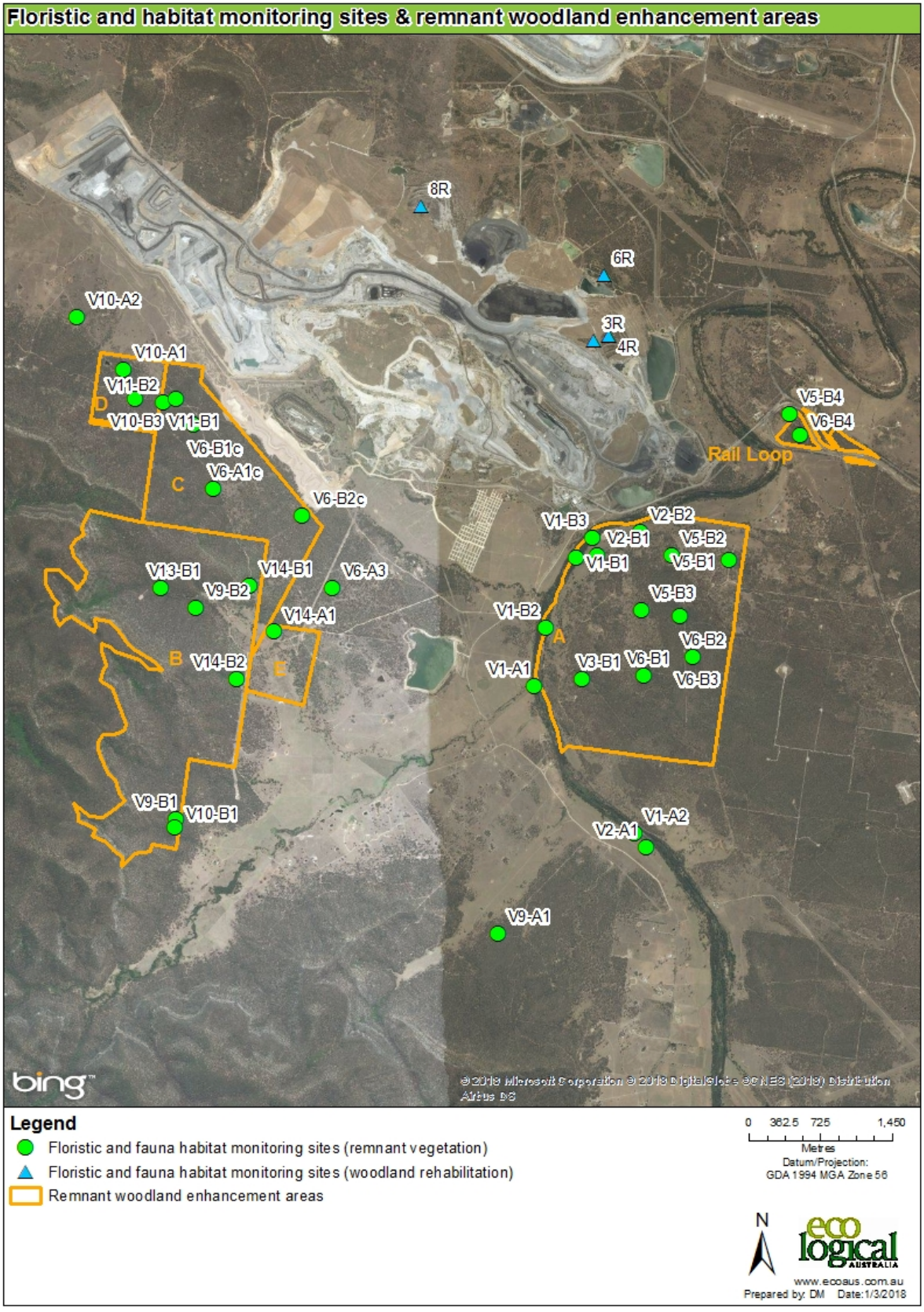


Figure 13: Floristic and Habitat Monitoring Sites

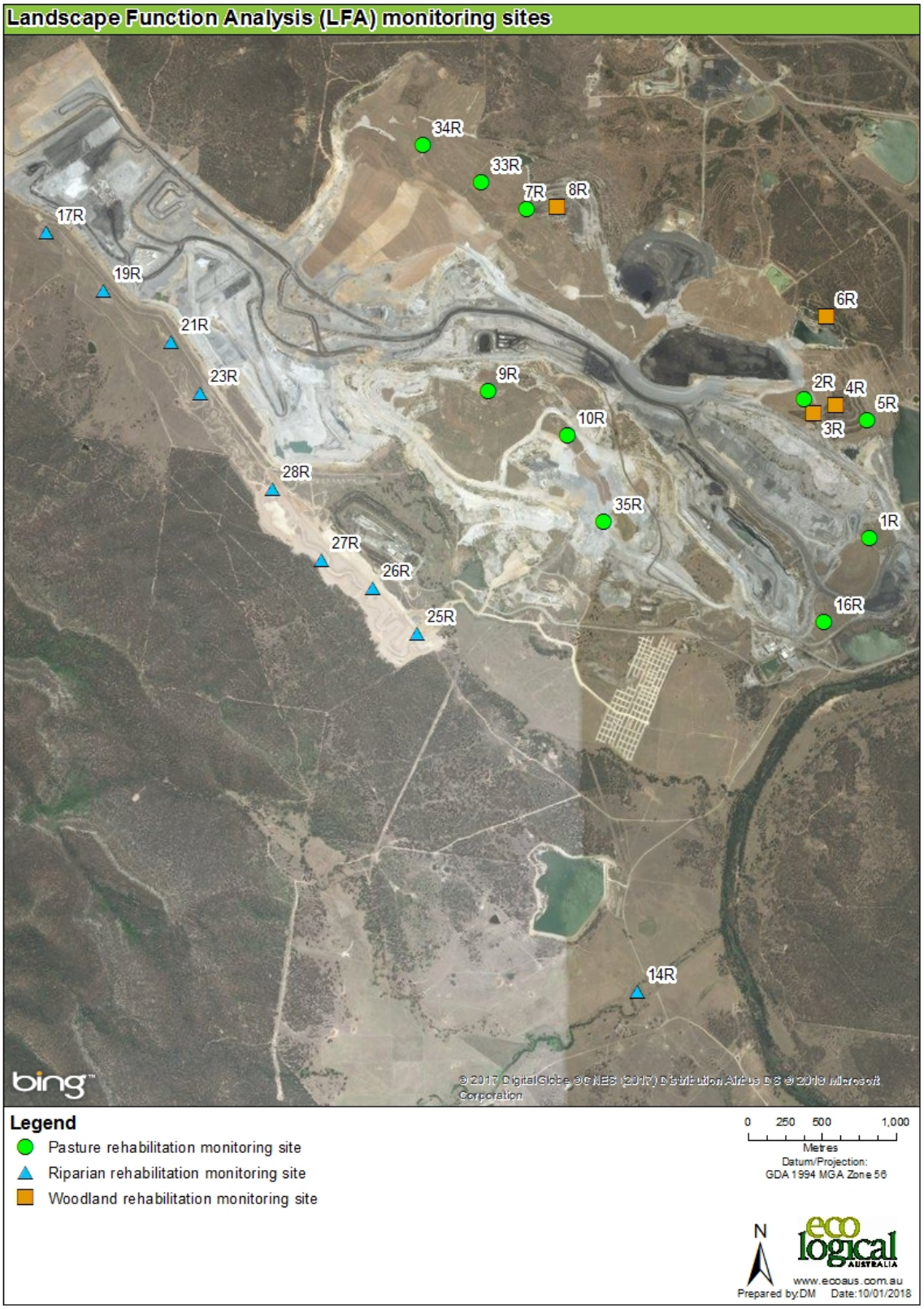


Figure 14: LFA Monitoring Locations

Figure 15: Location of Photo Monitoring Points

Figure 16: Location of Riparian Monitoring Sites and Transects

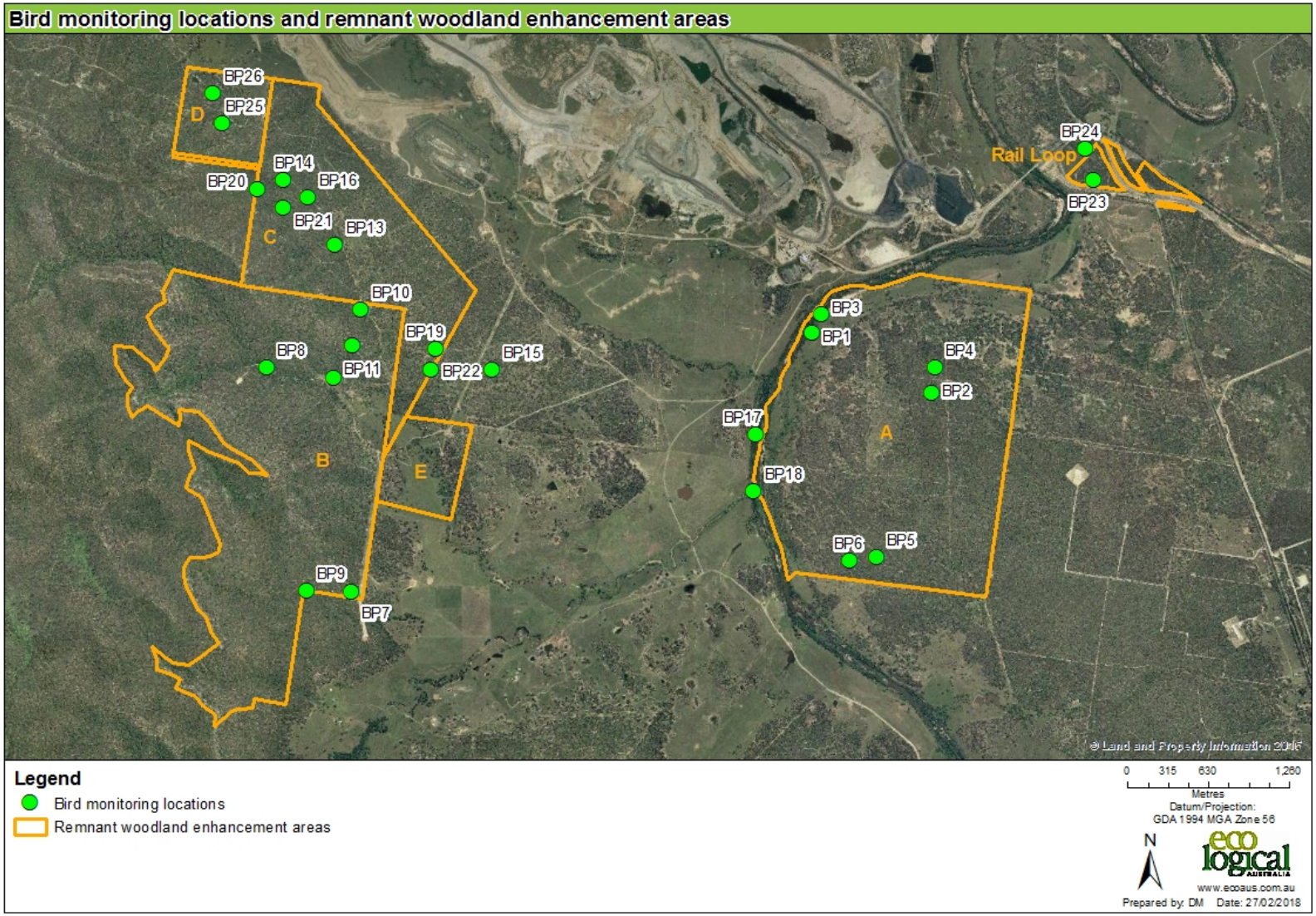


Figure 17: Bird Monitoring Locations

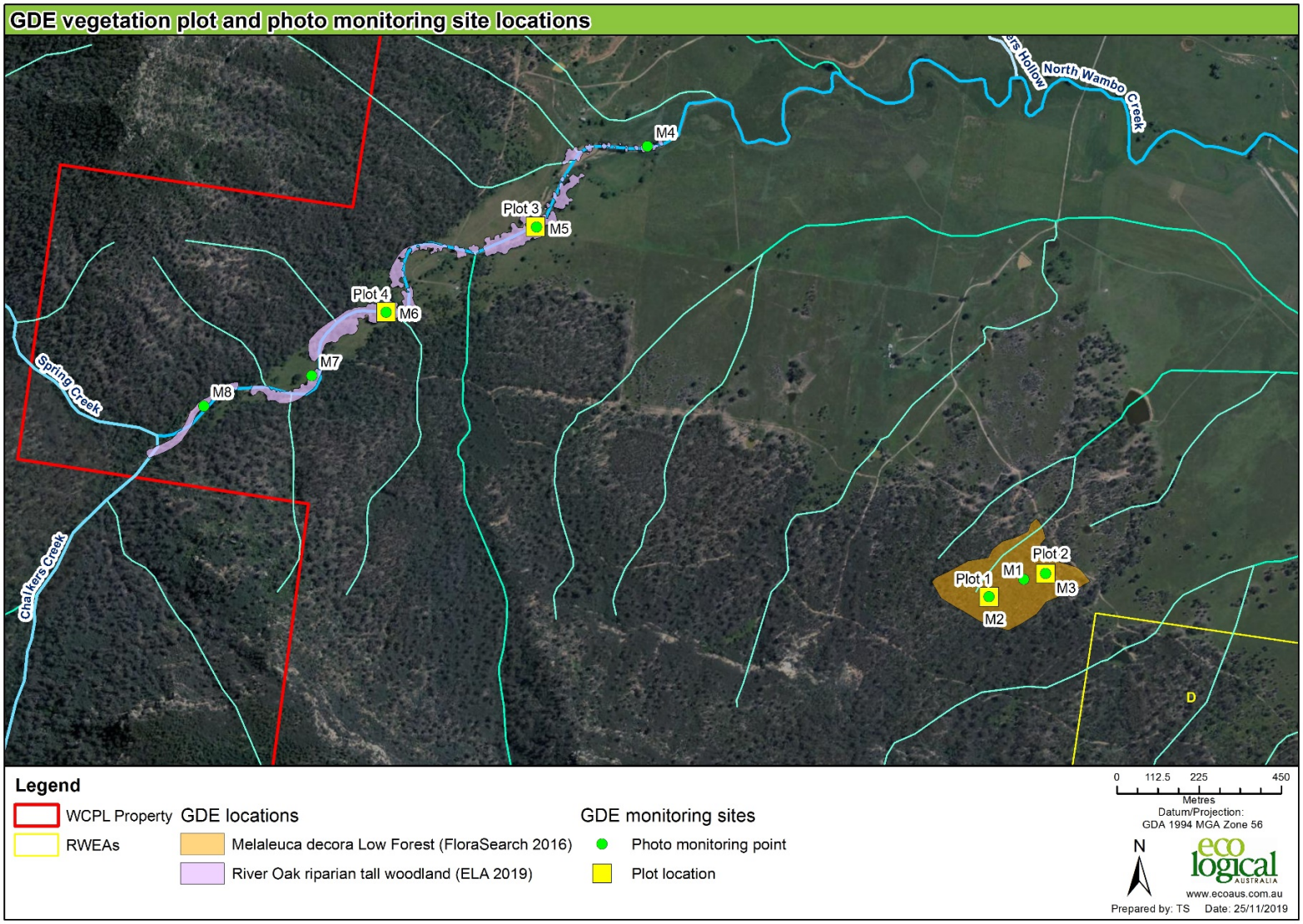


Figure 18: Groundwater Dependent Ecosystem Biometric and Photo Monitoring Point Locations

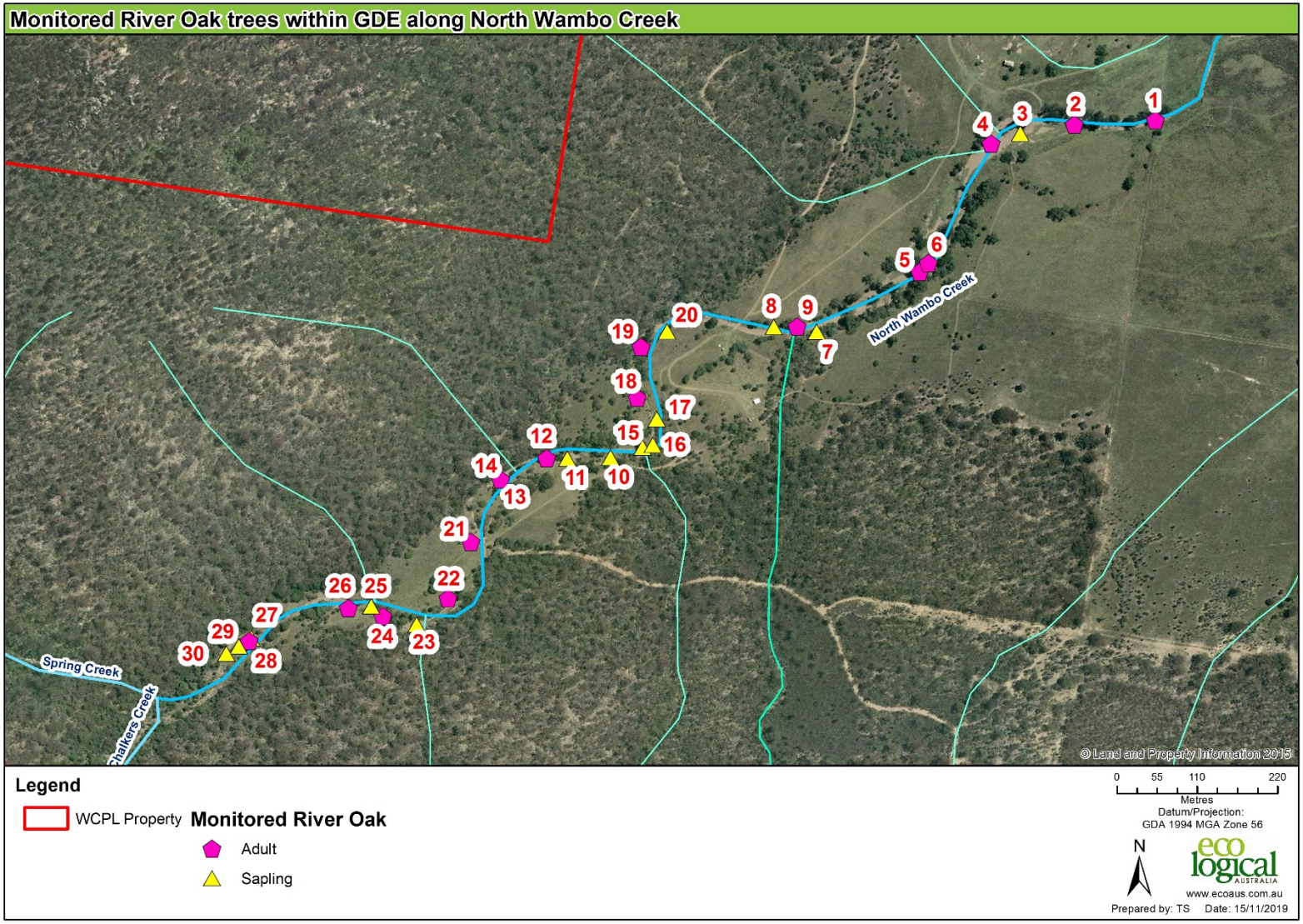


Figure 19: Monitored River Oak Trees within the River Oak Riparian Tall Woodland GDE along North Wambo Creek

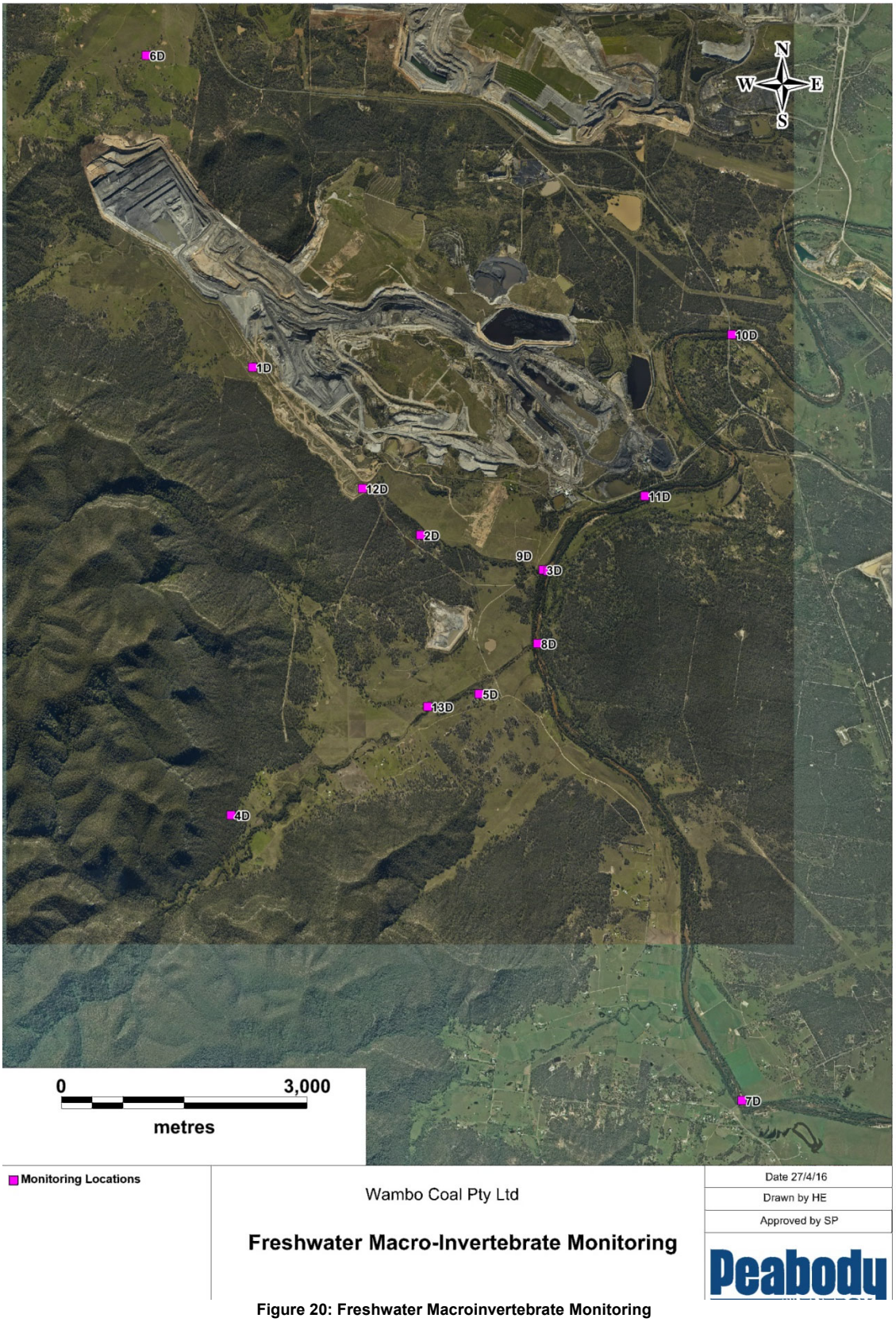


Figure 20: Freshwater Macroinvertebrate Monitoring

7.2.1 RWEAs

Monitoring of biodiversity in the RWEAs will be undertaken in accordance with the requirements of the CAs and DA305-7-2003 (Condition B75(h)). These requirements are summarised in **Table 20** and further detail provided in the following sections.

Table 20: RWEA Monitoring Program Requirements

Instrument	Monitoring Component	Monitoring Description	BMP Section
CAs	Photo	A photo is required to be taken at a number of photo monitoring points within the RWEAs. Photos must be taken from the exact location and bearing to allow subsequent comparison and assessment.	7.2.1.1
CAs	Walk Through Assessment	A walk through assessment must be undertaken to record opportunistic sightings within the RWEAs e.g. for weed and pest management etc	7.2.1.2
CAs	Quadrat (Biometric)	Quadrat data must be collected at floristic quadrat monitoring sites within the RWEAs. Results must be compared to baseline and benchmark quadrat data.	7.2.1.3
DA305-7-2003	Flora	A number of permanent flora survey quadrats (of varying sizes to survey tree, shrubs and ground cover) should be established in woodland enhancement areas to obtain quantitative data on plant species diversity and abundance.	7.2.1.3
DA305-7-2003	Habitat Complexity	Habitat complexity should be monitored using a number of permanent transects established within woodland enhancement areas. Habitat complexity parameters such as canopy cover, shrub cover, ground vegetation cover, the amount of litter, fallen logs and rocks should be surveyed.	7.2.1.3
DA305-7-2003	Specific Enhancement Initiatives	Monitoring of specific enhancement initiatives (e.g. the provision of nesting/ roosting boxes, weed control or feral animal control).	7.2.1.4
DA305-7-2003	Terrestrial Fauna	Terrestrial fauna surveys should be conducted to monitor the usage of enhancement areas by vertebrate fauna. Monitoring may include fauna species diversity and abundance or, alternatively, the use of indicator species to measure the effectiveness of enhancement measures.	7.2.1.5
DA305-7-2003	Aquatic Fauna	Freshwater macro-invertebrate monitoring, including an assessment of SIGNAL A values and water quality (e.g. temperature, pH, and salinity).	7.2.1.5

In compliance with the CAs a qualified ecologist will be engaged to undertake the monitoring in the RWEAs each year. A monitoring report on the RWEAs will be produced by WCPL's ecologist each year and submitted to the Chief-Executive (BCD) within 14 days of it being received by WCPL (**Section 11.3**).

7.2.1.1 Photo Monitoring

Photo monitoring points have been established in each of the RWEAs (**Table 21** and **Appendix D**). A photo will be taken at each photo point (exact location and bearing) annually during each monitoring event, to allow subsequent comparison and assessment. Baseline photographs are provided in **Appendix E.**

Table 21: CA Monitoring Photo Point Locations (Oct 2014)

RWEA	Photo Point	Easting	Northing	Bearing	Vegetation Community Represented
Wambo Coal Terminal	CT1	314587	6393774	NE	Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest
	CT2	314556	6393925	W	Ironbark eucalypt dominated woodlands/forest
RWEA A	A1	312525	6392578	SE	River Red Gum Woodland
	A2	313850	6392523	SSE	Coast Banksia / Rough-barked Apple / Blakely's Red Gum Forest (Warkworth Sands Woodland EEC)
	A3	312012	6391818	NE	River Oak / Rough-barked Apple Forest
	A4	313004	6391327	NW	Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest
RWEA B	B1	308525	6392151	SW	White Mahogany / Rough-barked Apple Forest
	B2	308274	6389887	W	Spotted Gum / Narrow-leaf Ironbark / Bulloak / Paperbark Forest
RWEA C	C1	308272	6394148	NE	Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest
	C2	308254	6394144	E	Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest
RWEA D	D1	307836	6394168	SW	Slaty Gum / Narrow-leaf Ironbark / Bulloak / Paperbark Forest
RWEA E	E1	309235	6391793	E	Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest

7.2.1.2 Walk Through Assessment

A walk through assessment will be undertaken during the monitoring event to record opportunistic sightings within the RWEAs including:

- Fire events or management;
- Weeds (including compiling a list of exotic species and recording new weed infestations including location and extent);
- Pest animals (species and location must be recorded, including evidence of pest animals such as burrows, scats or disturbance);
- Visitor impact and vehicle access (including evidence of any recent usage, and the presence of any new access tracks);
- Rubbish dumping;
- Natural regeneration of previously disturbed areas; and
- Sightings of threatened species.

7.2.1.3 Quadrat Monitoring (Biometric)

A number of permanent BioMetric quadrats have been established in the RWEAs and in rehabilitation areas to obtain quantitative data on plant species diversity and abundance and habitat values (**Figure 13**). BioMetric data will be collected at each of the quadrat monitoring sites listed in **Table 19.** Results will be compared to baseline and benchmark quadrat data (refer **Appendix C**) and reported in the Annual Review.

The Monitoring Data Sheet in **Appendix J** will be used to record the Biometric Monitoring Data.

7.2.1.4 Specific Enhancement Initiatives

The RWEA enhancement strategies (**Section6.1.1**) are monitored for their effectiveness. These enhancement strategies include fencing, weed and pest control, and where necessary the provision of nesting/roosting boxes. This monitoring will be undertaken as part of the walk through assessment (**Section 7.2.1.2**).

7.2.1.5 Terrestrial Fauna

The monitoring of indicator species will be used to qualitatively validate BioMetric and LFA monitoring results (i.e. self-sustaining stable landforms and vegetation structure have been successfully recreated or reintroduced and are being inhabited or frequented by local fauna).

Avifauna (as an indicator species) will be monitored to assess the effectiveness of management measures in maintaining species richness and increase the relative abundance of woodland birds within Management Domains (except grazing). Systematic surveys at a selection of representative sites already established for Biometric monitoring will be utilised (**Table 19**).

Survey sites have been established in each major habitat type present within each RWEA (**Figure 17**). These habitats include:

- Creek line and riparian habitats;
- Woodland/open forest on steep hills; and
- Woodland, including scattered trees, on undulating and level land.

Corresponding survey sites have also been established in areas of equivalent habitat type adjacent to the Management Domains to provide reference sites. Reference sites provide comparative data so that the long-term progress of the Management Domains can be determined.

Fauna species diversity and abundance will be monitored annually in spring. Additional avifauna monitoring undertaken in winter during alternate years (starting 2016) will target the Swift Parrot (*Lathamus discolor*) and the Regent Honeyeater (*Xanthomyza phrygia*). The actual total period over which monitoring will occur will be dependent on the ultimate mine life.

Survey techniques are described in **Table 22**.

Table 22: Overview of Fauna and Aquatic Survey Methods

Survey Technique	Description
Bird Surveys	Diurnal bird censuses will be undertaken within each survey site on two separate days. The census will survey avifauna species diversity, relative abundance and behaviour (e.g. breeding/nesting activities).
Opportunistic observations	Opportunistic observations for vertebrate fauna, particularly threatened species, will be noted during the survey.
Aquatic Fauna	A visual assessment of aquatic habitat is conducted using the AUSRIVAS (Australian River Assessment System) proforma. Water quality is measured and macroinvertebrate sampling is conducted using AUSRIVAS protocol

7.2.2 Monitoring of Revegetation of Disturbance Areas

WCPL will revegetate areas of the Mine to woodland, pasture and/or riparian vegetation, as described in the WCPL MOP/RMP. A number of techniques, such as visual monitoring, LFA and Biometric monitoring will be utilised to monitor the progress of the revegetation of disturbance areas.

7.2.2.1 Visual Monitoring

Visual monitoring of revegetation will be undertaken to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed and animal pest control). Visual assessments allow for the rapid application of remedial actions where necessary.

7.2.2.2 Landscape Function Analysis (LFA) and Biometric Monitoring

LFA and Biometric Monitoring will be adopted as the primary monitoring methodologies to assess revegetated landscape stability and progress towards quantitative completion criteria targets.

Monitoring will be undertaken annually as per the locations detailed in **Table 19** and **Figure 14,** and consistent with the methodology outlined in **Section 7.1**.

Areas that have progressed beyond the landform establishment phase will transition to Biometric monitoring as described in **Section 6.1.3.**

7.2.3 Aquatic Monitoring

Localised bed and bank instability is a natural phenomenon in alluvial creeks, which contributes to the dynamic geomorphology of fluvial systems. Creek beds are also susceptible to subsidence induced erosion, due to the variable depth of subsidence associated with underground longwall mining.

Three types of monitoring are undertaken as part of the program:

- Bed and Bank Stability Monitoring;
- Riparian Vegetation Monitoring; and
- Freshwater Macro-Invertebrate Monitoring including SIGNAL A assessment.

The Baseline Riparian Vegetation and Bed Bank Stability Monitoring Program commenced in October 2006 to monitor for potential subsidence impacts. The program aims to distinguish natural erosion from mine subsidence associated instability, through pre-mining and post-mining survey of North Wambo Creek, NWCD, South Wambo Creek and Stony Creeks.

Freshwater macro-invertebrate monitoring including an assessment of SIGNAL A values and water quality (temperature, pH and salinity) is also undertaken to determine the effectiveness of rehabilitation efforts and enhancement initiatives.

Aquatic monitoring was last conducted by Niche Environment and Heritage in 2016 to assess the river health of drainages occurring above the North Wambo Underground Mine area, open cut operations and associated infrastructure. Aquatic monitoring is conducted every five years, and is next scheduled for 2021.

7.2.3.1 Bed and Bank Stability Monitoring

Bed and bank stability monitoring is undertaken by surveying consultants who undertake replicate surveys of the three creeks to measure areas of significant erosion and identify changes related to creek bed condition and water flow. A written assessment is completed, detailing any areas of significant erosion, bare soil and subsidence along each creek line.

7.2.3.2 Riparian Vegetation Monitoring

Two types of transect are assessed for sections of the three creeks, consisting of:

- Cross sectional – A marked single line transect across the width of the stream from bank to bank, also referred to as 'transects'; and
- Longitudinal – An unmarked transect along the length of the creek between two transects, also referred to as 'sections'.

Transect and section locations are established along those sections of the three creeks situated above underground workings, plus at least one site beyond each end of the underground workings.

The effects of subsidence and erosion on riparian vegetation are monitored by repetitive sampling of established permanent transects by assessing:

- The current erosion status of transects and sections;
- Photographing each transect site & any areas of significant erosion or subsidence impacts; and
- Quantifying vegetative structure and species composition for each transect.

Assessment of riparian vegetation characteristics is also undertaken using a standardised RARC methodology as developed by Jensen et.al (2005). The methodology is made up of five sub-indices, each with a number of indicators:

- Habitat continuity and extent
- Vegetation cover and structure
- Dominance of natives versus exotics
- Standing dead trees, hollows, fallen logs and leaf litter
- Indicative features

Visual assessment of the impact of erosion and subsidence will also be included as part of an ongoing photographic record.

The location of riparian monitoring cross-sections and transects is shown on **Figure 16.** The location and number of transects is subject to annual review.

7.2.3.3 Riparian Vegetation Monitoring

Freshwater macro-invertebrate monitoring is undertaken at identified monitoring locations targeting critical creek lines.

Assessment of SIGNAL A values are completed at these sites to assist in determining the anthropogenic impacts of mine site activities and the success of enhancement and rehabilitation efforts.

7.2.4 Subsidence Impacts

Areas overlying existing underground workings or proposed underground mining areas are subject to annual subsidence monitoring inspections. These inspections:

- Identify any isolated surface disturbances;
- Assess the level of disturbance to native vegetation and the condition of the vegetation (e.g. health and vigour of species and communities); and
- Assess any changes in drainage lines or watercourses (that may be attributable to subsidence).

Details regarding the remediation of subsidence impacts are provided in the relevant Extraction Plans.

7.2.5 Monitoring of Groundwater Dependent Ecosystems

Hunter Eco (2019) identified two likely GDEs in the area above the South Bates Underground Extension; River Oak Riparian Tall Woodland, and *Melaleuca decora* Low Forest.

Baseline monitoring of these communities was initiated in 2019. A variety of methods are used to monitor these GDEs as described in the sections below.

7.2.5.1 Quadrat Monitoring (BioMetric)

Two permanent BioMetric quadrats were established in each GDE to obtain quantitative data on plant species diversity and abundance and habitat values (**Figure 18**). BioMetric data will be collected at each of the quadrat monitoring sites listed in **Table 19.** Results will be compared to baseline and benchmark quadrat data (refer **Appendix C**) and reported in the Annual Review.

The Monitoring Data Sheet in **Appendix J** will be used to record the Biometric Monitoring Data.

7.2.5.2 Photo Monitoring

Photo monitoring points were established in September 2019 (permanently marked with star-picket) at the starting point of each GDE quadrat site and at additional locations to achieve an even distribution across each GDE area. Monitoring locations are described in **Table 23** and shown on **Figure 18**. At each photo monitoring point, images are captured facing 0, 90, 180, and 270 degrees, with the North facing (0 bearing) photo reported. Baseline photographs are provided in **Appendix E.**

Table 23: Monitoring Photo Point Locations within Groundwater Dependent Ecosystems

Photo Point	Easting	Northing	Bearing	Vegetation Community Represented
M1	307280	6394719	N, E, S, W	Melaleuca decora Low Forest
M2	307185	6394672	N, E, S, W	Melaleuca decora Low Forest
M3	307340	6394735	N, E, S, W	Melaleuca decora Low Forest
M4	306251	6395900	N, E, S, W	River Oak Riparian Tall Woodland
M5	305947	6395680	N, E, S, W	River Oak Riparian Tall Woodland

Photo Point	Easting	Northing	Bearing	Vegetation Community Represented
M6	305536	6395448	N, E, S, W	River Oak Riparian Tall Woodland
M7	305332	6395275	N, E, S, W	River Oak Riparian Tall Woodland
M8	305038	6395192	N, E, S, W	River Oak Riparian Tall Woodland

7.2.5.3 Tree Measurements

Thirty River Oak (*Casuarina cunninghamiana*) trees (15 mature trees and 15 saplings) are monitored annually in the River Oak riparian tall forest GDE area along North Wambo Creek. Monitoring locations are described in **Table 24** and shown on **Figure 19.**

Each tree was permanently marked in 2019 with a numbered metal tree tag and the DBH was measured. The point of DBH measurement (1.3m above the ground) was sprayed with paint so that the measurement location can be replicated during subsequent monitoring. Crown extent is also assessed for each tree as an indicator of tree health. Crown extent is measured as the percentage of the assessable crown (all live and dead branches on the tree) in which there are live leaves. Two observers each recorded a crown extent estimate from opposite sides of the tree to the nearest 5%, and the average of the two scores is reported.

Table 24: River Oak Tree monitoring locations and baseline data (September 2019)

Tree Tag No.	Age class	DBH (cm)	Crown Extent (%)	Easting	Northing
1	Adult	76	55	306275	6395900
2	Adult	34.3	50	306164	6395894
3	Sapling	22.15	95	306090	6395881
4	Adult	77.5	78	306050	6395868
5	Adult	32.15	8	305952	6395693
6	Adult	99	63	305964	6395705
7	Sapling	19.5	78	305811	6395612
8	Sapling	10.6	90	305753	6395618
9	Adult	56	55	305785	6395619
10	Sapling	11.5	80	305529	6395440
11	Sapling	19.5	93	305470	6395438
12	Adult	63.5	55	305442	6395439
13	Sapling	1.4	78	305380	6395409
14	Adult	56.7	38	305379	6395410
15	Sapling	3.8	48	305573	6395454
16	Sapling	8.45	75	305587	6395457
17	Sapling	9	50	305593	6395493
18	Adult	99.5	38	305566	6395521
19	Adult	79.9	58	305571	6395591
20	Sapling	15	70	305607	6395612
21	Adult	107	50	305338	6395325
22	Adult	57.4	63	305307	6395248
23	Sapling	18.1	55	305264	6395213
24	Adult	49.8	18	305218	6395224
25	Sapling	16.5	73	305202	6395237
26	Adult	47.5	48	305171	6395235
27	Sapling	15.9	78	305038	6395194

Tree Tag No.	Age class	DBH (cm)	Crown Extent (%)	Easting	Northing
28	Adult	46	63	305035	6395190
29	Sapling	6.9	58	305021	6395183
30	Sapling	6.2	55	305004	6395173

7.2.5.4 Mapping of vegetation extent

The extent of the River Oak Riparian Tall Woodland community along the upper reach of North Wambo Creek will be mapped annually using the latest available aerial imagery and rapid data points collected on the ground. Previous changes in the extent of the community over time have been mapped by Hunter Eco (2019). Any changes in the extent of the community will be reported in the Annual Review.

Monitoring data collected under the Water Management Plan (such as groundwater levels at monitored wells in the vicinity if the GDEs) will be available for correlation with GDE monitoring results if required.

7.2.5.5 Monitoring of Surface Water and Groundwater in the Vicinity of the Groundwater Dependent Ecosystems

Monitoring of surface water and groundwater in the vicinity of the GDEs above the South Bates Extension Underground Mine is described in the Water Management Plan for Longwalls 21 to 24.

7.3 Data Management and Review

Monitoring results will be collated after each monitoring round and compared against the Completion Criteria and Performance Targets in **Section 5.0**. If monitoring results show that targets are not being met, the TARPs in **Section 8.0** will be implemented.

All monitoring results are filed by the Manager Environment and Community (ECM) and/or Environmental Representative within the document control system and maintained at the Mine for at least four years after the monitoring or event to which they relate took place, as required by law. All records are kept in a legible form, or in a form that can readily be reduced to a legible form.

Monitoring results for the annual biodiversity monitoring program are included in WCPL's Annual Review reports, which are publicly available on WCPL's website (refer **Sections 11.2** and **11.6**). Where relevant, statistical analysis (including any underlying assumptions) will also be included in the Annual Review reports.

8.0 Contingency Plans and Incident Response

8.1 Risks to Successful Implementation of Biodiversity Offset Strategy

Risks to the successful implementation of the Biodiversity Offset Strategy include:

- Rehabilitation progress that stagnates or deteriorates;
- Actual subsidence impacts exceeding predicted impacts; and
- Natural disasters including bushfires, flooding and prolonged drought.

Trigger Action Response Plans (TARPs) have been developed to address risks associated with stagnated or failing rehabilitation and observed subsidence impacts exceeding predicted impacts. These TARPs are presented in **Section 8.3.**

Risks associated with natural disasters are generally out of WCPL's control, however WCPL has developed a Bushfire Management Plan which specifically addresses bushfire management issues across WCPL landholdings, including bushfire risk analyses (refer **Section 6.1.1.4.3**).

8.2 Adaptive Management

WCPL will assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in **Section 5.0.** Any exceedance of these criteria and/or performance measures constitutes a breach of the conditions of DA305-7-2003 and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, WCPL will, at the earliest opportunity:

- Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

WCPL will notify the Chief-Executive (BCD) in writing as soon as possible after becoming aware of the deterioration of any of the Conservation Values, or of any threat to the Conservation Values.

8.3 Trigger Action Response Plans

WCPL has developed TARPs for both Biometric and LFA sites as well as subsidence impacts.

TARPs are provided in **Table 25** (Biometric), **Table 27** (LFA) and **Table 28** (Subsidence). Additional TARPs are included in the MOP/RMP for rehabilitated areas. Potential biometric TARP management measures are provided in **Table 26.**

Table 25: Native Vegetation and Habitat Complexity (BioMetric) TARP

TARP	
Trigger	• Score obtained during annual monitoring round has stagnated or is retreating from completion target range for three consecutive years.
Action	• Notify the WCPL ECM. • Check and validate the data to ensure correct/accurate. • Review site attribute scores to determine which attributes are contributing to the lower than expected score • Review management actions undertaken during previous 12 months to determine if actions have contributed to the lower than expected score • Review previous monitoring scores and climatic conditions to establish whether external factors could be contributing to the lower than expected score
Response	Site Attribute Classification - Green (within target range): • Maintain monitoring for three years and seek Resources Regulator sign off if no significant decline observed (exclude reference sites). Site Attribute Classification - Yellow (not meeting target but still acceptable): • Review monitoring data against seasonal variations and existing management actions • Increase/adopt management effort to address identified lagging site attribute scores. • Maintain monitoring until all site attributes classifications are Green (within target ranges). Site Attribute Classification – Orange (in need of improvement): • Review monitoring data against seasonal variations and existing management actions • Increase/adopt management effort to address identified lagging site attribute score. • Refer to LFA results to determine if there are other causal factors. • Maintain monitoring until all site attributes classifications are Yellow (not meeting targets but still acceptable). Site Attribute Classification – Red (needs greater improvement): • Review monitoring data against seasonal variations and existing management actions. • Increase/adopt management effort to address identified lagging site attribute score. • Treat surface as if rehabilitation is establishing. Use management actions to improve condition. • Refer to LFA results to determine if there are other causal factors • Maintain monitoring until all site attributes classifications are Orange (in need of improvement). Site value score declines from expected performance target range to a preceding range: • Analyse data for potential reasons for decline. • Develop remedial actions to address declining biodiversity values. • Review LFA monitoring to examine for potential casual factors OR start LFA monitoring if landform instability is detected.
Plan	• Review and revise the Management Strategy, targeting the specific site attribute/s contributing to the lower score. • Report monitoring results and management actions in the Annual Review.

Table 26: Potential BioMetric TARP Management Measures

Site Attribute	Red (needs greater improvement)	Orange (in need of improvement)	Yellow (Not meeting target but values still acceptable)	Green (Excellent – within target range)
Native Plant Species Richness (NPS) Native Overstorey Cover (NOS) Native Midstorey Cover (NMS) Native Ground Cover – grasses (NGCG) Native Ground Cover – shrubs (NGCS) Native Ground Cover – other (NGCO) Proportion of native overstorey species regenerating (OR)	Review LFA monitoring data Review of climactic trends to determine potential influence Sample and analysis of soil characteristics Application of soil ameliorates Targeted planting/seeding Establishment of watering regime or infrastructure	Review of climactic trends to determine potential influence Sample and analysis of soil characteristics Application of soil ameliorates Targeted planting/seeding Establishment of watering regime or infrastructure	Review of climactic trends to determine potential influence Establishment of watering regime or infrastructure Ongoing monitoring	Ongoing monitoring Seek Resources Regulator sign off
Exotic plant cover (EPC)	Weed control management measures Planting of select species to prevent re-colonisation of removed weeds	Weed control management measures Planting of select species to prevent re-colonisation of removed weeds	Weed control management measures Ongoing monitoring	Continue monitoring until Resources Regulator sign off

Table 27: Landscape Stability (LFA) TARP

	TARP
Trigger	• <5% annual improvement or significant decline in LFA Score (from previous monitoring round)
Action	• Notify the WCPL ECM. • Check and validate the data to ensure correct/accurate. • Review individual SSCI and LFA Index results to determine which SSCI or index result is contributing to the lower than expected score • Review management actions undertaken during previous 12 months (applicable to relevant Management Period) to determine if actions have contributed to the lower than expected score • Review previous monitoring scores and climatic conditions to establish whether external factors could be contributing to the lower than expected score
Response	• Develop remedial actions to address stagnant or declining landscape stability, if stagnant or declining score not caused by external factors. • Maintain monitoring of affected site until first LFA score ≥50 (i.e. stable landform) and • Review monitoring program and consider expanding to include additional treatment and reference sites.
Plan	• Review and revise the Management Strategy, targeting the specific SSCI and LFA indices contributing to the lower score. • Report monitoring results and management actions in the Annual Review.

Table 28: Subsidence TARP

TARP	
Trigger	• Biodiversity performance measure in Section 5.4 has been exceeded, or is likely to be exceeded.

Action	• Notify WCPL ECM and GM.
	• Notify DPIE, Resources Regulator and BCD (National Parks and Wildlife).
	• Conduct an investigation to identify/evaluate contributing factors, including:
	  ○ Re-survey of relevant subsidence monitoring lines.
	  ○ Analysis of measured versus predicted subsidence parameters.
	  ○ Ecological and/or geotechnical review of the observed consequences.

Response	• Develop an appropriate course of action in consultation with relevant agencies, including:
	  ○ Proposed contingency measures (see Sections 5.4 and 6.2).
	  ○ Program to review the effectiveness of the contingency measures.
	  ○ Consideration of adaptive management (see Section 8.1).
	• DPIE to approve the course of action.
	• Implement the approved course of action to the satisfaction of the DPIE.

Plan	• Review of this BMP and the performance indicators to adequately manage future potential impacts within the limits of the Development Consent. • Review of the subsidence monitoring program and update of the program where appropriate. • Report monitoring results and management actions in the Annual Review.

8.4 Management of Incidents and Non-compliances

Environmental incidents are managed and reported in accordance with the requirements detailed in **Section 11.7.**

If a non-compliance of any approval condition is identified, WCPL will investigate the non-compliance and implement corrective actions as required. Reporting of non-compliances will be undertaken in accordance with WCPL's statutory requirements.

A review of the effectiveness of the corrective or preventative action will be undertaken within one month of the occurrence of the incident and the relevant procedures will be updated as required.

9.0 Training and Awareness

Training forms an integral part of environmental management at WCPL. All personnel and contractors at the Mine undergo General Induction Training before being allowed to commence work at the Mine. This includes specific training in flora and fauna risks, the location of Domains, vegetation and burrow clearance protocols (including Surface Disturbance Permits), cultural heritage and rehabilitation. Competency assessments are completed as part of this training.

Employees and permanent full-time contractors also undergo specific training undertaken as tool-box talks. This type of training is provided on an as-needed basis, for example, when introducing a new procedure such as the Surface Disturbance Permit process, or following identification of a new environmental risk, relevant changes in legislation or a change in operations. The Environmental Representative in consultation with the Environment and Community Manager (ECM) undertakes the identification of environmental training needs of personnel and the delivery method, including source material as appropriate.

10.0 Community Complaint Response

All biodiversity related community complaints received by WCPL will be recorded within the Community Complaints Register. The E&C Manager will investigate the complaint, which will include, where possible, contacting the complainant within 24 hours to discuss the complaint. A review of the effectiveness of the corrective or preventative actions will be conducted within a month of the complaint and the relevant work procedures updated if required.

Preliminary investigations will commence as soon as practicable upon receipt of a complaint to establish if WCPL is responsible. All efforts will be made to determine the likely causes contributing to the complainant's concerns.

WCPL will attempt to address the complainants concerns such that a mutually acceptable outcome is achieved. If a mutually beneficial outcome cannot be reached, WCPL may refer the matter to the Planning Secretary for resolution.

WCPL will retain a copy of the Community Complaints Register for at least four years. The ECM will ensure the latest Community Complaints Register is posted on the WCPL website.

11.0 Review and Reporting

11.1 Review

The performance of the biodiversity monitoring program (Section 7.0) will be reviewed annually by the E&C Manager. A complete review of the BMP will occur:

- Every two years;
- When there are changes to consent or licence conditions relating to biodiversity;
- Prior to new underground mining areas being developed;
- Following significant biodiversity related incidents at WCPL;
- Following continual exceedance of completion criteria;
- Following submission of an Annual Review;
- Following an independent environmental audit which requires BMP review; or
- If there is a relevant change in technology, practice or legislation.

The revised BMP will be re-submitted to the Planning Secretary for approval within 6 weeks of the review, as required by Condition D7 of DA305-7-2003 (and DA177-8-2004). A copy will also be submitted to the Commonwealth Minister for Environment for approval, in accordance with Condition 5 of EPBC approval 2003/1138.

If the Commonwealth Minister for Environment believes that it is necessary or desirable for the better protection of the listed threatened and migratory species to do so, the Minster may request that WCPL make specified revisions to the BMP approved and submit the revised plan for the Minister's approval.

The RWEA Monitoring Program (**Section 7.0**) may be reviewed 5 years after the date of the CAs. If the parties determine to vary the Monitoring Program, the parties may vary the CA under section 69D of the NPW Act to give effect to any agreed variation to the Monitoring Program.

11.2 Annual Review

Prior to the end of March each year, WCPL will review the environmental performance of the Mine and submit an Annual Review report to the DPIE. This report will:

- Describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;
- Include a comprehensive review of the monitoring results (including any statistical analysis and associated underlying assumptions) and complaints records of the development over the previous calendar year, which includes a comparison of these results against the:
  - Relevant statutory requirements, limits or performance measures/criteria;
  - Requirements of the BMP;
  - Monitoring results of previous years; and
  - Relevant predictions in the EA;
- Identify any non-compliance or incident over the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;

- Evaluate and report on compliance with the performance measures, criteria and operating conditions;
- Identify any trends in the monitoring data over the life of the development;
- Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- Describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.

A copy of the Annual Review will be forwarded to other relevant government agencies, including BCD.

11.3 Conservation Area Monitoring Report

After each Monitoring Event, WCPL's Ecologist will produce a monitoring report on the Conservation Area by 1 March of each year.

The Monitoring Report must include:

- A description of all completed management actions undertaken in the previous 12 month period;
- Copies of all receipts from third party contractors engaged by WCPL to undertake management actions listed in **Appendix G**;
- Completed monitoring data sheets (including photographs) using the template provided in **Appendix J;**
- A discussion of the changes recorded at monitoring points and quadrats;
- A discussion of the condition of conservation values (as described in **Sections 4.2.1.1** and **4.2.1.2**);
- A discussion of effectiveness of any management actions implemented; and
- Recommendations and proposed management actions to be performed in following year.

The Monitoring Report will be submitted to the Chief-Executive (BCD) by the end of March each year, as part of the.Annual Review.

11.4 Independent Audit of EPBC Approvals

Every 5 years WCPL will commission an Independent Audit of the compliance with the conditions of EPBC 2003/1138, in accordance with Condition 4 of EPBC 2003/1138.

WCPL will seek approval from the Commonwealth Minister for Environment for the appointment of the independent auditor, prior to the commencement of the audit. Audit criteria will be agreed to by the Minister and the audit report will address the criteria to the satisfaction of the Minister. A copy of the audit report will be submitted to the Minister at the completion of the audit.

Upon direction from the Minister, WCPL will ensure that an independent audit of compliance with the conditions of EPBC 2016/7816 is undertaken and a report submitted to the Minister, in accordance with Condition 7 of EPBC 2016/7816.

The last independent audit of the biodiversity offset strategy was undertaken by Cumberland Ecology in December 2019. Relevant recommendations from this audit have been considered in the development of this BMP.

11.5 Independent Environmental Audit

By the end of October 2020, and every 3 years, unless the Planning Secretary directs otherwise, WCPL will commission an Independent Environmental Audit of the development. This audit will:

- Be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary;
- Be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary;
- Be carried out in consultation with the relevant agencies and the CCC;
- Assess the environmental performance of the development and assess whether it is complying with the requirements in the development approvals, water licences and mining leases (including any assessment, strategy, plan or program required under these consents/approvals);
- Review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals;
- Recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and
- Be conducted and reported to the satisfaction of the Planning Secretary.

Within 3 months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, WCPL submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. Any recommendations will be implemented to the satisfaction of the Planning Secretary.

The last independent environmental audit of the Mine was undertaken by Hansen Bailey in September 2017. Relevant recommendations from this audit have been considered in the development of this BMP.

11.6 Website Updates

A comprehensive summary of the biodiversity monitoring results will be made publicly available at WCPL's website:

https://www.peabodyenergy.com/Operations/Australia-Mining/New-South-Wales-Mining/Wambo-Approvals,-Plans-Reports

Information on the website will be updated regularly as required by DA305-7-2003.

WCPL will also ensure that any information relevant to biodiversity management and monitoring is uploaded to the website (and kept up to date). This includes:

- Current statutory approvals and associated environmental assessments;
- Approved strategies, plans or programs required under the DA305-7-2003;
- Detailed plans for the Phases of the development;
- Minutes of Community Consultative Committee (CCC) meetings;
- A summary of the current phase and progress of the development;

- Contact details to enquire about the development or to make a complaint;
- A community complaints register, updated monthly;
- Annual Reviews;
- A copy of any Independent Audits and WCPL's response to any recommendations in any audit; and
- Any other matter required by the Planning Secretary.

11.7 Reportable Environmental Incidents

All reportable incidents will be reported via the EPA's Environmental Line on **131 555** by the E&C Manager in accordance with WCPL's Pollution Incident Response Management Plan (PIRMP).

In accordance with the PIRMP, WCPL must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of *Part 5.7* of the *POEO Act.* The notification will be made in writing to compliance@planning.nsw.gov.au.

For all other incidents that do not cause threatening material harm to the environment associated with the development, WCPL will notify the Planning Secretary and any other relevant agencies as soon as practicable after WCPL becomes aware of the incident.

Within 7 days of the date of the incident, WCPL will provide the Planning Secretary and any relevant agencies with a detailed report on the incident, including:

- The cause, time and duration of the event;
- Where possible the type, volume and concentration of every pollutant discharged as a result of the event;
- The name, address and business hours telephone number of employees or agents of the licensee who witnessed the event;
- The name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
- Action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
- Implement remediation measures as directed by the Secretary, to the satisfaction of the Planning Secretary;
- Details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
- Any other relevant matters.

12.0 Responsibilities

Table 29 below summarises responsibilities documented in the BMP. Responsibilities may be delegated as required.

Table 29: Biodiversity Management Plan Responsibilities

No	Task	Responsibility	Timing
1	Ensure biodiversity monitoring is undertaken in accordance with **Section 7.0**	Environmental Advisor	As required (refer **Section 7.0**)
2	Assess monitoring data against relevant completion criteria and interim performance indicators listed in **Section 5.0**	Environmental Advisor	Annually
3	Ensure Biodiversity Management Measures and Strategies outlined in Section 6.0 are implemented.	Environmental Advisor	Annually
4	Review BMP in accordance with **Section 11.0**.	Environmental Advisor	Annually
5	Notify government departments if an incident occurs in accordance with **Section 11.7**	E&C Manager	As required
6	Submit updated BMP to DPIE and Department of the Environment and Energy.	E&C Manager	As required
7	Biodiversity related complaints to be responded to in accordance with **Section 10.0**	E&C Manager	As required
8	Annual Review to include biodiversity monitoring results, complaints, mitigation measures undertaken and a review of the monitoring undertaken	E&C Manager	Annually
9	Regulator review to be undertaken of the BMP	E&C Manager	As required
10	Prepare investigation reports and implementation of corrective actions in accordance with **Section 11.7**	E&C Manager	As required
11	Liaise with government authorities to establish conservation agreements/bonds for RWEAs	E&C Manager	By Dec 2017
12	Ensure the Management Strategy is implemented	E&C Manager	As required (refer **Appendix G**).

13.0 References

- Advisian (2016). South Bates Extension Modification Surface Water Assessment. Report prepared for Wambo Coal Pty Limited.
- Biodiversity Conservation Act 2016
- Development Consent (DA177-8-2004)
- Development Consent (DA305-7-2003)
- Draft Conservation Agreements for Remnant Woodland Enhancement Areas (RWEAs) A, B, C, D & D Extension and RWEA Wambo Coal Terminal. 20 April 2016
- Eco Logical Australia (2015) South Bates (Wambo Seam) Underground Mine Modification Fauna Assessment. Report prepared for Wambo Coal Pty Limited.
- Eco Logical Australia (2016) South Wambo Underground Mine Modification Fauna Assessment. Report prepared for Wambo Coal Pty Limited.
- Eco Logical Australia (2017) South Bates Extension Modification Fauna Assessment. Report prepared for Wambo Coal Pty Limited.
- Environment Protection and Biodiversity Conservation Act 1999
- Environmental Planning and Assessment Act 1979
- EPBC 2003/1138, EPBC 2016/7816 & EPBC 2016/7636
- Fisheries Management Act 1994
- Florabank (1999 and 2000) Guidelines and Code of Practices for seed collection and use.
- FloraSearch (2015) South Bates (Wambo Seam) Underground Mine Modification Environmental Assessment – Flora Assessment. Report prepared for Wambo Coal Pty Limited.
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- Hunter Eco (2019). South Bates Underground Extension – Groundwater Dependent Ecostystems Vegetative Assessment. Report prepared for Wambo Coal Pty Ltd.
- Kovac, M. and Lawrie, J.W. (1991) Soil Landscapes of the Singleton 1:250,000 Sheet. Soil Conservation Service of NSW.
- Mine Subsidence Engineering Consultants (2017a) South Bates Underground Mine Subsidence Assessment – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan for WYLW11 to WYLW13 in the Whybrow Seam and WMLW14 to WMLW16 in the Wambo Seam. Report prepared for Wambo Coal Pty Limited.
- Mine Subsidence Engineering Consultants (2017b) Addendum to South Bates Underground Mine Subsidence Assessment – The Effects of the Modified Commencing End of Longwalls 14 to 16 on the Subsidence Predictions and Impacts Assessments for the Natural and Built Features in Support of an Application to Amend the Extraction Plan. Report Prepared for Wambo Coal Pty Limited.

- Mine Subsidence Engineering Consultants (2018). South Bates Extension Subsidence Assessment – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan Application for the South Bates Extension WYLW17 to WYLW20.
- Mine Subsidence Engineering Consultants (2019) South Bates Extension Subsidence Assessment – The Effects of the Modified Finishing Ends of Whybrow Longwalls 17 to 20 on the Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of an Application to Amend the Extraction Plan. Report prepared for Wambo Coal Pty Limited.
- Mine Subsidence Engineering Consultants (2020) South Bates Extension Subsidence Assessment – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan Application for the South Bates Extension WYLW21 to WYLW24.
- Mining Act 1992
- Mount King Ecological Services (2003) Terrestrial Fauna Assessment. Report prepared for Wambo Coal Pty Limited. Appendix HB of WCPL (2003) Wambo Development Project Environmental Impact Statement.
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- Wambo Environment Protection Licence (529)
- WCPL Mining Operations Plan/Rehabilitation Management Plan.

APPENDIX A
BIODIVERSITY MANAGEMENT PLAN STATUTORY REQUIREMENTS

<table>
<tr><th>Approval</th><th>Condition</th><th>Requirement</th><th>Section</th></tr>
<tr><td>DA305-7-2003</td><td>Condition B1</td><td>SUBSIDENCE - Subsidence Management Plan
Performance Measures – Natural and Heritage Features, etc
The Applicant must ensure that underground mining operations undertaken following the approval of Modification 9comply with the performance measures in Table 1.

Table 1: Subsidence Impact Performance Measures – Natural and heritage features etc
<table>
<tr><th>Biodiversity</th><th>Performance Measure</th></tr>
<tr><td>Wollemi National Park</td><td>Negligible subsidence impacts and environmental consequences.</td></tr>
<tr><td>Warkworth Sands Woodland Community</td><td>Minor cracking and ponding of the land surface or other subsidence impact.
Negligible environmental consequences</td></tr>
<tr><td>White Box, Yellow Box, Blakely’s Red Gum, Woodland/ Grassy White Box Woodland Community</td><td>Minor cracking and ponding of the land surface or other subsidence impact.
Negligible environmental consequences</td></tr>
<tr><td>Central Hunter Valley Eucalypt Forest and Woodland Ecological Community</td><td>Minor cracking and ponding of the land surface or other subsidence impact.
Negligible environmental consequences.</td></tr>
<tr><td>Conservation Areas (including the proposed Wambo offset area under SSD 7142)</td><td>Negligible reduction to previously identified biodiversity credits</td></tr>
<tr><td colspan="2">Notes:
1) The Applicant will be required to define more detailed performance indicators for each of these performance measures in the Extraction Plan (see condition B7 below).</td></tr>
</table></td><td>5.4</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B2</td><td>Measurement and monitoring of compliance with performance measures and performance criteria in this consent is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans and monitoring programs. In the event of a dispute over the appropriateness of proposed methods is to be settled by the Planning Secretary, following consultation with the relevant agency. Any decision by the Planning Secretary shall be final.</td><td>5.4 and 7.3</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B3</td><td>If the Applicant exceeds the performance measures in Table 1 and the Planning Secretary determines that:
(a) it is not reasonable or feasible to remediate the subsidence impact or environmental consequence; or
(b) remediation measures implemented by the Applicant have failed to satisfactorily remediate the subsidence impact or environmental consequence,
then the Applicant must provide an offset to compensate for the subsidence impact or environmental consequence, that is proportionate to the significance of the subsidence impact or environmental consequence, following consultation with BCD and to the satisfaction of the Planning Secretary.</td><td>5.4</td></tr>
</table>

Approval	Condition	Requirement	Section
DA305-7-2003	Condition B7	The Applicant must prepare an Extraction Plan for all second workings on the site to the satisfaction of the Planning Secretary. Each Extraction Plan must: … (c) provide updated predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed mining covered by the Extraction Plan, incorporating any relevant information obtained since this consent;	Refer to specific Extraction Plan and Appendix M and N of this Plan
		(d) describe in detail the performance criteria to be implemented to ensure compliance with the performance measures in Table 1 and Table 2, and manage or remediate any impacts and/or environmental consequences to meet the rehabilitation objectives in condition B104, including:	5.4 and 6.2
		(i) a trigger action response plan to identify risks and specific follow up actions to avoid exceedances of the performance measures; and	8.3
		(ii) a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of the performance measures, or where any such exceedance appears likely; …	8.2 and 8.3
		(f) include a: … (ii) Biodiversity Management Plan, which has been prepared in consultation with BCD, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on flora and fauna, with a specific focus on threatened species, populations and their habitats, EECs and groundwater dependent ecosystems; …	This Plan, particularly Section 6
		(g) include a program to collect sufficient baseline data for future Extraction Plans.	7.0
DA305-7-2003	Condition B8	The Applicant must not undertake second workings until the applicable Extraction Plan is approved by the Planning Secretary	Noted
DA305-7-2003	Condition B9	The Applicant must implement the Extraction Plan as approved by the Planning Secretary. Notes: Management plans prepared under condition B7(e) and (f) should address all potential impacts of proposed underground coal extraction on the relevant features. Other site-wide management plans required under this consent are not required to duplicate these plans or re-address the specific impacts associated with underground coal extraction.	Noted
DA305-7-2003	Condition B10	Conditions B7 to B9 do not apply to first or second workings which are covered by an Extraction Plan or Subsidence Management Plan approved, or submitted for approval, as at the date of determination of Modification 16.	Noted
DA305-7-2003	Condition B69	**Biodiversity Offset Strategy** The Applicant must implement the Biodiversity Offset Strategy set out in Table 9 and shown in Appendix 6, to the satisfaction of the Planning Secretary.	4.1 and 6.1.1

<table>
<tr><th>Approval</th><th>Condition</th><th>Requirement</th><th>Section</th></tr>
<tr><td>DA305-7-2003</td><td>Condition B70</td><td>Table 9: Biodiversity Offset Strategy
<table>
<tr><th>Area</th><th>Size</th></tr>
<tr><td>Remnant Woodland Enhancement Area A</td><td>424ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area B</td><td>454ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area C</td><td>211ha</td></tr>
<tr><td>Open Cut Woodland Revegetation</td><td>270ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area D</td><td>46ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area E</td><td>41.6 ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area D Extension</td><td>2ha</td></tr>
<tr><td>Remnant Woodland Enhancement Area for the Wambo Coal Terminal</td><td>As shown in Appendix 6</td></tr>
<tr><td colspan="2">Notes:
(a) The area of Open Cut Woodland Revegetation in Table 9 was previously 1,570 hectares. Under EA (Mod 16) this obligation was reduced to 270 hectares, with the remaining area being taken up by SSD 7142.
(b) Additional offsets may be required by the Planning Secretary under condition B3.</td></tr>
</table></td><td>4.1 and 6.1.1</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B71</td><td>The land used to satisfy the requirement to establish Open Woodland Revegetation under condition B69 cannot be the same land as land used for Open Woodland Revegetation or Ecological Mine Rehabilitation under SSD 7142. If the United Wambo open cut coal mine does not proceed to Phase 2 (as defined within SSD 7142), then the Applicant must establish an additional 1,300 hectares of Open Woodland Revegetation, as otherwise required under SSD 7142.</td><td>Noted</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B72</td><td>Long Term Security
The Conservation Agreement/s made under section 69B of the National Parks and Wildlife Act 1974 for the offset areas listed in Table 9 must remain in force in perpetuity.</td><td>6.1.1.1</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B73</td><td>Offset Conservation
The Applicant must not undertake any mining operations (except approved underground mining operations) or other activities within the offset areas listed in Table 9, other than:
(a) environmental management, environmental monitoring or other monitoring required under this consent or under an approved management plan or monitoring program;
(b) exploration and ancillary disturbance activities approved under a Biodiversity Management Plan or a Conservation Agreement; or
(c) rehabilitation activities under an approved Extraction Plan.</td><td>6.1.1.3 and 6.1.1.4</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B74</td><td>Strategic Study Contribution
If, during the life of the development, the Department commissions a strategic study into the regional vegetation corridor stretching from the Wollemi National park to the Barrington Tops National Park, then the Applicant must contribute $20,000 towards the completion of this study.</td><td>Noted</td></tr>
<tr><td>DA305-7-2003</td><td>Condition B75</td><td>Biodiversity Management Plan
The Applicant must prepare a Biodiversity Management Plan to the satisfaction of the Planning Secretary. This plan must:</td><td>This Plan</td></tr>
<tr><td></td><td></td><td>(a) be prepared by a suitably qualified and experienced person/s;</td><td>1.1</td></tr>
</table>

Approval	Condition	Requirement	Section
		(b) be prepared in consultation with BCD;	2.3
		(c) describe the short, medium, and long term measures to be undertaken to manage vegetation and fauna habitat on the site and in the offset areas;	Appendix G
		(d) describe how biodiversity management would be integrated with similar measures within the Water Management Plan referred to in condition B66 and the Rehabilitation Management Plan referred to in condition B107;	1.4
		(e) describe the measures to be implemented within approved disturbance areas on the site to: (i) minimise the amount of clearing and employ temporary vegetation strategies (see condition B106);	Refer to MOP/RMP See also Section 6.5 of this Plan and Appendices K and L
		(ii) minimise impacts on fauna, including undertaking pre-clearance surveys;	
		(iii) provide for the salvage, transplanting and/or propagation of any threatened flora found during pre-clearance surveys, in accordance with the Guidelines for the Translocation of Threatened Plants in Australia (Vallee et al., 2004);	
		(iv) minimise impacts on fauna habitat features such as tree hollows and termite mounds where reasonable and feasible; and	
		(v) maximise the salvage of resources, including bush rocks, tree hollows, fallen timber, vegetation and soil resources, for beneficial reuse, including fauna habitat enhancement;	
		(f) describe the measures to be implemented on the site to: (i) enhance the quality of vegetation, vegetation connectivity and fauna habitat including through the assisted regeneration and/or targeted revegetation of appropriate canopy, sub-canopy, understorey and ground strata;	6.1.2.4, 6.1.2.5, 6.1.2.6
		(ii) introduce naturally scarce fauna habitat features such as nest boxes and salvaged tree hollows and promote the use of these introduced habitat features by threatened fauna species;	6.1.2.3, 6.3.5
		(iii) manage any potential conflicts between these works and Aboriginal heritage values; and	6.1.1.4.10
		(iv) enhance riparian vegetation along the North Wambo Creek Diversion;	6.1.3
		(v) protect vegetation and fauna habitat outside of the approved disturbance areas;	6.1.1, 6.5
		(vi) manage potential indirect impacts on threatened flora and fauna species;	6.1.1.4.5, 6.5.3
		(vii) manage the collection and propagation of seed from the local area;	6.1.1.4.7 6.3.2
		(viii) control weeds, including measures to avoid and mitigate the spread of noxious weeds;	6.3.2.2
		(ix) control feral pests with consideration of actions identified in relevant threat abatement plans;	6.1.1.4.1, 6.3.2.3
		(x) control erosion;	6.3.4
		(xi) manage any grazing and agriculture;	6.1.2.2, 6.1.4
		(xii) control access to vegetated or revegetated areas; and	6.3.1
		(xiii) manage bushfire hazards;	6.1.1.4.3

Approval	Condition	Requirement	Section
		(g) describe the measures to manage the offset areas listed in Table 9 in accordance with any Conservation Agreement/s, including measures to: (i) enhance the quality of existing remnant vegetation; vegetation connectivity and fauna habitat;	6.1.1
		(ii) avoid clearing of Warkworth Sands EEC and minimise vegetation clearing generally for gas drainage infrastructure and exploration activities;	6.1.1.4 and Appendix F
		(iii) control weeds and feral pests; and	6.1.1.4.1
		(iv) limit vehicular traffic;	6.1.1.4.2
		(h) include a seasonally-based program to monitor and report on: (i) the effectiveness of the above measures;	7.0 and 11.2, 11.3
		(ii) quality of vegetation, vegetation connectivity and fauna habitat through assessment of landscape functionality, species diversity and abundance, vegetation dynamics and habitat complexity; and	
		(iii) improvements that could be implemented to improve biodiversity outcomes;	
		(i) identify the potential risks to the successful implementation of the Biodiversity Offset Strategy, and include a description of the contingency measures to be implemented to mitigate against these risks; and	8.1
		(j) include details of who would be responsible for monitoring, reviewing, and implementing the plan.	12.0
DA305-7-2003	Condition B76	The Applicant must not commence Phase 2 until the Biodiversity Management Plan is approved by the Planning Secretary.	Noted
DA305-7-2003	Condition B77	The Applicant must implement the Biodiversity Management Plan as approved by the Planning Secretary.	Noted
DA305-7-2003	Condition B78	**Conservation Bond** Within 6 months of the approval of the Biodiversity Management Plan referred to in condition B74 above, or other timeframe agreed by the Planning Secretary, the Applicant must lodge a Conservation Bond with the Department to ensure that the Biodiversity Offset Strategy is implemented in accordance with the performance and completion criteria in the Biodiversity Management Plan. The sum of the bond must be determined by: (a) calculating the remaining cost of implementing and managing the Biodiversity Offset Strategy at third party rates; and (b) employing a suitably qualified, independent and experienced person to verify the calculated costs.	6.1.1.1
DA305-7-2003	Condition B79	The calculation of the Conservation Bond must be submitted to the Department for approval at least 2 months prior to lodgement of the bond.	
DA305-7-2003	Condition B80	The Conservation Bond must be reviewed and, if required, an updated bond must be lodged with the Department within 3 months following: a) any update or revision to the Biodiversity Management Plan; b) the completion of an Independent Environmental Audit in which recommendations relating to the implementation of the Biodiversity Offset Strategy have been made; or c) in response to a request by the Planning Secretary,	

Approval	Condition	Requirement	Section
DA305-7-2003	Condition B81	If the Biodiversity Offset Strategy is completed generally in accordance with the performance and completion criteria in the Biodiversity Management Plan, to the satisfaction of the Planning Secretary, or if alternate funding arrangements are provided, the Planning Secretary will release the Conservation Bond.	
DA305-7-2003	Condition B82	If the Biodiversity Offset Strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Planning Secretary will call in all, or part of, the Conservation Bond, and arrange for the completion of the relevant works.	
DA305-7-2003 DA177-8-2004	Condition D4 Condition D5	**Adaptive Management** The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and performance measures in this consent. Any exceedance of these criteria or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria or performance measures has occurred, the Applicant must, at the earliest opportunity: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement reasonable remediation measures as directed by the Planning Secretary.	8.1
DA305-7-2003	Condition D5	**Management Plan Requirements** Management plans required under this consent must be prepared in accordance with relevant guidelines, and include where relevant: (a) summary of relevant background or baseline data;	3.0
		(b) details of: · the relevant statutory requirements (including any relevant consent, licence or lease conditions);	2.0 and this Appendix
		· any relevant limits or performance measures and criteria; and	5.0
		· the specific indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	5.0
		(c) any relevant commitments or recommendations identified in the documents listed in condition A2(c);	This Appendix
		(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	6.0
		(e) a program to monitor and report on the: · impacts and environmental performance of the development; · effectiveness of any management measures set out pursuant to paragraph (d);	7.0 and 11.2
		(f) a contingency plan 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;	8.0
		(g) a program to investigate and implement ways to improve the environmental performance of the development over time;	11.2, 11.4 and 11.5
		(h) a protocol for managing and reporting any: · incident, non-compliance or exceedance of any impact assessment criteria and performance criterion;	8.4 and 11.7
		· complaint; or	10.0 and 11.2
		· failure to comply with other statutory requirements; and	8.4 and 11.2
		i) a protocol for periodic review of the plan.	11.1

Approval	Condition	Requirement	Section
		Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	
DA305-7-2003 DA177-8-2004	Condition D6 Condition D6	**Revision of Strategies, Plans and Programs** Within 3 months of: (a) the submission of an incident report under Condition D8; (b) the submission of an Annual Review under Condition D10; (c) the submission of an Independent Audit Report under Condition D11; or (d) the approval of any modification (excluding Modification 16 to DA305-7-2003) to the conditions of this consent, The suitability of existing strategies, plans, and programs required under this consent must be reviewed by the Applicant.	11.1
DA305-7-2003 DA177-8-2004	Condition D7 Condition D7	If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review. Note: This is to ensure strategies, plans and programs are updated on a regular basis, and to incorporate any recommended measures to improve the environmental performance of the development.	11.1
DA305-7-2003 DA177-8-2004	Condition D8 Condition D8	**Incident Notification** The Applicant must immediately notify the Department and any other relevant agencies immediately after it becomes aware of an incident. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name) and set out the location and nature of the incident.	11.7
DA305-7-2003 DA177-8-2004	Condition D9 Condition D9	**Non-Compliance Notification** Within seven days of becoming aware of a non-compliance, the Applicant must notify the Department of the non-compliance. The notification must be in writing to compliance@planning.nsw.gov.au and identify the development (including the development application number and name), set out the condition of this consent that the development is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance. Note: A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.	8.4
DA305-7-2003 DA177-8-2004	Condition D10 Condition D10	**Annual Review** By the end of March each year, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development. This review must: (a) describe the development (including any rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year; (b) include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against: · relevant statutory requirements, limits or performance measures/criteria; - requirements of any plan or program required under this consent; · monitoring results of previous years; and · relevant predictions in the documents listed in condition A2(c);	11.2

Approval	Condition	Requirement	Section
		(c) identify any non-compliance or incident which occurred in the previous calendar year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence (d) evaluate and report on: (i) the effectiveness of the noise and air quality management systems; and (ii) compliance with the performance measures, criteria and operating conditions in this consent; (e) identify any trends in the monitoring data over the life of the development; (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and (g) describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.	
DA305-7-2003 DA177-8-2004	Condition D11 Condition D11	**Independent Environmental Audit** By the end of October 2020, and every 3 years after, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must: (a) be led by a suitably qualified, experienced and independent auditor whose appointment has been endorsed by the Planning Secretary; (b) be conducted by a suitably qualified, experienced and independent team of experts (including any expert in field/s specified by the Planning Secretary) whose appointment has been endorsed by the Planning Secretary; (b) be carried out in consultation with the relevant agencies and the CCC; (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent, water licences and mining leases for the development (including any assessment, strategy, plan or program required under the abovementioned approvals and this consent); (d) review the adequacy of strategies, plans or programs required under the abovementioned consents/approvals; (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned consents; and (f) be conducted and reported to the satisfaction of the Planning Secretary.	11.5
DA305-7-2003 DA177-8-2004	Condition D12 Condition D12	Within 3 months of commencing an Independent Environmental Audit, or other timeframe agreed by the Planning Secretary, the Applicant must submit a copy of the audit report to the Planning Secretary, and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of the recommendations. The recommendations must be implemented to the satisfaction of the Planning Secretary.	11.5
DA305-7-2003 DA177-8-2004	Condition D15 Condition D14	**Access to Information** Within three months of the determination of Modification 16/ Modification 3, until the completion of all rehabilitation required under this consent, the Applicant must: (a) make the following information and documents (as they are obtained, approved or as otherwise stipulated within the conditions of this consent) publicly available on its website: i. the documents referred to in Condition A2(c) ii. all current statutory approvals for the development; iii. all approved strategies, plans and programs required under the conditions of this consent;	11.6

Approval	Condition	Requirement	Section
		iv. detailed plans for the Phases of the development (Modification 16); v. minutes of CCC meetings (Modification 16); vi. regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; vii. a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; viii. a summary of the current phase and progress of the development; ix. contact details to enquire about the development or to make a complaint; x. a complaints register, updated monthly; xi. the Annual Reviews of the development; xii. audit reports prepared as part of any Independent Environmental Audit of the development, and the Applicant's response to the recommendations in any audit; xiii. any other matter required by the Planning Secretary; and (b) keep this information up-to-date, to the satisfaction of the Planning Secretary.	
DA177-8-2004	Condition D1	**Environmental Monitoring Program** The Applicant must prepare an Environmental Monitoring Program for the development, in consultation with the relevant agencies, and to the satisfaction of the Planning Secretary. This program must: (a) describe the measures to be implemented to comply with the relevant performance measures and operating conditions of this consent; (b) include a monitoring program to evaluate the performance of the development against the relevant performance measures in this consent; and …	7.2
DA177-8-2004	Condition D2	The Applicant must implement the Environmental Monitoring Program as approved by the Planning Secretary.	Noted
DA177-8-2004	Condition D13	**Monitoring and Environmental Audits** Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit. For the purposes of this condition, as set out in the EP&A Act, "monitoring" means monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an "environmental audit" means a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.	Noted
EPBC 2003/1138	Condition 1	The person taking the action must not clear any vegetation in the area designated as Remnant Woodland Enhancement Area A without the prior written agreement of the Minister.	6.1.1.3
EPBC 2003/1138	Condition 2	Prior to the commencement of the mine expansion, the person taking the action must submit for the Minister's approval a plan for managing the impacts of the mine expansion on listed threatened and migratory species. The plan must include measures to:	This Plan
		(a) define and implement an offsets strategy that provides: - protection in perpetuity for Remnant Woodland Enhancement Area A; and	6.1.1

Approval	Condition	Requirement	Section
		- long-term protection of Remnant Woodland Enhancement Areas B and C;	
		(b) define and implement a Remnant Woodland Enhancement Program that includes the fencing of remnants to exclude livestock, weed and feral animal management, restrictions on site access, and bushfire management	6.1.1
		(c) define and implement a Vegetation Clearance Protocol that includes the delineation of areas of remnant vegetation to be cleared, progressive clearing and the salvage and reuse of materials	6.5.2 and Appendix K
		(d) define and implement a Threatened Species Management Protocol that includes surveys for threatened species, the implementation of threatened species management strategies, and the development and implementation of a Flora and Fauna Monitoring Program	6.5.3 and Appendix L
		(e) define and implement a Project Area Rehabilitation Programme that includes progressive rehabilitation, erosion and sediment control, revegetation, and maintenance and monitoring	Refer to WCPL MOP/RMP
		(f) a process to review and report annually on this plan and the offsets strategy	11.2
		(g) outline a process for stakeholder consultation	2.3 and Appendix B
		The mine expansion must not commence until the plan has been approved. The approved plan must be implemented.	Noted
EPBC 2003/1138	Condition 3	Within three months of the date of this approval, the person taking the action must submit for the Minister's approval a plan for managing the impacts of the rail spur on listed threatened and migratory species. The plan must include measures for:	This BMP
		(a) the permanent protection and ongoing management of woodland areas in the vicinity of the rail spur;	6.1.1
		(b) defining and implementing a Vegetation Clearance Protocol;	6.5.2
		(c) a revegetation and landscaping plan that includes the fencing of woodland remnants to exclude livestock, weed and feral animal management, restrictions on site access, and bushfire management; and	6.1.1 and Appendix G
		(d) a process to review and report annually on this plan	11.2
		Construction of the rail spur must not commence until the plan has been approved. The approved plan must be implemented.	Noted
EPBC 2003/1138	Condition 4	Within five years of the commencement of this action, and every subsequent five years, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	11.4
EPBC 2003/1138	Condition 5	If the person taking the action wishes to carry out any activity otherwise than in accordance with the plans referred to in paragraphs 2 and 3, the person taking the action may submit for the Minister's approval a revised version of any such plan. If the Minister approves such a revised plan, that plan must be implemented in place of the plan originally approved.	11.1
EPBC 2003/1138	Condition 6	If the Minister believes that it is necessary or desirable for the better protection of the listed threatened and migratory species to do so, the Minster may request that the person taking the action make specified revisions to the plans approved pursuant to paragraphs 2 and 3 and submit the revised plan for the Minister's approval. The person taking the action must comply with any such request. The revised approved plan must be implemented	11.1
EPBC 2016/7816	Condition 1	The person taking the action must: a. Implement conditions 1, 2 and 2A of schedule 3 of the state development consent[1] to minimise the impacts of the action on protected matters.	Not specific to this Plan

[1] Development consent (DA305-7-2003) conditions referred to here have been superseded by conditions included in the modified consent, dated 29 August 2019.

Approval	Condition	Requirement	Section
		b. Implement environmental performance conditions 22, 22C, 22D and 23-39 of Schedule 4 of the state development[1]	5.4
		c. Notify the Department in writing of any proposed change to the conditions of the state development consent, referred to in conditions 1 a and 1 b, within 14 days of formally proposing a change or becoming aware of any other proposed change.	Not specific to this Plan
		d. Notify the Department in writing of any change to conditions of the state development consent, referred to in conditions 1 a to 1 b[1], within 14 days of a change to conditions being finalised.	Not specific to this Plan
EPBC 2016/7816	Condition 2	Within 30 days after the commencement of the action, the person taking the act on must advise the Department in writing of the actual date of commencement of the action.	Noted
EPBC 2016/7816	Condition 3	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans and strategies required by conditions 22, 22C, S22D and 23-39 of Schedule 4 of the state development consent[1] on their website. Each management plan and strategy must be published on the website within 1 month of being approved by the Secretary and remain there for a period of no less than 5 years.	11.6
EPBC 2016/7816	Condition 4	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans and strategies required by conditions 22, 22C, 22D and 23-39 of Schedule 4 of the state development consent[1], and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of this approval.	7.3
EPBC 2016/7816	Condition 5	By 31 March of each year after the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans and strategies required by conditions 22, 22C, 22D and 23-39 of Schedule 4 of the state development consent[1] over the previous calendar year and provide documentary evidence providing proof of date of publication to the Department, by email to EPBCMonitoring@environment.gov.au (or another email address as stipulated by the Department). The person taking the action must continue publishing annual compliance reports and make reports available on their website for the life of the approval, unless agreed in writing by the Minister.	11.2, 11.3, 11.6
EPBC 2016/7816	Condition 6	Any potential or actual contravention of the conditions of this approval, including contravention of a commitment made in a management plan or strategy required by conditions 22, 22C, 22D and 23-39 of Schedule 4 of the state development consent[1] must be reported to the Department no later than 7 days of the person taking the action becoming aware of the actual or potential contravention, by email to EPBCMonitoring@environment.gov.au or an address as stipulated by the Department.	11.7
EPBC 2016/7816	Condition 7	Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	11.4
EPBC 2016/7816	Condition 8	If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister	Noted
CAs – Wambo Coal Terminal RWEP and RWEAs	Condition 5	**Use of the Conservation Area** The Owner must not undertake, consent to or permit the following activities on or in the Conservation Area, unless provided for under the Conservation Agreement or with prior written consent of the Chief-Executive: (a) the sowing or planting of trees, grasses or other plants; (b) the introduction of any non-indigenous plants or non-indigenous fauna; (c) the entry of domestic animals including pets (except for the Owner's domestic pets, and only if kept under control/on a leash) and domestic livestock;	6.1.1.3

Approval	Condition	Requirement	Section
		(d) the use or application of fertilizers or pesticides; (e) the use of trail bikes, four wheel drive vehicles or any other vehicle off any formed road (except for management purposes, research, firefighting and/or any emergency requirements); (f) any works, especially any revegetation work, or any development which has the potential to adversely impact on any of the Conservation Values; (g) the removal of any biological or inorganic component of the Conservation Area; (h) any works which will adversely affect the natural flows of water; (i) grazing of domestic livestock; (j) any act or omission that may harm any native fauna, native plants, their habitats, cultural heritage or geo-heritage in the Conservation Area or the Conservation Values; (k) the construction of any new road, access track, trail, building or internal fencing; and (l) subdivide the Conservation Area.	
CAs – Wambo Coal Terminal RWEP and RWEAs	Condition 6	**Management of the Conservation Area** 1. The Owner must undertake the management activities listed in Item 1 of Annexure C to the Conservation Agreement on or in the Conservation Area, at the times specified in Item 1 of Annexure C to the Conservation Agreement, for a minimum period of 10 years from the Commencement date.	Appendix G
		2. The Owner must undertake the management activities listed in Item 2 of Annexure C to the Conservation Agreement on or in the Conservation Area, from Year 11 for the duration of the Conservation Agreement.	Noted – not included in this version of the BMP (will be included in future versions)
		3. The Owner may undertake the management activities listed in Item 3 of Annexure C to the Conservation Agreement on or in the Conservation Area, if carried out in the manner prescribed in Item 3 of Annexure C to the Conservation Agreement.	6.1.1.4
		4. The Owner must notify the Chief-Executive in writing as soon as possible after becoming aware of the deterioration of any of the Conservation Values, or of any threat to the Conservation Values.	8.1
CAs – Wambo Coal Terminal RWEP and RWEAs	Condition 7	**Monitoring** 1. The Owner must engage a suitably qualified ecologist to undertake the monitoring program as set out in Annexure D to the Conservation Area (Monitoring Program).	7.2
		2. The Monitoring Program must be undertaken, beginning in 2016, for a minimum period of 10 years.	7.2
		3. The Monitoring Program may be reviewed and updated throughout the duration of the Conservation Agreement with prior written approval from OEH.	11.1
CAs – Wambo Coal Terminal RWEP and RWEAs	Condition 8	**Reporting Obligations** Following completion of the Monitoring Program the Owner should from time to time (i.e. as part of the Annual Environmental Management Report/Annual Review), complete a monitoring report, including photo-point photos, noting changes occurring in the Conservation Area. This will form the basis for decisions about ongoing management actions for the Conservation Area. A copy of all monitoring reports should be forwarded to OEH.	11.2 and 11.3

Approval	Condition	Requirement	Section
CAs – Wambo Coal Terminal RWEP and RWEAs	Condition 13	**Non-compliance** In the event that the Owner fails to comply with the Conservation Agreement, including, without limitation, damaging or causing damage to the Conservation Area, OEH may issue a written notice to the Owner requiring the Owner to remedy the non-compliance or damage within a specified time period. This clause does not affect any rights of the parties under section 69G of the NPW Act.	Noted
CA – Wambo Coal Terminal RWEP	Annexure B	**Conservation Values** The Owner and the Minister recognise that the Conservation Area contains the following conservation values: The Conservation Area contains: • MU10 Central Hunter Box – Ironbark Woodland (Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions listed as an Endangered Ecological Community under Schedule 2 of the BC Act and Critically Endangered under the EPBC Act) (also HU551 Biometric Vegetation Type); • MU14 – Warkworth Sands Woodland (Warkworth Sands Woodland in the Sydney Basin Bioregion listed as an Endangered Ecological Community under Schedule 2 of the BC Act EEC); and • G - Secondary Native Grassland. The Conservation Area contains habitat suitable for fauna species listed as Endangered (seven species), Vulnerable (37 species) and Critically Endangered (two species), under Schedules 1of the BC Act plus 10 species listed only under the EPBC Act (refer to table 1 Annexure B). The Conservation Area contains registered Aboriginal sites (open artefact sites 37-6-1131 and 37-6-0594). The Conservation Area is adjacent to remnant bushland areas (i.e. Wollemi National Park [Figure 1]). Wollemi National Park is part of the Greater Blue Mountains World Heritage Area, which covers approximately 1 million ha and supports an exceptional number of threatened flora and fauna species.	4.2.1.2
CA – RWEAs	Annexure B	**Conservation Values** The following conservation values apply to RWEAs A-D: • MU7 - Narrabeen Footslopes Slaty Box Woodland, Biometric Vegetation Type HU618. Also recognised as Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (listed as Vulnerable under the BC Act and Critically Endangered under the EPBC Act); • MU10 - Central Hunter Box – Ironbark Woodland, Biometric Vegetation Type HU551. Also recognised as Central Hunter Grey Box-Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions (listed as Endangered under the BC Act and Critically Endangered under the EPBC Act); • MU12 - Southern Hunter Escarpment Spotted Gum Woodland; • MU13 - Hunter Floodplain Red Gum Woodland Complex, Biometric Vegetation Type HU599 95% cleared within the Hunter-Central Rivers CMA. Also recognised as Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions (listed as Endangered under the BC Act);	4.2.1.1

Approval	Condition	Requirement	Section
		• MU14 - Warkworth Sands Woodland (Warkworth Sands Woodland in the Sydney Basin Bioregion listed as an Endangered Ecological Community under Schedule 2 of the BC Act EEC); • MU17 - Central Hunter Paperbark Soak Woodland (HU564 Biometric Vegetation Type - 80% cleared within the Hunter-Central Rivers CMA); • MU22 - Wollombi Alluvial Red Gum – Apple Forest; • MU30 - Hunter Valley River Oak Forest; • 8 - Native Olive-Scrub Wilga Woodland; and • G - Secondary Native Grassland. The Conservation Area contains habitat suitable for fauna species listed as Endangered (seven species), Vulnerable (37 species) and Critically Endangered (two species), respectively under the BC Act plus 10 species listed only under the EPBC Act (refer **Table 4**). The Conservation Area contains extensive registered Aboriginal sites, including open artefact sites, grinding grooves, isolated finds and potential archaeological digs. The Conservation Area is adjacent to remnant bushland areas (i.e. Wollemi National Park). Wollemi National Park is part of the Greater Blue Mountains World Heritage Area, which covers approximately 1 million ha and supports an exceptional number of threatened flora and fauna species.	
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Item 1: Management actions for a minimum period of 10 years** Refer to Annexure C, Item 1 of the Conservation Agreements.	Appendix G
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Item 2: Management actions for the Conservation Agreements from Year 11 onwards** Refer to Annexure C, Item 2 of the Conservation Agreements.	Noted – not included in this version of the BMP (will be included in future versions)
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Item 3: Permitted Activities** Control of pest animals and non-indigenous fauna (in addition to pest animal control management actions in Items 1 and 2 of Annexure C to the Conservation Agreement) a) Participate in community pest animal control programs and encourage neighbours to implement pest animal control programs. Contact your local National Parks and Wildlife Service Area office to find out where community control programs are occurring.	6.1.1.4.1
CAs – Wambo Coal Terminal	Annexure C	**Fencing, tracks and trails** b) Maintaining all existing fences within the Conservation Area.	6.1.1.4.2

Approval	Condition	Requirement	Section
RWEP and RWEAs		c) Maintaining existing access tracks in the Conservation Area to a maximum width of 2m. d) Maintaining existing access trails in the Conservation Area to a maximum width of 4m with 1m either side permissible for clearing. e) Construction of any new internal fence, access track or trail only with prior written approval from OEH or DPE (excluding cases of emergency, e.g. bushfire risk/control).	
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Fire management** (in addition to fire management actions in Item 1 of Annexure C to the Conservation Agreement) f) Using fire hazard reduction burns and controlled burning which take into account the recommended fire intervals given in the Bush Fire Environmental Assessment Code for New South Wales (Rural Fire Service February 2006) and the guidelines contained in the Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code or equivalent replacements. Current recommendations are: • in the Warkworth Sands Woodland in the Sydney Basin Bioregion EEC, no fire more than once every 10 years and no slashing, trittering or tree removal relating to mechanical forms of hazard reduction. • in general, at least 50% of the EEC/CEEC within each LGA must exist in a state that has been burnt less frequently than the minimum fire interval. • both live and dead trees with hollows should be protected from burning to preserve nesting habitat for hollow dwelling animals. g) lighting a fire, or causing a fire to be lit on the Conservation Area if it complies with the Rural Fires Act 1997 (NSW), and: • the lighting of the fire is for the purposes of controlled burning and is carried out in accordance with any fire guidelines for controlled burning as provided for in Annexure C to the Conservation Agreement; or • the lighting of the fire is a necessary component of bush fire hazard reduction work carried out in accordance with a notice served on the Owner under the Rural Fires Act 1997 (NSW) or other applicable legislation; or • life or property is in immediate threat by bush fire and the lighting of the fire is reasonably necessary to protect life or property; or • the fire is a camp fire, subject to the compliance with the Rural Fires Act 1997 (NSW), or • the Chief-Executive gives prior written consent to the lighting of the fire.	6.1.1.4.3
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Use of timber** h) Harvesting of fallen non-hollow wood in amounts necessary for heating the Owner's dwelling on the Land and camp fires on the Conservation Area and for fencing the Conservation Area.	6.1.1.4.4
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Threatened species** (in addition to management actions in Item 2 of Annexure C to the Conservation Agreement) i) Implementing any measures included in recovery plans for any threatened species, population or ecological communities which are or may be found in the Conservation Area. j) Implementing other specific management advice from OEH for any threatened species, populations or ecological communities which are or may be found in the Conservation Area.	6.1.1.4.5 and Appendix L
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Restoration of indigenous vegetation** k) Restoration of native vegetation on the Conservation Area using a preferred method of encouraging and retaining natural regeneration. Preferred methods include: i) bush regeneration ii) brush mulching; and/or iii) direct seeding. l) Revegetation to establish indigenous plants to maintain the vegetation structure in keeping with the identified vegetation community, using species produced from material sourced locally and without fertilisers, where the ability to regenerate naturally within a reasonable time frame has been lost, or to prevent soil erosion.	6.1.1.4.6

Approval	Condition	Requirement	Section
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Seed collection** m) Collection of seed on the Conservation Area for non-commercial use in accordance with Guidelines and Codes of Practice as given in the Florabank guidelines (http://www.florabank.org.au), and the following limitations and permissions: i) Collect seed in the Conservation Area only if seed of the particular species and genotype is not available elsewhere, or if the seed collected is intended for seedlings that will be planted within the Conservation Area or adjacent to the Conservation Area. ii) Seeds may be collected from within endangered ecological communities. iii) Seeds may not be collected from species individually listed in Schedules 1or 2 to the BC Act without prior written approval from the Chief-Executive, or under a licence granted under section 132C of the NPW Act or section 91 of the BC Act. iv) Seeds may be collected from any protected species listed in Schedule 13 to the NPW Act. v) Seeds may be collected from any other native species.	6.1.1.4.7
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Cultural heritage** o) Recording and management of any newly identified Aboriginal Objects, in consultation with OEH (and the Aboriginal community where applicable).	6.1.1.4.10
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Visitation and research** p) Visitation, research and community use at a level that does not adversely impact on the Conservation Values or the amenity of the Owner. Research projects must be discussed with OEH before being carried out.	6.1.1.4.11
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure C	**Development** q) Carrying out any development as described in the Conservation Agreement and maintaining development (including existing fire trails, access trails and infrastructure), with the following conditions: i) clear a corridor not greater than 3 metres wide during construction or for maintenance for the installation of fences or other agreed rural structures; ii) construct and maintain fences to ensure they are stockproof; iii) move fallen timber and any other obstructions to maintain access; iv) where clearing is necessary, undertake all works in a manner that minimises disturbance to soil and hydrological characteristics; and v) remove old fences and close unwanted tracks within the Conservation Area and facilitate restoration of native vegetation by allowing natural regeneration.	6.1.1.4.12
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure D	**Monitoring Program** (a) The Owner must instruct a suitably qualified ecologist (Ecologist) to undertake a monitoring event in each year, beginning in 2015 (Monitoring Event).	7.2
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure D	(b) Each Monitoring Event must include: i) photo monitoring - a photo is required to be taken at each of the two monitoring photo points. Photos must be taken from the exact location and bearing to allow subsequent comparison and assessment. Photo point locations are provided in Table 1 of Annexure D to the Conservation Agreement (below). Baseline photographs are provided in Annexure A to the Conservation Agreement; ii) quadrant monitoring – quadrant data must be collected at each of the two floristic quadrat monitoring sites. Quadrant locations and baseline quadrat scores in October 2015 are shown in tables 1 and 2 of Annexure D. Results must be compared to baseline and benchmark quadrat. iii) a walk through assessment to record opportunistic sightings within the Conservation Area including:	7.2

Approval	Condition	Requirement	Section
		i. fire events or management ii. weeds (including compiling a list of exotic species and recording new weed infestations including location and extent) iii. pest animals (species and location must be recorded, including evidence of pest animals such as burrows, scats or disturbance) iv. visitor impact and vehicle access (including evidence of any recent usage, and the presence of any new access tracks) v. rubbish dumping vi. natural regeneration of previously disturbed areas; and vii. sightings of threatened species.	
CAs – Wambo Coal Terminal RWEP and RWEAs	Annexure D	(c) After each Monitoring Event, the Ecologist must produce a monitoring report on the Conservation Area of each year, beginning in [2016] (Monitoring Report). The Monitoring Report must include: 1. a description of all completed management actions undertaken in the previous 12 month period; 2. copies of all receipts from third party contractors engaged by the Owner to undertake management actions listed in items 1 and 2 of Annexure C to the Conservation Agreement; 3. completed monitoring data sheets (including photographs) using the template provided in Table 4 of Annexure D to the Conservation Agreement; 4. a discussion of the changes recorded at monitoring points and quadrats; 5. a discussion of the condition of Conservation Values; 6. a discussion of effectiveness of any management actions implemented; and 7. recommendations and proposed management actions to be performed in following year. The Monitoring Report must be submitted to OEH within 14 days of it being received by the Owner.	11.3
United Wambo Project EIS	Appendix 13, Section 10.2	**Pre-clearance Surveys and Tree Felling Supervision** A robust tree felling procedure will be implemented to minimise the potential for impacts on native fauna species (including threatened species) and a result of the clearing of hollow-bearing trees. The procedure will detail the necessary pre-clearing activities, requirements during clearing operations, and post-clearing requirements. The procedure will include pre-clearing surveys and hollow-bearing tree felling procedures.	6.1.1.4.5, 6.5, Appendices K and L (see also the WCPL MOP/ RMP)
United Wambo Project EIS	Appendix 13, Section 10.2.1	**Burrow Clearing Procedure** A burrow clearing procedure will be implemented to minimise the potential for impacts on wombats as a result of the digging up of wombat burrows. The procedure will detail the necessary pre-clearing activities, requirements during clearing operations, and post-clearing requirements.	6.5.2, Appendix K
United Wambo Project EIS	Appendix 13, Section 10.3	**Weed Control** Existing weed management controls at Wambo will be incorporated into the Biodiversity Management Plan. Weed control will be undertaken in accordance with current mine practices and, for noxious weed species, with NSW control guidelines. Regular weed inspections will be undertaken across the Project Area and appropriate weed control methods will be implemented.	6.1.1.4.1, 6.3.2.2 and Appendix G
United Wambo Project EIS	Appendix 13, Section 10.4	**Pest and Feral Animal Control** Pest and feral animal controls at Wambo will be incorporated into the Biodiversity Management Plan. Pest and feral animal control will be undertaken in accordance with current mine practices and in consideration of the UHSA mitigation guidelines (OEH 2015c).	6.1.1.4.1, 6.3.2.3 and Appendix G

Approval	Condition	Requirement	Section
		Regular monitoring of revegetation areas and retained areas will be undertaken to assess the level of impact by feral animals, particularly on vegetation establishment. Feral animal control works will be undertaken periodically to provide for the suppression of feral animals, and this will be undertaken in a manner that is sympathetic to ecological outcomes.	
United Wambo Project EIS	Appendix 13, Section 10.5	**Fencing and Access Control** Any new fencing used within the Project Area adjacent to native vegetation areas will where possible remove the use of barbed wire especially in the top two strands and replace with plain wire. The use of as few wire strands as practical will be considered to reduce the potential for fauna entanglement, particularly by macropods.	6.1.1.4.2, 6.3.1

United Wambo Project EIS	Appendix 13, Section 10.6	**Domestic Stock**
		The following mitigation measures will be undertaken to manage the impacts of grazing by domestic stock:
		• Stock grazing will not be undertaken in areas of high biodiversity values.
		• Where livestock are being used to remove vegetation by crash grazing the following principles will be considered:
		  ○ Allow the stock to feed intensively in a defined area only for short periods
		  ○ Undertake crash grazing between autumn and mid-spring
		  ○ Manage the movement of livestock using fencing (temporary or permanent)
		  ○ Monitor feed levels so that overgrazing does not occur.
		• Where possible ground cover will be maintained towards 100%
		• The grazing pressure from other herbivores (e.g kangaroos, wallabies, rabbits and hares) is to be reviewed in the context of the domestic stocking rate that can be utilised.
			6.1.2.2

United Wambo Project EIS	Appendix 13, Section 10.8	**Bushfire Management** Appropriate bushfire management controls will be considered in the development of the Biodiversity Management Plan.	6.1.1.4.3
United Wambo Project EIS	Appendix 13, Section 10.9	**Fauna Habitat Enhancement and Re-instatement** In parallel with revegetation works in mine site rehabilitation areas, the Project will re-establish ground fauna habitat through the relocation of cleared vegetation to targeted mine site rehabilitation areas, where practicable.	6.1.2.3
United Wambo Project EIS	Appendix 13, Section 10.10	**Employee Education and Training** Inductions for staff, contractors and visitors will be undertaken to makes them aware of the ecological issues present in the Project Area. Inductions will identify the location of sensitive flora and fauna and the policies being implemented to protect the biodiversity values of such areas.	9.0

APPENDIX B STAKEHOLDER CONSULTATION

Summary of Stakeholder Consultation undertaken for this version (Version 1) of the Biodiversity Management Plan

Date	Stakeholder	Description
20 March 2020	BCD	Version 0 provided to BCD for comment.
3 May 2020	BCD	Comments received from BCD on BMP Version 0 - – see Table below .
tba	DPIE, BCD	Version 1 submitted to DPIE for approval with the Extraction Plan for Longwalls 21-24 (comments from BCD on Version 0 addressed as per attached correspondence)

BCD Comments on Version 0 of the BMP and WCPL Response

BCD Recommendation (3 May 2020) (refer to full correspondence in pages following)	WCPL response
1. BCD recommends that changes are made to the colour ramp in the vegetation communities map, Figure 3, to make it easier for the reader to identify each vegetation community shown.	Complete
2. BCD recommends that the same colour scheme from Figure 3 is applied to Figure 9 to allow ready comparison between both figures.	Complete Figure 9 (now Figure 10 in Version 1) is consistent with Figure 3
3. BCD recommends that the revised Biodiversity Management Plan includes a figure showing the location of threatened species recorded on the Wambo Mine land.	Complete – refer to new Figure 4 Threatened Flora and Fauna Species Records at Wambo Mine
4. BCD recommends that at least two BioMetric plots are established to take a representative sample of areas of riparian rehabilitation, and that floristic data is collected in areas of pasture rehabilitation in order to better understand Landscape Function Analysis results, and to gauge whether rehabilitation goals are likely to be met.	Agreed - : • in 2020 two BioMetric plots will be established in the North Wambo Creek Diversion, and • from 2020 BioMetric data will be collected from pasture rehabilitation areas to allow assessment against completion criteria.
5. BCD recommends that Table 9 and Table 13 include the minimum and maximum values measured in each zone as well as the average value.	Complete - Relevant minimum and maximum values added to Tables 9 and 13
6. BCD recommends that all BioMetric field data collected from the rehabilitation areas is provided in the Annual Review.	Complete - BioMetric data from woodland rehabilitation areas has been added to Table 10. This data is also provided in the annual biodiversity monitoring report.

Summary of Stakeholder Consultation undertaken for the Previous Iterations of the Biodiversity Management Plan

Date	Stakeholder	Description
	DPE, OEH, Division of Resources and Energy (DRE) and Department of Primary Industries (DPI) – Fisheries	North Wambo Underground (NWU) Longwalls (LWs) 7-8
	DPE and OEH	NWU LWs 7-10
	DPE and OEH	NWU LWs 8-10A
	DPE	South Bates Underground (SBU) LWs 11-13
	OEH	Implementation of the CAs
	CCC, members of the local community	Any comments that were received during this consultation process were addressed by WCPL during the EP application process.
July 2016	OEH and the Commonwealth Department of Environment and Energy (DoEE)	WCPL provided a copy of the BMP (Rev 10) for comment. DoEE approved Rev 10 of the BMP under Condition 5 of EPBC 2003/1138 on 17 November 2016.
16 Aug 2016	OEH	Comments on BMP (Rev 10) received from OEH
12 Oct 2016	OEH	BMP (Rev 11) provided to OEH with an explanation of the changes made to address comments received from the OEH
28 Oct 2016	OEH	BMP (Rev 12) provided to OEH with updates to incorporate Longwalls 11 to 16 at the South Bates Underground Mine
1 Nov 2016	OEH	OEH advised that BMP (Rev 12) incorporated the changes made to address the OEH's comments provided on 22 July 2016. OEH indicated it would not be providing additional comments on BMP (Rev 12).
June 2017	DPE	Comments were received from DPE in relation to BMP (Rev 12). These comments were addressed in BMP (rev 13)
11 Oct 2017	DPE	DPE approved BMP (Rev 13)
Feb 2018		BMP was amended to include South Bates Underground Extension Longwalls17 to 20
7 Sept 2018		BMP (Rev 14) approved for Longwall 17 and the Wambo Mining Complex
1 Apr 2019	OEH	OEH provided comments on the BMP (Rev 15) – refer attached
4 June 2019	DPE	DPE approved BMP (Rev 16)

Peabody

NSW GOVERNMENT | Planning, Industry & Environment

Our ref: DOC20/238396-3
Your ref: DA 305-7-2003

Nicole Dobbins

Senior Environmental Advisor
Wambo Coal Mine
Peabody Australia
ndobbins@peabodyenergy.com

Dear Ms Dobbins

Wambo Coal Mine Revised Biodiversity Management Plan

I refer to your e-mail dated 20 March 2020 in which Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment was invited to review the revised Biodiversity Management Plan for the South Bates Extension Underground Mine prepared by Wambo Coal Pty Limited (dated March 2020). The Biodiversity Management Plan forms part of the Extraction Plan for the South Bates Extension Underground Mine, Longwalls 21 to 24, but covers all biodiversity issues for the Wambo Mine site.

BCD has reviewed the revised Biodiversity Management Plan and BCD's recommendations are provided in **Attachment A**. Detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154 or via email at rog.hcc@environment.nsw.gov.au

Yours sincerely

03 May 2020

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division

Enclosure: Attachments A and B

Attachment A

BCD's recommendations

Wambo Coal Mine Revised Biodiversity Management Plan

1. BCD recommends that changes are made to the colour ramp in the vegetation communities map, Figure 3, to make it easier for the reader to identify each vegetation community shown.

2. BCD recommends that the same colour scheme from Figure 3 is applied to Figure 9 to allow ready comparison between both figures.

3. BCD recommends that the revised Biodiversity Management Plan includes a figure showing the location of threatened species recorded on the Wambo Mine land.

4. BCD recommends that at least two BioMetric plots are established to take a representative sample of areas of riparian rehabilitation, and that floristic data is collected in areas of pasture rehabilitation in order to better understand Landscape Function Analysis results, and to gauge whether rehabilitation goals are likely to be met.

5. BCD recommends that Table 9 and Table 13 include the minimum and maximum values measured in each zone as well as the average value.

6. BCD recommends that all BioMetric field data collected from the rehabilitation areas is provided in the Annual Review.

BCD's detailed comments

Wambo Coal Mine Revised Biodiversity Management Plan

1. The colour ramp for the vegetation map includes colours that are difficult to distinguish

Figure 3 'Floristic Communities' of the Biodiversity Management Plant (BMP) has a colour ramp with some colours that are difficult to distinguish on the map. This is so for the two yellow shades in the current map (Coastal Myall Shrubland and Weeping Myall Woodland), the two pale blue shades (Narrow-leaved Ironbark – Grey Box Woodland and Native Quince – Rust Fig Dry Rainforest) and the two pink tones (Forest Red Gum – Rough-barked Apple – River Sheoak Forest (Disturbed) and Spotted Gum – Narrow-leaved Ironbark – Grey Box Woodland).

Recommendation 1

BCD recommends that changes are made to the colour ramp in the vegetation communities map, Figure 3, to make it easier for the reader to identify each vegetation community shown.

2. Inconsistent colours for vegetation communities in Figure 5 are confusing

Figure 9 'RWEA A – E Flora Communities' of the BMP uses different colours to represent the same vegetation communities within the six Remnant Woodland Enhancement Areas (RWEAs).

Recommendation 2

BCD recommends that the same colour scheme from Figure 3 is applied to Figure 9 to allow ready comparison between both figures.

3. A map of threatened species recorded on the Wambo Mine Land will flag areas for different management

Sections 3.6.1 and 3.6.2 of the BMP list threatened flora species and fauna species, that are known or are considered likely to occur on the Wambo Mine lands. However, the report does not include a figure showing the locations of the threatened species. Such a figure would help identify areas of higher biodiversity values that may require different management, as per the *Wambo Coal Threatened Species Management Protocol* given in Appendix L of the BMP.

Recommendation 3

BCD recommends that the revised Biodiversity Management Plan includes a figure showing the location of threatened species recorded on the Wambo Mine land.

4. Species composition and plant structure data add value to Landscape Function Analysis results

Section 3.6.5 of the BMP discusses how Landscape Function Analysis (LFA) is used to measure and monitor rehabilitation success. LFA is an index of surface stability, water infiltration and nutrient cycling but it does not collect or present data on the plant species on a site. Therefore, a positive trend in LFA values may be due to an increase in the cover and abundance of an invasive exotic grass species, or the persistence of annual species, rather than the establishment of perennial species, which may not meet overall rehabilitation objectives. Figure 12 (Floristic and Habitat Monitoring Sites) and Figure 13 (LFA Monitoring

Locations) shows that floristic data is collected near LFA sites near areas of woodland regeneration.

Recommendation 4

BCD recommends that at least two BioMetric plots are established to take a representative sample of areas of riparian rehabilitation, and that floristic data is collected in areas of pasture rehabilitation in order to better understand Landscape Function Analysis results, and to gauge whether rehabilitation goals are likely to be met.

5. Completion Criteria needs to be applied to individual sites rather than an average of sites

Section 5 of the BMP discusses Completion Criteria for rehabilitation areas using averaged values of sites in each plant community type or other management zone. However, using average values can mask problem areas. Including the minimum and maximum values measured in each zone as well as the average value in Table 9 and Table 13 would identify rehabilitation zones that are all performing well, and any zones where there may be some areas that require additional management.

Recommendation 5

BCD recommends that Table 9 and Table 13 include the minimum and maximum values measured in each zone as well as the average value.

6. Background data behind monitoring provides more meaning to monitoring results

Chapter 7 of the BMP describes the biodiversity monitoring program for rehabilitation areas of the Wambo Mine. It includes the collection of data using the BioMetric method. The BioMetric method collects data for ten attributes. The presentation of the background data for the BioMetric method, such as the flora species found and their cover and abundance, enables the BioMetric results to be better understood. This in turn helps identify if rehabilitation issues may be present, and whether rehabilitation outcomes are likely to be met.

Recommendation 6

BCD recommends that all BioMetric field data collected from the rehabilitation areas is provided in the Annual Review.

Peabody

NSW GOVERNMENT Office of Environment & Heritage

DOC19/198692-20
DA 305-7-2003 MOD 17

Ms Melanie Hollis
Senior Planning Officer
Resource Assessments & Planning Services
Department of Planning & Environment
melanie.hollis@planning.nsw.gov.au

Dear Melanie

Wambo South Bates Extension – Amended Extraction Plan for Longwalls 17 to 20

I refer to your e-mail dated 8 March 2019 from the Department of Planning and Environment inviting the Office of Environment and Heritage (OEH) to comment on Wambo's amended *South Bates Extraction Plan for Longwalls 17 to 20.* The plan has been updated to accommodate the shortened longwall panels that will finish 25 to 210 metres earlier in their northern ends than was originally planned. The change will reduce the subsidence impact of those longwall panels.

OEH reviewed the updated *Biodiversity Management Plan* (BMP) (Version 15: Dated February 2019) and *Heritage Management Plan* (Version 6: Dated February 2019) for longwalls 17 to 20. OEH's recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154 or via email at rog.hcc@environment.nsw.gov.au.

Yours sincerely

1 April 2019

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Conservation and Regional Delivery Division

Contact officer: ROBERT GIBSON
02 4927 3154

Enclosure: Attachments A and B

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Attachment A

OEH's recommendations

Wambo South Bates Extension – amended extraction plan for longwalls 17 to 20

1. OEH recommends that Kikuyu is not planted within 50 metres of woodland restoration areas to enable plantings of woodland species to become established, and that this is noted when the Mine Operation Plan is next reviewed.

2. OEH recommends that the lists of native plant species include additional indigenous species to help with nitrogen-fixation and increase species and structural diversity in rehabilitated woodland corridors and rehabilitated native pastures.

3. OEH recommends that the figures in the approved *South Bates Extension Underground Mine Extraction Plan Longwalls 17 to 20 Appendix D Heritage Management Plan* (Peabody 2019) should be updated to show the proposed mine layout changes for Longwalls 17 to 20.

Attachment B

OEH's detailed comments

Wambo South Bates Extension – amended extraction plan for longwalls 17 to 20

Biodiversity

1. Kikuyu adjacent to woodland revegetation areas will hamper woodland plant establishment

Most of OEH's recommendations from our letter dated 16 August 2016 (presented in Appendix B of the revised Biodiversity Management Plan (BMP)) have been implemented. However, the plant species mixes for revegetation given in Appendix G of the BMP have not changed since the 2016 version. OEH notes that this list comes from the *Mine Operation Plan 2015-2020*. The 'Cover Crop and Pasture Species List' (on the un-numbered page that is page 155 of the 188-page document) includes Kikuyu (*Cenchrus clandestinus*). Kikuyu is an aggressive exotic grass that can outcompete woody plants. OEH recommends that it is not included in the pasture mix within 50 metres of woodland revegetation areas to enable woodland plants to become established.

Recommendation 1

OEH recommends that Kikuyu is not planted within 50 metres of woodland restoration areas to enable plantings of woodland species to become established, and that this is noted when the Mine Operation Plan is next reviewed.

2. Native Woodland corridor and native grassland revegetation planting mixes requires more plant diversity

The 'Provisional Species List for Woodland Corridors' in Appendix G of the BMP (on an un-numbered page that is page 154 out of the 188-page report) has a short list of four native herbs in the planting mix. OEH recommends that a greater diversity of herbs is added to the species list, such as small native nitrogen fixers like species of *Glycine*, *Desmodium*, *Kennedia*, *Chorizema*, etc. are included to help boost nutrient recycling and soil amelioration. Similarly, the 'Provisional Species List for Pastures' given on page 155 of the 188-page document, contains only grasses, and would benefit from the inclusion of native herb species, such as *Glycine* and *Desmodium* to help with Nitrogen-enrichment, and forbs, like species of *Vittadinia* or *Chrysocephalum* to make the grasslands more floristically and structurally diverse.

Recommendation 2

OEH recommends that the lists of native plant species include additional indigenous species to help with nitrogen-fixation and increase species and structural diversity in rehabilitated woodland corridors and rehabilitated native pastures.

Aboriginal cultural heritage

3. The approved extraction plan figures for Longwall 17 to 20 should be updated

OEH is satisfied that the proposed reduction in extraction area and shortening of Longwall Panels 17 to 20 will generally reduce the subsidence impacts in areas no longer proposed for extraction above the previous finishing ends of the longwalls. The predicted subsidence impacts to Artefact Scatter Site 231 will therefore be reduced. There is no change to the predicted subsidence impacts to previously recorded rock shelter with PAD sites, scarred tree sites or other artefact sites within the South Bates Extension Underground Mine Project Area. OEH considers that the proposed variation to Extraction Plan Longwall Panels 17 to 20 is unlikely to adversely affect

Aboriginal cultural heritage within the South Bates Extension Underground Mine Longwalls 17 to 20.

The figures in the approved *South Bates Extension Underground Mine Extraction Plan Longwalls 17 to 20, Appendix D Heritage Management Plan* (Peabody 2019) should be updated to show the mine layout changes for Longwalls 17 to 20.

Recommendation 3

OEH recommends that the figures in the approved *South Bates Extension Underground Mine Extraction Plan Longwalls 17 to 20, Appendix D Heritage Management Plan* (Peabody 2019) should be updated to show the proposed mine layout changes for Longwalls 17 to 20.

Peabody

NSW GOVERNMENT | Planning, Industry & Environment

Ms Nicole Dobbins
Senior Environmental Advisor
Wambo Coal Pty Ltd
PMB 1
SINGLETON NSW 2330

Contact: Heidi Watters
Phone: 02 6575 3401
Email: compliance@planning.nsw.gov.au
Our Ref: DA 305-7-2003

By Email: NDobbins@peabodyenergy.com

Dear Ms Dobbins

Wambo Coal Mine (DA 305-7-2003)
Gas Exploration Hole 18_6

Reference is made to correspondence from Wambo Coal Pty Ltd (WCPL) dated 3 October 2019, seeking the satisfaction of the Department of Planning, Industry and Environment (the Department) to disturb a discrete area within the Wambo Coal Mine Remnant Woodland Enhancement Area (RWEA) B for the installation of Gas Exploration Borehole 18_6.

Following a review of the information provided, the Department is satisfied for WCPL to proceed with the installation of Gas Exploration Borehole 18_6, noting:

- Re-growth disturbance for exploration drilling of Gas Exploration Borehole 18_6 is identified in Section 6.1.1.3.8 of the Biodiversity Management Plan (June 2019);
- The RWEA Exploration Drilling Procedure requires WCPL to obtain written consent for exploration activities in RWEA B;
- The footprint of the proposed Gas Exploration Borehole 18_6 drill pad (0.09 ha) and access track (0.06 ha) is wholly located within RWEA B and in an area previously cleared in 2006.
- Existing access tracks will be utilised, and no further clearing will be required outside of the existing track and proposed drill pad;
- A flora and fauna assessment, prepared by Ecological Australia on behalf of WCPL, concluded that Gas Exploration Borehole 18_6 is unlikely to result in significant impacts to threatened species, populations or communities listed under the *Biodiversity Conservation Act 2016*.

If you have any questions, please contact Heidi Watters, Senior Compliance Officer, on the details listed above.

Yours sincerely

16/10/19.

Leah Cook
Team Leader - Compliance
As nominee of the Secretary

Department of Planning, Industry & Environment
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APPENDIX C
BASELINE DATA

Baseline LFA Results - Landscape Organisation Index

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Woodland Rehabilitation													
3R	0.04	0.03	0.07	0.45	0.36	1	1	1	1	0.72	0.70	0.68	0.68
4R	0.08	0.22	0.26	0.52	0.56	0.68	0.73	0.81	0.59	0.82	0.76	0.86	0.87
6R	0.77	0.37	0.17	0.84	0.17	1	0.89	0.91	0.86	0.90	0.92	0.92	0.92
8R	0.05	0.05	0.04	0.45	0.23	0.51	1	1	0.56	0.65	0.65	0.68	0.71
Average	**0.24**	**0.17**	**0.14**	**0.57**	**0.33**	**0.80**	**0.91**	**0.93**	**0.75**	**0.77**	**0.76**	**0.79**	**0.79**
Pasture Rehabilitation													
1R	0.69	0.74	0.94	0.9	0.9	1	1	0.86	1	0.83	0.85	0.77	0.86
2R	0.57	0.45	0.89	0.89	1	1	1	0.86	0.94	0.68	0.58	0.5	0.48
5R	0.29	0.52	0.68	0.72	0.94	1	1	0.7	0.91	0.70	0.63	0.4	0.47
7R	-	-	-	0.94	1	1	1	0.85	0.99	0.97	1	0.88	0.66
9R	-	-	-	0.56	0.83	0.72	1	0.55	1	0.68	0.8	0.65	0.86
10R	0.6	0.62	0.85	0.91	0.89	1	1	0.67	-	0.89	0.93	0.91	0.97
16R	0.69	0.74	0.94	0.9	0.9	1	1	0.86	1	0.96	0.98	0.96	0.88
33R	-	-	-	-	1	1	1	0.77	0.98	0.98	0.99	0.91	0.88
34R	-	-	-	-	0.9	1	1	0.94	1	0.84	0.78	0.67	0.65
35R^	-	-	-	-	-	-	-	-	-	-	-	0.61	0.86
Average	**0.54**	**0.58**	**0.76**	**0.85**	**0.94**	**0.97**	**1.00**	**0.79**	**0.98**	**0.84**	**0.84**	**0.73**	**0.76**

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North Wambo Creek Diversion													
17R	-	-	-	1	1	1	0.86	0.92	0.97	0.93	0.96	0.92	0.81
19R	-	-	0.25	1	1	1	1	1	0.69	0.71	0.75	0.71	0.54
21R	-	-	0.18	1	0.81	1	0.86	1.07	0.54	0.66	0.76	0.87	0.76
23R	-	-	-	0.6	0.63	0.85	0.84	0.84	0.7	0.41	0.44	0.34	0.47
25R*	-	-	-	-	-	-	-	-	-	0.45	0.59	0.74	0.71
26R*	-	-	-	-	-	-	-	-	-	0.55	0.67	0.72	0.81
27R*	-	-	-	-	-	-	-	-	-	0.35	0.35	0.29	0.45
28R*	-	-	-	-	-	-	-	-	-	0.43	0.55	0.41	0.59
Average	-	-	**0.22**	**0.90**	**0.86**	**0.96**	**0.89**	**0.96**	**0.73**	**0.56**	**0.63**	**0.63**	**0.64**
Wambo Creek													
14R*	-	-	-	-	-	-	-	-	-	0.67	-	0.99	1

* New riparian rehabilitation monitoring site added in 2015.
^ New pasture rehabilitation site added in 2017. 2017 result not included in average scores for 2017.

Peabody

Baseline LFA Results – Stability Index

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Woodland Rehabilitation													
3R	40.4	41.9	61.5	53.7	52.91	48	64.2	73.6	100.4	54.80	61.70	60	61.9
4R	48.8	50.3	61.5	52.5	52.39	54.2	66.2	70	61.5	60.50	57.50	61.9	63.7
6R	24.7	47.2	59.3	58.3	57.39	72.2	55.4	67.7	67.6	55.30	62.00	62.5	65.4
8R	45.9	43.2	49.6	58.7	50.91	56.4	61.5	58.8	59.8	55.7	55.90	62.6	59.7
Average	**39.95**	**45.65**	**57.98**	**55.80**	**53.40**	**57.70**	**61.83**	**67.53**	**72.33**	**56.58**	**59.28**	**61.75**	**62.67**
Pasture Rehabilitation													
1R	52.7	65	66.1	65.68	66.44	65.6	53.9	70.3	71.7	58.1	65.6	62.4	63.3
2R	58	69.7	62.8	70.05	66.1	65.5	51.9	64.8	62.4	55.2	51	51	49.1
5R	57.3	57.4	52.6	64.84	61.95	62	66.4	59.1	61	57.40	61	61.9	58.5
7R	-	-	-	65.94	67.78	69.4	70	67.4	70.1	58.00	51.8	64.6	65
9R	-	-	-	50.2	57.91	55.8	50.9	65.4	61.3	59.80	67.2	60.2	61.9
10R	60.7	58.4	67	70.52	70.65	73.3	63.7	79.7	-	67.10	68	67	68.8
16R	-	-	44	78.47	67.22	72.2	71.1	78.6	68.9	61.80	67	63.3	66.6
33R	-	-	-	-	68.89	65	70.6	67.1	68.8	63.30	71.1	65.5	62.3
34R	-	-	-	-	64.13	68.3	73.2	68.9	42.5	59.60	60	64.3	57
35Rˆ	-	-	-	-	-	-	-	-	-	-	-	62.2	66.5
Average	**57.18**	**62.63**	**58.50**	**66.53**	**65.67**	**66.34**	**63.52**	**69.03**	**63.34**	**60.03**	**62.52**	**62.24**	**61.9**

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North Wambo Creek Diversion													
17R	-	-	-	79	70	71.3	56.1	74.5	64	60.1	65.1	62.2	56.3
19R	-	-	53	71	61	65.6	57	54.3	55.1	53.8	55.9	64.6	59.5
21R	-	-	56	75	62	65.4	58.6	65.8	53.4	56.5	60.3	60.5	62.2
23R	-	-	53	52	48	52.6	44.9	45.9	50	51.4	56.8	44.1	50.3
25R*	-	-	-	-	-	-	-	-	-	52.1	56.9	58.6	66.7
26R*	-	-	-	-	-	-	-	-	-	54.2	59	61.1	62.5
27R*	-	-	-	-	-	-	-	-	-	52.1	58.1	46.7	51.8
28R*	-	-	-	-	-	-	-	-	-	45.9	51.9	52.2	58.5
Average	**-**	**-**	**54**	**69.25**	**60.25**	**63.725**	**54.15**	**60.125**	**55.625**	**53.26**	**58**	**56.25**	**58.5**
Wambo Creek													
14R*	-	-	-	-	-	-	-	-	-	52.3	-	53.9	52.5

* New riparian rehabilitation monitoring site added in 2015.
^ New pasture rehabilitation site added in 2017. 2017 result not included in average scores for 2017.

Baseline LFA Results - Infiltration

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Woodland Rehabilitation													
3R	25.8	20.7	29.4	28.23	24.74	28.2	28.5	26.6	63.3	37.6	32.80	39.6	35.7
4R	30.4	23.9	29.8	25.85	30.32	35.5	35.1	43.2	38.5	42.5	40.60	43.8	45.7
6R	16.3	30.9	31.7	43.38	56.66	44.5	27.3	46.2	49.3	48.3	43.70	60.7	55.1
8R	22.4	16	28.2	27.58	26.4	27.3	25.4	33.6	36.9	33.3	36.90	37.5	34.6
Average	**23.73**	**22.88**	**29.78**	**31.26**	**34.53**	**33.88**	**29.08**	**37.40**	**47.00**	**40.43**	**38.50**	**45.4**	**42.77**
Pasture Rehabilitation													
1R	29.7	34.8	36.5	36.74	34.22	39.8	37.1	40.4	39.7	39.2	44.4	40.5	46.6
2R	35	32.2	38.5	34.96	34.96	35.6	25.8	32.4	36	32.6	32.5	28.1	24.9
5R	36.8	31.6	25.8	30.04	31.93	33.6	30.6	27.9	29.3	34.10	35.80	28.8	29
7R	-	-	-	31.32	33.65	44.2	41.3	34.7	38.4	39.90	33.70	38.4	37.4
9R	-	-	-	22.16	24.69	23.7	20.7	29.9	30.1	33.00	36.40	29.6	39.7
10R	-	-	-	22.16	24.69	23.7	20.7	44.5	-	42.90	43.80	40.2	45.6
16R	-	-	29.3	38.86	30.77	44.5	38.6	38.7	41.7	45.90	49.70	44.5	41.6
33R	-	-	-	-	35.05	44.1	40.8	33.4	37.4	46.30	51.00	41.5	44.7
34R	-	-	-	-	35.52	40.5	40.7	41.7	39.3	33.90	39.40	36.6	36.4
35R^	-	-	-	-	-	-	-	-	-	-	-	29.2	34.5
Average	**33.83**	**32.87**	**32.53**	**30.89**	**31.72**	**36.63**	**32.92**	**35.96**	**36.49**	**38.64**	**40.74**	**36.47**	**38.43**

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North Wambo Creek Diversion													
17R	-	-	-	37	36	41.2	27.7	38.4	38.4	37.6	36.3	38.6	34.9
19R	-	-	27	42	33	30.7	25.1	19.6	23.1	27.7	32.6	30	29.1
21R	-	-	33	47	23	33.2	30	28.4	24.2	33.70	34.8	35	39.4
23R	-	-	30	27	26	29	18.4	23.3	25.7	30.1	27.4	28.6	22.1
25R*	-	-	-	-	-	-	-	-	-	23.9	29.9	31.9	28.3
26R*	-	-	-	-	-	-	-	-	-	28.1	30.2	27.9	24.6
27R*	-	-	-	-	-	-	-	-	-	22.9	24.8	33.5	25.9
28R*	-	-	-	-	-	-	-	-	-	26.1	25.5	38.2	31.1
Average			**30.00**	**38.25**	**29.50**	**33.53**	**25.30**	**27.43**	**27.85**	**28.76**	**30.18**	**32.96**	**29.4**
Wambo Creek													
14R*	-	-	-	-	-	-	-	-	-	45.0	-	40.3	47.1

* New riparian rehabilitation monitoring site added in 2015.
^ New pasture rehabilitation site added in 2017. 2017 result not included in average scores for 2017.

Baseline LFA Results – Nutrient Index

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Woodland Rehabilitation													
3R	12	15.2	24.4	20.66	22.51	25.7	25.8	20.1	55.5	29.2	28.80	33	34
4R	15.6	15.9	24.9	20.65	23.12	34.1	34.5	41.2	30.7	39.6	36.90	40.5	42.9
6R	12.1	24.9	27.6	37.76	47.28	42.7	26.6	40.5	44.3	37.8	37.30	47.4	47.1
8R	15.1	13.3	15.1	22.23	23.27	25	27	26.6	29.3	29.2	30.70	35.5	28.7
Average	**13.70**	**17.33**	**23.00**	**25.33**	**29.05**	**31.88**	**28.48**	**32.10**	**39.95**	**33.95**	**33.43**	**39.1**	**38.17**
Pasture Rehabilitation													
1R	20.1	33.6	33.7	31.65	29.26	36.7	36.2	32.1	36.4	30	36.9	36.7	34.8
2R	24.6	28.8	27.2	30.1	34.35	38.5	21.7	28.2	30.2	22.4	24.1	23.3	23.6
5R	26.5	31.3	20.5	26.72	27.77	34.5	31	22.9	20.5	23.60	27.8	23.6	24.3
7R	-	-	-	28.97	32.98	39.7	43.2	31.2	37.4	34.80	30.9	29.7	33.4
9R	-	-	-	15.71	21.52	20.1	15.9	26	25	26.00	32.3	25.6	31.9
10R	27	28.1	36.4	27.33	37.21	41.4	30	43.5	-	37.80	37.4	33.2	38.8
16R	-	-	14.2	40.43	25.35	42.7	39.5	35.1	36.4	39.60	44.8	36.6	36.3
33R	-	-	-	-	32.51	39.5	41.5	29.4	34.5	42.20	46.8	32.4	37.2
34R	-	-	-	-	34.14	36.2	43.6	37.4	-	30.30	34.1	31	30.7
35R^	-	-	-	-	-	-	-	-	-	-	-	23.7	26.8
Average	**24.55**	**30.45**	**26.40**	**28.70**	**30.57**	**36.59**	**33.62**	**31.76**	**31.49**	**31.86**	**35.01**	**30.23**	**30.23**

LFA Monitoring Plot	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North Wambo Creek Diversion													
17R	-	-	-	39	30	40.1	28.2	34.6	30.2	28.3	26.8	33.3	30.7
19R	-	-	15	38	30	30.8	25.1	15.2	18.4	20	21.9	26.7	30
21R	-	-	17	44	21	30.5	29.7	26.1	19.5	24.60	25	31.1	23.4
23R	-	-	14	18	19	24.5	15.4	15.6	17.4	17.2	14.6	19.5	29.9
25R*	-	-	-	-	-	-	-	-	-	16.2	20	26.2	21.7
26R*	-	-	-	-	-	-	-	-	-	18.5	24.7	25.6	19.1
27R*	-	-	-	-	-	-	-	-	-	13.9	15.2	19.6	25.1
28R*	-	-	-	-	-	-	-	-	-	16	19.2	26.4	18.7
Average	-	-	**11.5**	**27.8**	**20**	**25.18**	**19.68**	**18.3**	**17.1**	**19.34**	**20.93**	**26.05**	**24.4**
Wambo Creek													
14R*	-	-	-	-	-	-	-	-	-	29.6	-	29.5	30.7

* New riparian rehabilitation monitoring site added in 2015.
^ New pasture rehabilitation site added in 2017. 2017 result not included in average scores for 2017.

Baseline Floristic Results for RWEAs

Vegetation Community	RWEA	Plot Name	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
PCT 42: River Red Gum / River Oak riparian woodland wetland in the Hunter Valley												
River Oak/Rough Barked Apple Forest	-	V1-A1	5	35	0	6	0	0	8	1	0	23
	-	V1-A2	13	8.5	34	70	2	4	50		0	49
	A	V1-B1	14	15.5	15.5	12	0	10	50		0	0
	A	V1-B2	17	14.5	12.5	46	2	2	52.5		0	2.5
	A	V1-B3	10	0.5	34	14	2	0	24		0	12
River Red Gum Woodland	-	V2-A1	18	8.5	0	18	2	4	54		0	7
	A	V2-B1	15	27	19	14	0	2	52		0	6
	A	V2-B2	18	14.5	15.5	64	2	2	54		0	0
Yellow Box / Blakely's Red Gum / Rough barked Apple Forest	A	V3-B1	19	14	0	16	0	38	0		0	35
Average Values			**14.3**	**15.3**	**14.5**	**28.9**	**1.1**	**6.9**	**38.3**	**1**	**0**	**14.9**
PCT 1658: Rough barked Apple – Narrow leaved Ironbark-Blakely's Red Gum-Bull Oak–Coast Banksia woodland on sands of the Warkworth area												
Coast Banksia/ Rough barked	A	V5-B1	23	11.5	10.5	28	2	18	9.5	1	0	4
	A	V5-B2	28	15.0	5.5	24	4	60	0		1	4.5

Vegetation Community	RWEA	Plot Name	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
Apple /Blakely's RedGum Forest	A	V5-B3	31	3.5	17.5	10	4	32	0		2	34
	Rail Loop	V5-B4	25	17	10	16	4	14	32		1	13
Average Values			**27**	**11.8**	**10.8**	**19.5**	**3.5**	**31**	**10.4**	**1**	**1**	**13.9**
PCT 1603: Narrow leaved Ironbark – Bull Oak - Grey Box shrub- grass open forest of the central and lower Hunter												
Narrow-leaf Ironbark / Grey Box / Bulloak / Honeymyrtle Forest	C	V6-A1c	36	12.5	9	50	4	6	0	1	2	44
	-	V6-A3	26	16	13	30	0	4	0		0	10
	A	V6-B1	29	13.5	7	8	2	4	0		3	42
	C	V6-B1c	35	11	13	26	12	2	0		0	13
	A	V6-B2	27	13.5	12.5	12	12	2	0		0	60
	C	V6-B2c	28	7	4	38	4	0	0		0	28
	A	V6-B3	31	9.5	9	4	4	2	2		1	35
	Rail Loop	V6-B4	12	16	0	12	2	0	0		0	4
Grey Gum / Narrow-leaf / Ironbark / Bulloak / Honeymyrtle Forest	C	V11-B1	26	16	10.5	24	30	2	0		0	21
	C	V11-B2	41	22.5	14	56	4	18	0		1	6.5
Average Values			**29**	**13.8**	**9.2**	**26**	**7.4**	**4**	**0.2**	**1**	**0.7**	**26.35**

Vegetation Community	RWEA	Plot Name	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
PCT1604: Narrow leaved Ironbark – Grey Box - Spotted Gum shrub - grass of the central and lower Hunter												
Spotted Gum / Narrow-leaf Ironbark/ Bulloak /Paperbark Forest	-	V9-A1	27	29	6	26	2	8	0	1	0	21
	B	V9-B1	42	23	8	24	16	8	0		0	45
	B	V9-B2	37	15.5	7.5	52	6	0	0		0	40
Average Values			**35**	**22.5**	**7.2**	**34**	**8**	**5.3**	**0**	**1**	**0**	**35.3**
PCT1176: Slaty Box – Grey Gum shrubby woodland on footslopes of the upper Hunter Valley, Sydney Basin Bioregion												
Slaty Gum / Narrow-leaf Ironbark / Bulloak / Paperbark Forest	D	V10-A1	27	12	13.5	6	0	0	0	1	0	17
	-	V10-A2	29	9.5	10.5	30	4	6	0		0	9
	B	V10-B1	36	14.5	12	22	6	12	0		0	38
	D	V10-B3	33	12.5	10.5	36	2	6	0		0	40
Average Values			**31**	**12.1**	**11.6**	**23.5**	**3**	**6**	**0**	**1**	**0**	**26**
PCT 1584: White Mahogany – Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley												
White Mahogany / Rough-barked Apple Forest	B	V13-B1	**50**	**10.5**	**19**	**70**	**16**	**8**	**0**	**1**	**0**	**25**
PCT 1603: Narrow leaved Ironbark – Bull Oak - Grey Box shrub -grass open forest of the central and lower Hunter *												

Vegetation Community	RWEA	Plot Name	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL
Brush Wilga/Native Olive Shrubland	E	V14-A1	41	1	50	24	0	8	10	1	0	7
	B	V14-B1	30	6.5	10.1	46	4	8	0		0	25
	B	V14-B2	47	9	17	52	16	22	2		0	6
Average Values			**39**	**5.5**	**25.7**	**40.7**	**6.7**	**12.6**	**4**	**1**	**0**	**12.6**

Baseline Floristic Results for Woodland Rehabilitation Areas

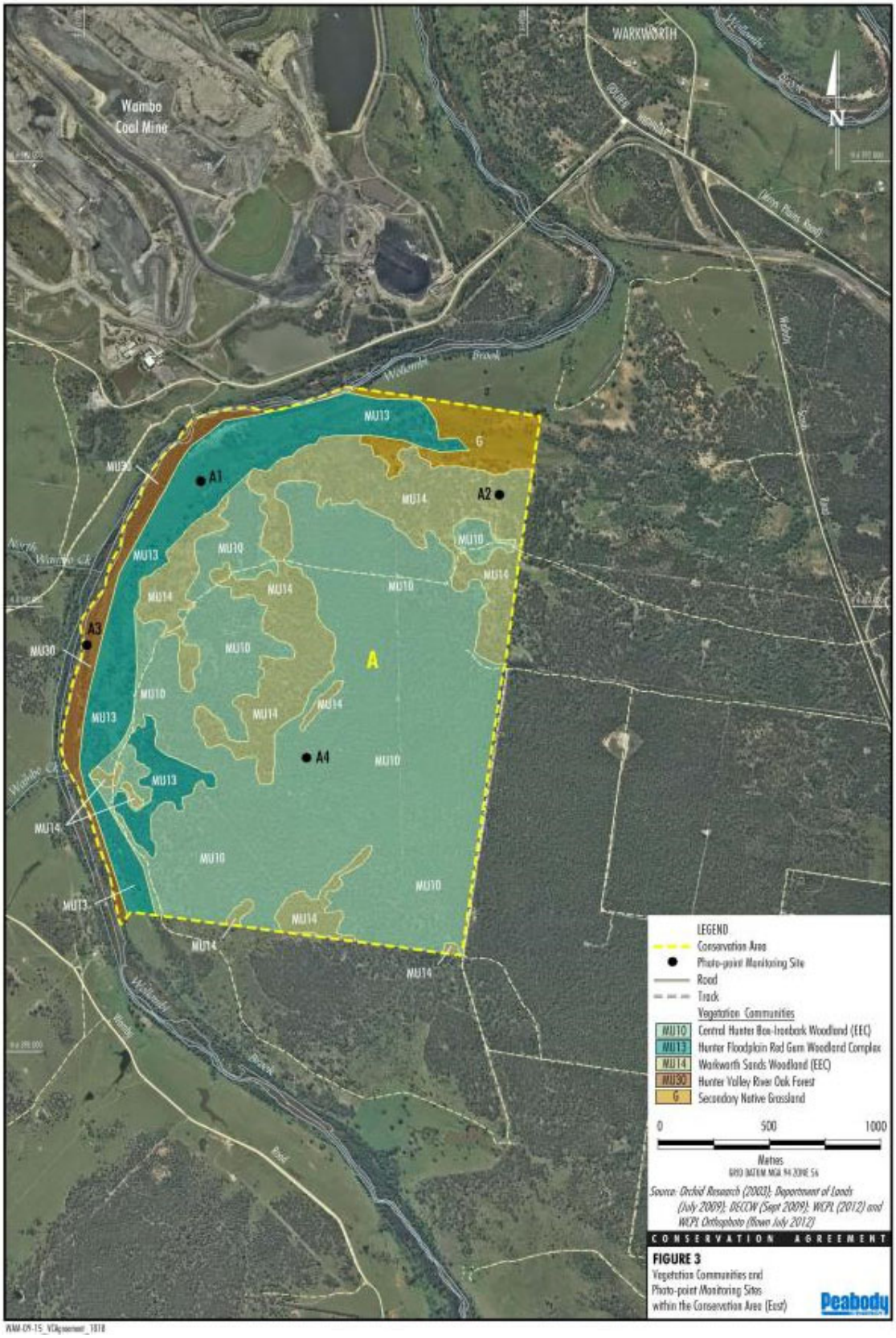
Plot Name	NPS[1]	NOS (%)[2]	NMS (%)[3]	NGCG	NGCS	NGCO	EPC[4]	OR	HBT	FL
3R	3	24.5	2	0	0	4	0	Planted	0	0
4R	4	4	14	0	0	0	0		0	0
6R	16	37.5	6.5	12	0	0	18		0	25.5
8R	5	18	6	4	0	2	4		0	0
Average Values	**7**	**20.25**	**7.13**	**4**	**0**	**1.5**	**5.5**	**0**	**0**	**6.38[5]**

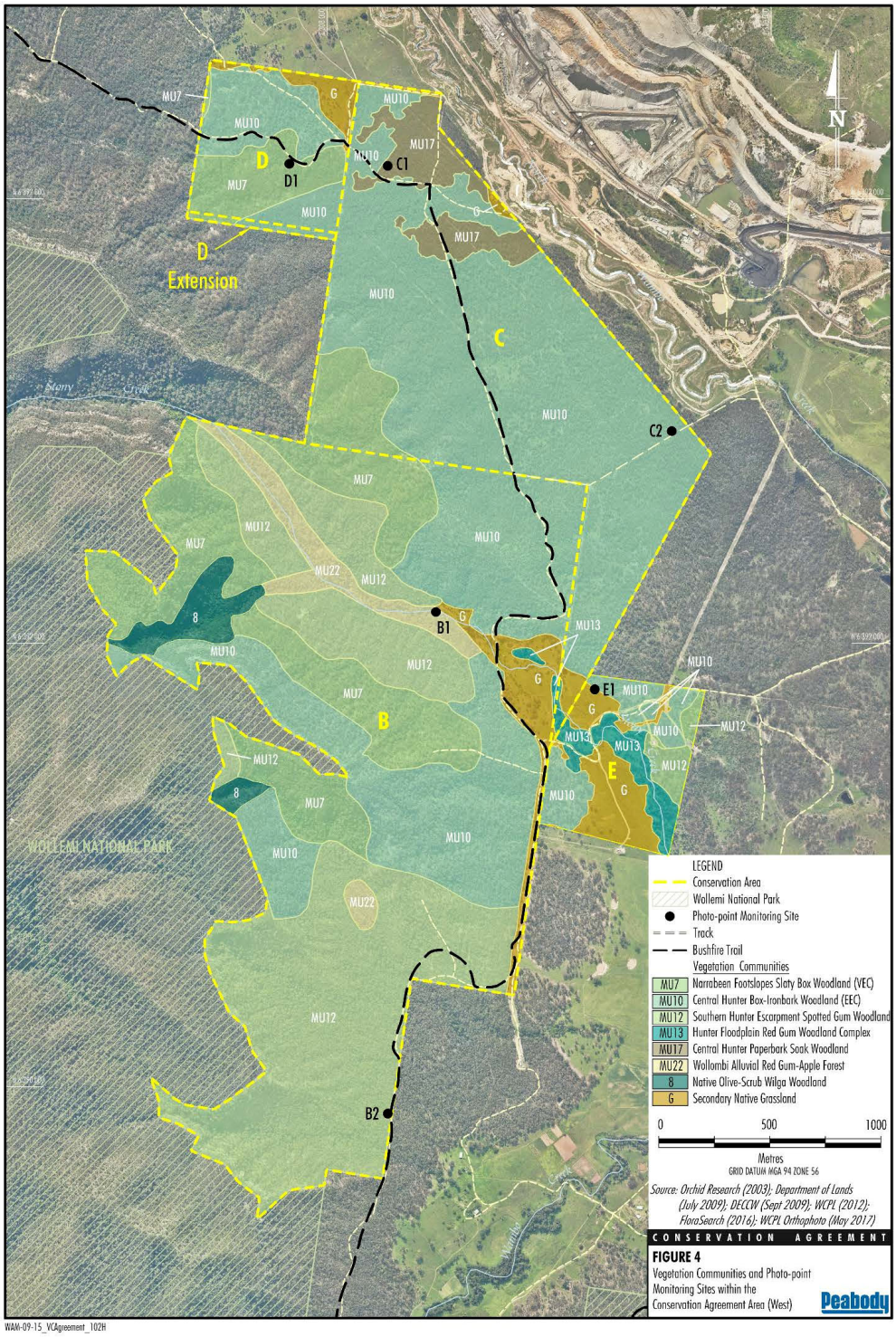
1. Native to NSW
2. Including *E.cladocalyx*
3. Including *A.saligna*
4. Exotic to Australia
5. Logs recorded in one site only

Baseline Floristic Results for Groundwater Dependent Ecosystems (collected in 2019)

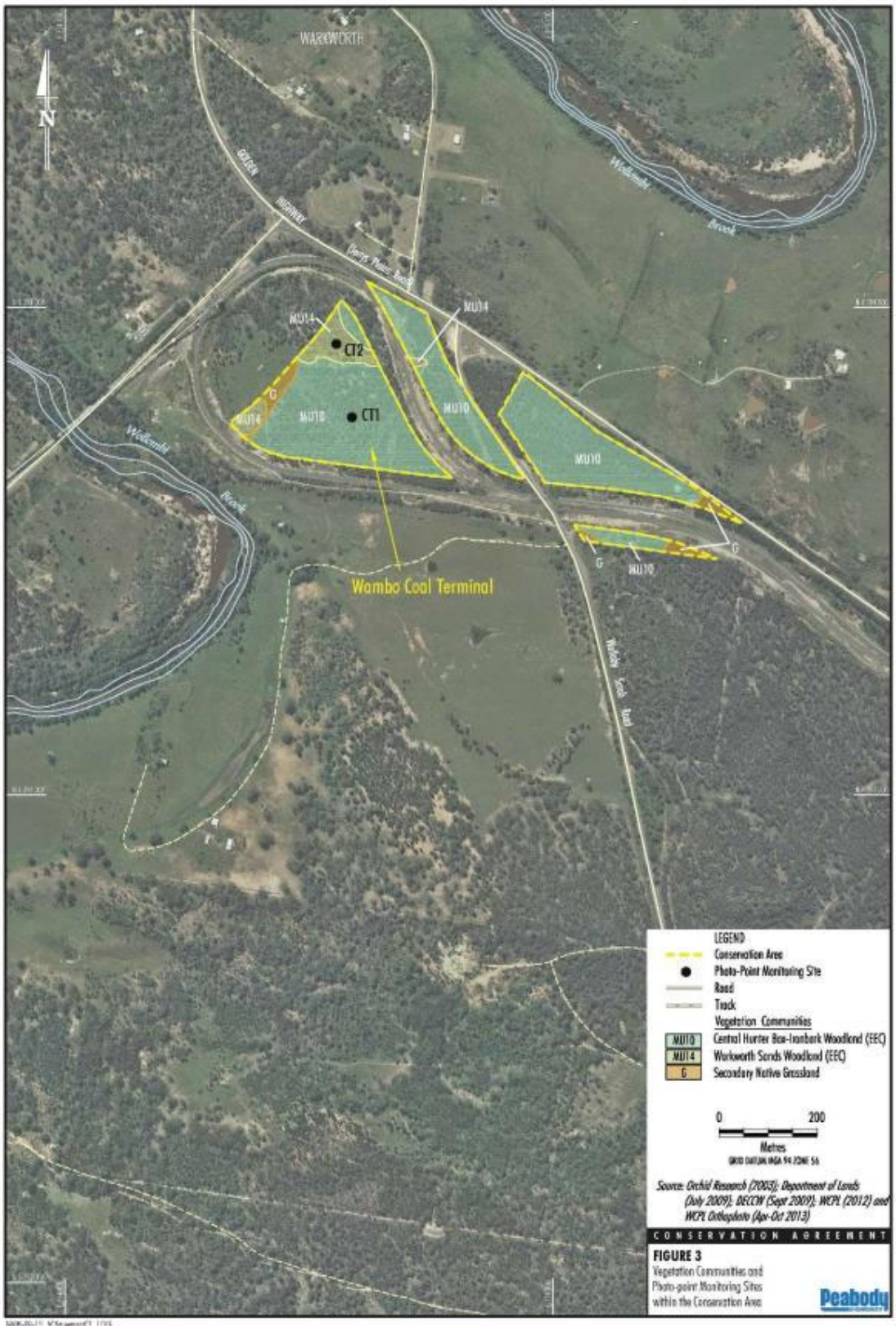
Groundwater Dependent Ecosystem	Plot Name	NPS	NOS (%)	NMS (%)	NGCG	NGCS	NGCO	EPC	OR	HBT	FL	LI	BS
Melaleuca decora low forest	GDE Plot 1	22	5.3	5.8	10	0	2	0	1	0	36	82	22
	GDE Plot 2	24	5.1	4.5	6	28	4	14	1	0	22	84	0
River Oak riparian tall forest	GDE Plot 3	14	13	0.1	0	0	0	14	0	1	55	56	46
	GDE Plot 4	17	13.5	0	0	0	4	22	1	0	23	64	24

APPENDIX D
VEGETATION COMMUNITIES AND PHOTO POINT MONITORING SITES WITHIN RWEAS A – D (OCT 2014) AND RWEA E (MARCH 2018)


WARKWORTH
Wambo Coal Mine
N
A1
A2
A3
A4
A
G
MU10
MU13
MU14
MU30
LEGEND
Conservation Area
Photo-point Monitoring Site
Road
Track
Vegetation Communities
MU10 Central Hunter Box-Ironbark Woodland (EEC)
MU13 Hunter Floodplain Red Gum Woodland Complex
MU14 Warkworth Sands Woodland (EEC)
MU30 Hunter Valley River Oak Forest
G Secondary Native Grassland
0
500
1000
Metres
GRID DATUM MGA 94 ZONE 56
Source: Orchid Research (2003); Department of Lands (July 2009); DECCW (Sept 2009); WCPL (2012) and WCPL Orthophoto (flown July 2012)
CONSERVATION AGREEMENT
FIGURE 3
Vegetation Communities and Photo-point Monitoring Sites within the Conservation Area (East)
Peabody



WAM-09-15_VCAgreement_102H


WARKWORTH
N
Wollombi Brook
MU14
CT2
MU10
CT1
Wambo Coal Terminal
Wollombi Brook
Wollombi Brook Road
LEGEND
Conservation Area
Photo-Point Monitoring Site
Road
Track
Vegetation Communities
MU10 Central Hunter Box-Ironbark Woodland (EEC)
MU14 Warkworth Sands Woodland (EEC)
G Secondary Native Grassland
0
200
Metres
Source: Orchid Research (2005); Department of Lands (July 2009); DECCW (Sept 2009); WCPL (2012) and WCPL Orthophoto (Apr-Oct 2013)
CONSERVATION AGREEMENT
FIGURE 3
Vegetation Communities and Photo-point Monitoring Sites within the Conservation Area
Peabody

APPENDIX E
PHOTO POINT MONITORING BASELINE PHOTOS FOR RWEAS A – D (OCT 2014), RWEA E (MARCH 2018) AND GROUNDWATER DEPENDENT ECOSYSTEMS (SEPTEMBER 2019)

Site A1

Location

Easting	Northing
312525	6392578

MGA 94 Zone 56

Date and Time:
15/10/13 – 1.15 pm.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
SE.

Notes:
Dominant canopy species include *Acacia sp.* and groundcover includes native and exotic herbaceous and grass species.

Site A2

Location

Easting	Northing
313850	6392523

MGA 94 Zone 56

Date and Time:
15/10/13 – 1.00 pm.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
SSE.

Notes:
Prickly Pear present. Dominant canopy species include Rough-barked Apple (*Angophora floribunda*) and Coast Banksia (*Banksia integrifolia*). Bracken Fern (*Pteridium esculentum*) is the dominant groundcover.

Site A3

Location

Easting	Northing
312012	6391818

MGA 94 Zone 56

Date and Time:
15/10/13 – 1.22 pm.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
NE.

Notes:
Unidentified soft weed present. The dominant canopy species is River Oak (*Casuarina cunninghamiana*) and dominant groundcover is Panic Veldtgrass (*Ehrharta erecta*).

Site A4

Location

Easting	Northing
313004	6391327

MGA 94 Zone 56

Date and Time:
15/10/13 – 1.40 pm.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
NW.

Notes:
Dominant canopy species include juvenile Narrow-leaf Ironbark (*Eucalyptus crebra*) and juvenile Grey Box (*E. moluccana*).

Site B1

Location

Easting	Northing
308525	6392151

MGA 94 Zone 56

Date and Time:
15/10/13 – 11.00 am.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
SW.

Notes:
Some erosion along stream bank. Dominant vegetation comprises juvenile Rough-barked Apple (*Angophora floribunda*) and groundcovers include *Lomandra sp.* and native grasses.

Site B2

Location

Easting	Northing
308274	6389887

MGA 94 Zone 56

Date and Time:
15/10/13 – 10.45 am.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
W.

Notes:
The dominant canopy species is Spotted gum (*Corymbia maculata*).

Site C1

Location

Easting	Northing
308272	6394148.7

MGA 94 Zone 56

Date and Time:
15/10/13 – 11.45 am.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
NE.

Notes:
A little water erosion present. Prickly Pear present. Dominant canopy species include juvenile Narrow-leaf Ironbark (*E. crebra*) and juvenile Grey Box (*E. moluccana*).

Site C2

Location

Easting	Northing
308254	6394144

MGA 94 Zone 56

Date and Time:
15/10/13 – 12.07 pm

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
E.

Notes:
Some erosion present. Deep hole (approx. 1 m deep and 20 cm diameter) noted. Fire evidence on logs. Dominant canopy species include juvenile Narrow-leaf Ironbark (*E. crebra*)

Site D1	
Location	
Easting	**Northing**
307836	6394168

MGA 94 Zone 56

Date and Time:
15/10/13 – 11.30 am.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
SW.

Notes:
Erosion around walking track. Dominant canopy species include Narrow-leaf Ironbark (*E. crebra*) and Bulloak (*Allocasuarina luehmannii*).

Site CT1	
Location	
Easting	**Northing**
314587.5	6393774.6

MGA 94 Zone 56

Date and Time:
16/10/13 – 9.15 am.

Weather Conditions:
Fine and warm, approximately 25°C.

Direction of Photo:
NE towards the picket.

Notes:
Prickly Pear noted. The dominant canopy species is Bulloak (*A. luehmannii*).

Site CT2	
Location	
Easting	**Northing**
314556	6393925

MGA 94 Zone 56

Date and Time:
29/08/14 – 1.30 pm.

Weather Conditions:
Mild, sunny with overcast periods, approximately 16°C.

Direction of Photo:
W.

Notes:
Evidence of pests (most likely rabbits). Creeping Pear and Galenia noted. Narrow-leaf Ironbark (*E. crebra*) comprise the dominant canopy.

Site E1	
Location	
Easting	**Northing**
309235	6391793

MGA 94 Zone 56

Date and Time:
06/03/18 – 9.00 am.

Weather Conditions:
19 °C, cloudy and light rain.

Direction of Photo:
E.

Notes:
Monitoring point located midslope. No erosion present and minimal weeds.

Site M1	
Location	
Easting	**Northing**
307280	6394719

MGA 94 Zone 56

Date and Time:
27/09/19 – 11.55 am.

Weather Conditions:
24 °C, scattered cloud.

Direction of Photo:
N

Notes:
Minimal weeds.

Site M2	
Location	
Easting	**Northing**
307185	6394672

MGA 94 Zone 56

Date and Time:
27/09/19 – 12.15 pm.

Weather Conditions:
25°C, scattered cloud.

Direction of Photo:
N

Notes:
Minimal weeds.

Site M3	
Location	
Easting	**Northing**
307340	6394735

MGA 94 Zone 56

Date and Time:
27/09/19 01.37 pm.

Weather Conditions:
26°C, scattered cloud.

Direction of Photo:
N

Notes:
Minimal weeds.

Site M4	
Location	
Easting	**Northing**
306251	6395900

MGA 94 Zone 56

Date and Time:
30/09/19 08.56 am.

Weather Conditions:
21°C, scattered cloud.

Direction of Photo:
N

Notes:
Sparse groundcover, mixed native and exotic species.

Site M5	
Location	
Easting	**Northing**
305947	6395680

MGA 94 Zone 56

Date and Time:
30/09/19 10.40 am.

Weather Conditions:
24°C, scattered cloud.

Direction of Photo:
N

Notes:
On edge of creek channel.

Site M6	
Location	
Easting	**Northing**
305536	6395448

MGA 94 Zone 56

Date and Time:
30/09/19 12.44 pm.

Weather Conditions:
24°C, scattered cloud.

Direction of Photo:
N

Notes:
Within creek channel. Ground cover, mid-storey and canopy all present.

Site M7	
Location	
Easting	**Northing**
305332	6395275

MGA 94 Zone 56

Date and Time:
30/09/19 2.42 pm.

Weather Conditions:
24ºC, scattered cloud.

Direction of Photo:
N

Notes:
Creek flat, mixed native and exotic groundcover, sparse mid-storey, canopy present.

Site M8	
Location	
Easting	**Northing**
305038	6395192

MGA 94 Zone 56

Date and Time:
30/09/19 3.16 pm.

Weather Conditions:
25ºC, scattered cloud.

Direction of Photo:
N

Notes:
Edge of creek channel, River Oaks along bank.

APPENDIX F
REMNANT WOODLAND ENHANCEMENT AREA EXPLORATION DRILLING PROCEDURE

WAMBO COAL
REMNANT WOODLAND ENHANCEMENT AREA
EXPLORATION DRILLING PROCEDURE

Document No. WA-ENV-PRO-506.3
May 2020

Document Control

Document No.	WA-ENV-PRO-506.3
Title	RWEA Exploration Drilling Procedure
General Description	Exploration Drilling Procedure for RWEAs
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	July 2016	RWEA Exploration Drilling Procedure	Harry Egan	Steve Peart	
2	Sept 2016	Revised following initial DP&E feedback	Palaris	Steve Peart	
3	May 2020	Revised as part of BMP revision (V1). Included RWEA E.	WCPL	Nicole Dobbins	

1.0 Purpose

The Remnant Woodland Enhancement Area (RWEA) Exploration Drilling Procedure (the Procedure) has been developed to ensure compliance with Condition B75 (g)(ii) of DA 305-7-2003 which requires WCPL to:

"avoid clearing of Warkworth Sands EEC and minimise vegetation clearing generally for gas drainage infrastructure and exploration activities;"

The Procedure details the proposed methodology for undertaking drilling activities within Wambo Coal Pty Ltd (WCPL) RWEAs. These methodologies detail specific management measures to prevent impacts to the RWEAs and threatened flora and fauna as listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

WCPL's RWEAs are illustrated in **Figure 1** and include RWEAs A, B, C, D, D Extension and E, and the RWEA Wambo Coal Terminal.

2.0 Context

This Procedure forms an appendix to WCPL's Biodiversity Management Plan, and has been developed in consultation with the Department of Planning, Industry and Environment (DPIE).

It is noted that any proposed drilling activities within RWEA A require further consultation and approval from the Commonwealth Department of Environment in accordance with WCPL's EPBC approval No. 2003/1138.

All exploration activities within the RWEAs will be undertaken in accordance with the conditions of WCPL's development approvals, direction from the DPIE and relevant mining and coal leases.

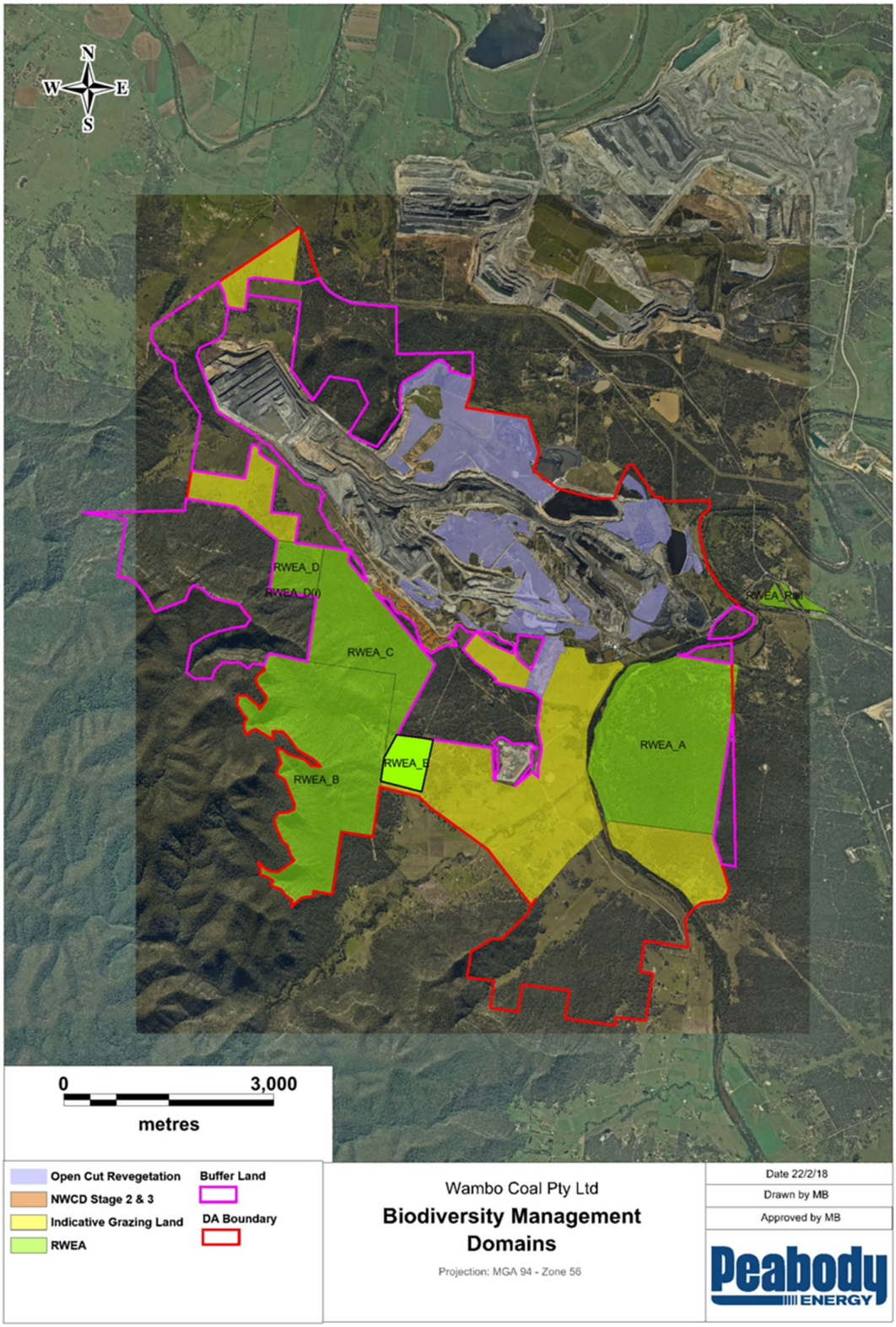


Figure 1 WCPL Biodiversity Management Domains and RWEAs

3.0 Scope

This Procedure is triggered by exploration drilling and related ancillary activities proposed to occur within any of WCPL RWEAs. These exploration activities consist of:

- Lox holes
- Structure holes
- Fault delineation
- Coal quality
- Gas conformance
- Open and closed monitoring bore installation

4.0 Drilling Procedure

The drilling procedure consists of the following components:

- Site Selection and Preliminary Assessment;
- Consultation and Approvals;
- Surface Disturbance Permit;
- Site Entry;
- Site Establishment;
- Drilling; and
- Rehabilitation.

4.1 Site Selection and Preliminary Assessment

Proposed drilling sites and areas to be impacted by related ancillary activities are selected through the following process:

- Desk top assessment against geological model;
- Preliminary environmental review; and
- Site inspection.

All selected sites are positioned on pre disturbed areas such as existing road ways or historic drill sites. Locations requiring clearing of native vegetation within the RWEA are not covered by this Procedure and are subject to further consultation and approval from DPIE.

A site inspection for the purpose of ground truthing and pegging of proposed hole locations is undertaken by WCPL's geologists as part of the preliminary assessment.

4.2 Consultation and Approvals

Prior to the commencement of exploration and disturbance activities detailed in **Section 3**, WCPL will notify the DPIE in writing of its intent to undertake the proposed works.

No exploration activities are permitted to occur without written consent from the DPIE. Exploration within RWEA A will require additional approval from the Commonwealth Department of Environment.

Exploration within WCPL's coal and mining leases is an approved activity under WCPL's current Mining Operations Plan/Rehabilitation Management Plan (MOP/RMP). All RWEAs are within WCPL's coal and mining lease boundaries (with the exception of the RWEA Wambo Coal Terminal).

4.3 Surface Disturbance Permit

Where proposed drill sites have been approved by the DPIE, they will undergo a pre disturbance assessment as part of the WCPL *Surface Disturbance Permit WA-SAH-PER-305.23* (SDP) and with consideration to the NSW DPIE, Resources Regulator (RR) guideline *ESG5: Assessment Requirements for Exploration Activities* (DPIE RR, 2015).

The SDP is implemented and approved by WCPL's Environmental Department prior to any land disturbance activities on undisturbed or rehabilitated land taking place. The SDP applies to WCPL owned land, mining leases and privately owned land where an agreement with the landowner is in place.

The SDP aims to identify and manage any environmental constraints such as cultural heritage sites, flora and fauna communities, surface drainage, threatened species and permitting required prior to disturbance. Examples of management measures to be implemented as part of the SDP process are:

- Erosion and sediment controls;
- Cultural heritage salvage or avoidance;
- Disturbance delineation; and
- Timing of activities.

A due diligence aboriginal archaeological assessment of the proposed drill site is undertaken as part of the SDP process.

A close out inspection of the site on completion of works will be undertaken by a site geologist and member of WCPL's Environmental Department post-rehabilitation to ensure the site is rehabilitated to a high standard as part of the SDP process. Any corrective actions arising from the inspection will be documented and actions taken to rectify any issues.

The SDP is not closed out until all rehabilitation has been completed to a satisfactory standard.

4.4 Site Entry

Prior to site entry and at the start of each day all vehicles must be clean and inspected as part of a pre start inspection to confirm the mechanical condition of the plant is satisfactory.

Access to and from drill sites will be via approved pre-existing tracks identified during the SDP process. These tracks will be inspected during and after the completion of activities to determine that no spills are present and tracks are left in a satisfactory condition.

4.5 Site Establishment

The following sections describe WCPL's general methods of site establishment activities. However, as exact disturbance will vary slightly on a site by site basis, specific controls and rehabilitation measures will be detailed in the site specific SDPs.

4.5.1 Vegetation Removal

Wherever practicable, existing native vegetation will be retained and vegetation clearance avoided at all drill sites and along designated access tracks. Where vegetation clearance is unavoidable WCPL will limit vegetation removal to

- Trimming of tree limbs <100mm in diameter, that may inhibit access along access tracks; and
- Removing suspended branches that pose a safety risk; and
- Removing fallen trees from access tracks.

Removed vegetation will either be mulched or retained for onsite habitat if suitable.

4.5.2 Earthworks

The installation of annular bags to control potential gas blow outs where identified by a risk assessment may be required. Earthworks required for the installation of annular bags will generally consist of a single cubic meter excavation and will be located within a pre disturbed area such as an access track.

4.5.3 Erosion and Sediment Control

Management of erosion and sediment control is achieved by implementing the following principles (as detailed within WCPL's approved Erosion and Sediment Control Plan (ESCP)):

- Separating undisturbed 'clean water' runoff from disturbed 'dirty water' runoff to minimise and isolate the amount of dirty water to be treated and either reused or removed off site;
- Diverting clean water runoff unaffected by the operations offsite; and
- Maintaining sediment control structures to ensure that the designed capacities are maintained for optimum settling of sediments.

Measures that will be implemented to manage erosion and sedimentation resulting from exploration activities in the RWEAs will generally include:

- Identifying waterways and drainage lines in close proximity of the site, prior to commencement of any proposed disturbance;
- Diverting clean water away from disturbed areas e.g. through the use of silt bags upslope of the work site;
- Installing appropriate sediment controls to manage dirty water runoff from disturbed areas (as detailed within the site specific SDP);
- Inspecting and maintaining sediment controls on a regular basis as well as before and after rain events, to ensure they work efficiently; and
- Restricting the use of unsealed roads and access tracks during wet weather to prevent damage to that track or road (unless roads/tracks area designed and constructed for wet weather use).

4.6 Drilling

4.6.1 Equipment

All works will be completed utilising water carts and track/tyred drill rigs. Ancillary support vehicles, such as trucks for transporting drill rods and light vehicles for transporting workers and miscellaneous tools and materials, will also be utilised at each drill site.

4.6.2 Drill Hole Design and Construction

In accordance with WCPL's exploration licence conditions, boreholes will be constructed/ maintained and decommissioned in accordance with standards equivalent to or exceeding the *Minimum Construction Requirements for Water Bores in Australia* (NUDLC 2012).

WCPL will ensure that the construction, operation, maintenance and decommissioning of boreholes does not cause or enhance:

- Hydraulic connection between aquifers;
- Contamination or cross-contamination of aquifers;
- The escape of natural or noxious gases;
- The uncontrolled surface discharge of ground waters;
- Collapse of the surrounding surface; or
- Hazards to persons, stock and wildlife.

The drill hole casing will be completed with steel and will allow for the removal of the casing at the completion of the exploration activities. .

Drilling water will be obtained locally from a fresh water fill point. This will be the only water utilised for the drilling process and will be used in the above ground sumps to mix the drilling products.

4.6.3 Drilling Products

Only biodegradable products, such as those listed in **Table 1** (or alternate supplier equivalent), will be used during drilling operations in RWEAs.

Table 1: Environmentally Friendly Drilling Products

Product	Supplier	Description[1]
Xan-bore	AMC - Drilling Fluids and Products[1]	Xan-bore is a premium quality biopolymer powder designed to provide maximum solids suspension and hole cleaning in vertical and highly deviated wells as well as horizontal directional drilling applications. Xan-bore also acts as a very effective mud filtrate viscosifier.
BIO-VIS XTRA	AMC - Drilling Fluids and Products[1]	BIO-VIS XTRA is a premium grade, high viscosity, modified natural polymer typically used for creating fresh and seawater spud muds as well as top hole sweeps.
KCl	Various	KCl or Potassium Chloride is used as a shale inhibitor in drilling
FRACSEAL®	DrilChem - Loss Control Experts[2]	FRACSEAL® is a finely sized (micronised) organic cellulose fibres that is used to; minimise fluid invasion, stabilise unconsolidated sand formations, reduce torque and drag in highly deviated wells, stabilise shale and coal beds and improve return permeability.
Residrill	AMC - Drilling Fluids and Products[1]	Residrill is a product designed to give any drilling fluid non invasive properties. It reduces dynamic filtration loss, stabilises wellbores and protects reservoirs from damage. The product is formulated to reduce fluid loss and stabilise shale by preventing filtrate invasion into permeable structures. Filter cake and differential sticking are therefore minimized and weak formations are stabilised.
AUS-DEX	MobiDrill - Portable Rotary Drilling Equipment	AUS-DEX is a modified polysaccharide used for filtration control and drilled solids encapsulation in most water based systems without appreciably affecting viscosity. AUS-DEX is a natural product, stabilised against bacterial degradation and is functional in fresh water, salt saturated brines and high hardness environments. AUS-DEX is non-damaging, can be used in systems exposed to temperature between 0 - 120ºC and is an effective additive in controlling reactive clays and shale from swelling and dispersing.
AUS-BEN	AMC - Drilling Fluids and Products[1]	AUS-BEN is a premium drilling grade bentonite. Its primary function is to provide viscosity but it also contributes to fluid loss control. AUS-BEN is a cost effective product for achieving viscosity, fluid loss control and maintaining filter cake quality in freshwater and seawater muds.
Liqui-pol	AMC - Drilling Fluids and Products[1]	Liqui-pol is a liquid anionic polymer viscosifier with high molecular weight providing rapid viscosity without the problems associated with mixing, as is the case with most powdered polymers. It provides a complete drilling fluid system and mixes very rapidly in fresh or brackish water
Super-foam	AMC - Drilling Fluids and Products[1]	Super-foam is a biodegradable mixture of anionic surfactants which has been formulated for use in the mineral and water well drilling industries.

1. Refer AMC Website: www.amcmud.com
2. Refer DrilChem website www.drilchem.com
3. Refer MobiDrill website: www.mobidrill.co.za

Safety Data Sheets for these products will be retained on site at all times. Any additional drilling products that may be required will be considered environmentally low risk products.

4.6.4 Noise Management

In accordance with Conditions B12 and B16 of DA305-7-2003, WCPL will ensure the operational noise generated by exploration drilling in RWEAs does not exceed the noise criteria detailed in WCPL's Noise Management Plan.

All drilling will be conducted during day time hours only.

4.6.5 Dust Management

Dust generation from drilling activities within RWEAs will be minimal, considering the small scale of the activities and the limited disturbance proposed at each site. WCPL will ensure that the following measures are implemented in accordance with Condition B46 of DA305-7-2003 and WCPL's Air Quality and Greenhouse Gas Management Plan (AQGGMP):

- Best management practice is employed for dust control onsite;
- Air quality impacts are minimised during adverse meteorological conditions and extraordinary events; and
- Compliance with the relevant conditions of consent.

4.6.6 Waste and Hazardous Materials

Measures that will be implemented to manage waste and hazardous materials from approved exploration activities include the following:

- Appropriate bins on site for general waste;
- Suitably sized pumps with appropriate erosion and sediment controls will be used to capture all drilling fluid from drilling activities. The drilling fluid will be reused and on completion of drilling activities will be pumped out for disposal at an appropriate facility or other destination;
- Equipment and/or materials to capture drips and spills will be used during the transfer of chemicals, fuels and oils and when maintaining oil or fuel filled components;
- All chemicals, fuels and oils (excluding those contained within plant and equipment and those for personal use) will be:
    - Stored and handled in accordance with the relevant Material Safety Data Sheet and Australian Standard for the material;
    - Stored in appropriate containers that are in good condition and labelled to clearly identify the stored product;
    - Kept in a facility or area which is capable of containing at least 100% of the largest container capacity stored within that area; and

4.7 Rehabilitation

Decommissioning and sealing of boreholes and site rehabilitation will be consistent with the DPIE *Exploration Code of Practice: Rehabilitation and Exploration Code of Practice: Environmental Management* (DPIE RR, 2015). Decommissioning of exploration sites consists of:

- Disposal of all waste from site;
- Sealing of the borehole to surface;
- Removal of the drill casing from one metre below surface; and
- Filling of all annular bag excavations.

As part of the SDP process, a close out inspection will be undertaken by a site geologist and member of WCPL's Environmental Department to ensure the site is rehabilitated to a high standard. Any corrective actions arising from the inspection will be documented and actions taken to rectify any issues.

5.0 Community Complaint Response

All community complaints received by WCPL will be recorded within the Community Complaints Register. The E&C Manager will investigate the complaint, which will include, where possible, contacting the complainant within 24 hours to discuss the complaint. A review of the effectiveness of the corrective or preventative actions will be conducted within a month of the complaint and the relevant work procedures updated if required.

WCPL will retain a copy of the Community Complaints Register for at least four years. The E&C Manager will ensure the latest Community Complaints Register is posted on the WCPL website.

6.0 Review and Reporting

As this Procedure forms an appendix to the WCPL BMP, this Procedure will be reviewed during any review of the BMP (refer Section 11 of the BMP).

All reporting, including reporting of environmental incidents, will be undertaken in accordance with the requirements of WCPL's various approvals (refer Section 11 of the BMP).

7.0 Responsibilities

Table 2 lists the responsibilities in relation to this Procedure.

Table 2: Exploration Procedure Responsibilities

Task	Responsibility
Implementation of RWEA Exploration Procedure	Environmental Advisor

APPENDIX G
MANAGEMENT STRATEGY (2020 - ONWARDS)

Management Strategy	Aim	Short term (1-2 years) (2020-2021)	Medium term (3-5 years) (2022-2024)	Long term (5+ years) (2025-on)
Weed Control (RWEAs)	Control and reduce weeds in RWEAs to protenct and enhance native vegetation. Exotic plant cover within the Conservation Area must not be permitted to exceed:	Primary weed control, consisting of bush regeneration by qualified bush regeneration contractor, applying a range of techniques including: • Removal of weeds ensuring that all plant parts which can reproduce are removed and that soils do not become prone to erosion. • Use of carefully selected herbicide according to label directions and/or current off label permit, ensuring minimal off target damage. • Use of appropriate control measures as recommended in the *Department of Primary Industries Noxious and Environmental Weed Control Handbook 5th Edition 2011* or equivalent replacements for control of weeds, ensuring minimal off target damage. • Use of forestry mulching or slashing machinery only with prior written permission from BCD. • Ensure control programs are commenced when timing and extent of weed removal will minimise adverse effects on wildlife (weeds may provide protection or habitat for native fauna). Dense thickets of lantana should be removed in gradually mosaic patterns to minimise disturbance to the habitat of native animals. • Contact BCD if any uncertainty exists regarding weed control methods. Other weed control methods may be undertaken with prior written permission of BCD.	Follow up weed control, consisting of bush regeneration by qualified bush regeneration contractor, applying a range of techniques as described for Short term. Targets for exotic weed cover will be reviewed annually with the aim of them being reduced, based on the performance of weed management documented within the annual report for the monitoring program. Management Effort Required: RWEAs A-D: between approximately 300 and 500 hours up to a maximum of $30,000/year (depending on contract rate and chemical requirement). RWEA Coal terminal: between approximately 100 and 167 hours up to a maximum of $10,000/year (depending on contract rate and chemical requirement).	Annual ongoing maintenance weed control From Year 11 onwards from the relevant Conservation Agreement date: The Owner must take reasonable measures in relation to the control of exotic plants.

<table>
<tr><th>Management Strategy</th><th>Aim</th><th>Short term (1-2 years) (2020-2021)</th><th>Medium term (3-5 years) (2022-2024)</th><th>Long term (5+ years) (2025-on)</th></tr>
<tr><td></td><td>
<table>
<tr><th rowspan="2">Monitoring Site/s</th><th colspan="3">Exotic Foliage Cover (%)</th></tr>
<tr><th>2016</th><th>(2017-2020)</th><th>2021-onwards</th></tr>
<tr><td>A1</td><td>70</td><td>60</td><td>50</td></tr>
<tr><td>A2</td><td>20</td><td>15</td><td>10</td></tr>
<tr><td>A3</td><td>30</td><td>20</td><td>15</td></tr>
<tr><td>CT2</td><td>10</td><td>10</td><td>5</td></tr>
<tr><td>A4</td><td>10</td><td>5</td><td>5</td></tr>
<tr><td>B1, B2, C1, D1, CT1</td><td>5</td><td>5</td><td>5</td></tr>
</table>
<table>
<tr><th rowspan="2">Monitoring Site/s</th><th colspan="3">Exotic Foliage Cover (%)</th></tr>
<tr><td>Short term (2020-2021)</td><td>Medium term (2022-2024)</td><td>Long term (2025–on)</td></tr>
<tr><td>E1*</td><td>10</td><td>5</td><td>5</td></tr>
</table>
*Dates to be confirmed upon signed Conservation Agreement for RWEA E.
</td><td>Management Effort Required:

RWEAs A-D: between approximately 300 and 500 hours up to a maximum of $30,000/year (depending on contract rate and chemical requirement).

RWEA Coal terminal: between approximately 100 and 167 hours up to a maximum of $10,000/year (depending on contract rate and chemical requirement).

RWEA E: to be confirmed based on finalised Conservation Agreement</td><td></td><td></td></tr>
<tr><td>Weed Control (other areas)</td><td>Control and reduce weeds across the site, including managing and avoiding the spread of noxious weeds.</td><td>Implement the annual weed treatment plan.

• Weed control activities undertaken by a qualified and experienced bush regeneration contractor in accordance with the annual</td><td>Annual ongoing weed control as per short term.

Target areas are likely to change over time.</td><td>Annual ongoing weed control as per short term.

Target areas are</td></tr>
</table>

Management Strategy	Aim	Short term (1-2 years) (2020-2021)	Medium term (3-5 years) (2022-2024)	Long term (5+ years) (2025-on)
		weed treatment plan; • Annual inspections and floristic monitoring of the RWEAs and Revegetation Areas during biodiversity monitoring; • An annual weed survey (if required); • An annual weed management report documenting the weed control activities undertaken prepared by a qualified bush regeneration contractor; • Review and update the annual weed treatment plan based on the results of weed control efforts, monitoring, inspections and surveys.		likely to change over time. Review weed management framework every 5 years, and update to ensure achieving goals of reducing weeds across the site.
Pest Control	Liaise with LLS and BCD annually and participate in coordinated pest animal control activities as required.	Pest animal control activities to be determined based on density and species of pest animals. Methods for monitoring pest animal activity may include: • observations and/or hearing calls, • the use of standard remote infra-red camera traps, • the use of non-poisoned “bait stations”, • scat counts, and • other quantitative techniques which can be designed in discussion with BCD or LLS. Methods for pest animal control can include; shooting, trapping and use of poisonous baits consistent with advice from BCD and LLS. Use control methods identified as ‘humane’ as defined in the *NSW Codes of Practice and Standard Operating Procedures for Humane Pest Vertebrate Control (Control Capture and Destruction of Feral Animals in Australia)* as developed by the NSW Department of Primary Industries. Management effort required: RWEAs A-D: $6,000/year RWEA Coal terminal: $2,000/year	Annual ongoing pest control as per short term.	Annual ongoing pest control as per short term up to 10 years. From Year 11 onwards from the relevant Conservation Agreement date: The Owner must take reasonable measures in relation to the control of pest animals.

Management Strategy	Aim	Short term (1-2 years) (2020-2021)	Medium term (3-5 years) (2022-2024)	Long term (5+ years) (2025-on)
		RWEA E: to be confirmed based on finalised Conservation Agreement		
Fire hazard reduction burn[1]	Operate with NSW Rural Fire Service or fire management contractor to implement hazard reduction burn. Liaise with RFS and NPWS regarding appropriate timing.	Implement 1 hazard reduction burn during low risk fire season. Must take into account the recommended fire intervals given in the *Bush Fire Environmental Assessment Code for New South Wales* (Rural Fire Service February 2006) and the guidelines contained in the *Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code* or equivalent replacements.		
Vehicle Access to RWEAs	Maintain vehicle access to RWEAs for visitor management, fire management, weed and fencing management.	Repair existing tracks/trails and fire breaks where required.	Maintain existing tracks/trails and fire breaks as required. No new tracks to be created,	Maintain existing tracks/trails and fire breaks as required. No new tracks to be created,
Fencing	Erect/repair and maintain stock proof fencing on boundaries of RWEAs.	Maintain fences as required. Remove any livestock which have entered the Conservation Area as soon as practical. Investigate and resolve the cause of the entry (e.g. repair fence or gate).	Maintain fences as required. Remove any livestock which have entered the Conservation Area as soon as practical. Investigate and resolve the cause of the entry (e.g. repair fence or gate).	Maintain fences as required. Remove any livestock which have entered the Conservation Area as soon as practical. Investigate and resolve the cause of the entry (e.g. repair fence or gate).
Annual Reports for Monitoring Program	Annual reports to be prepared in accordance with requirements detailed in **Section 11.3.**	Prepare and submit Annual Report for Monitoring Program.	Prepare and submit Annual Report for Monitoring Program.	Prepare and submit Annual Report for Monitoring Program.

1. WCPL's Conservation Agreements require a fire hazard reduction burn to occur within the RWEAs between Year 1-10. The timing of these burns will be determined in consultation with RFS and NPWS. The cost of the burn has been included in the total cost of this management strategy.

APPENDIX H
SPECIES LISTS FOR REHABILITATION (FROM WCPL MOP/RMP)

Provisional Species Lists for Woodland Corridors	
Scientific Name	**Common Name**
Trees*	
Allocasuarina luehmanii	Bulloak
Allocasuarina verticillata	Drooping Sheoak
Angophora floribunda^	Rough-barked Apple
Brachychiton populneum	Kurrajong
Casuarina glauca	Swamp Oak
Corymbia maculata	Spotted Gum
Eualyptus albens	White Box
Eualyptus crebra	Narrow-leaved Ironbark
Eucalyptus dawsonii	Slaty Gum
Eucalyptus fibrosa	Red Ironbark
Eucalyptus moluccana	Grey Box
Eucalyptus punctata	Grey Gum
Eucalyptus teretitornis^	Forest Red Gum
Melaleuca decora	A Honeymyrtle
Notelaea microcarpa	Native Olive
Geijera salicifolia	Brush Wilga
Shrubs*	
Acacia filicifolia^	Fern-leaf Wattle
Acacia implexa^	Hickory Wattle
Acacia amblygona	Fan Wattle
Acacia falcate	Sickle Wattle
Acacia decora	Western Silver Wattle
Acacia decurrens	Green Wattle
Acacia parvifolia^	-
Grevillea montana	A Grevillea
Hibbertia linearis	-
Cassinia quinquefaria	A Cough Bush
Grasses and Herbs*	
Dianella revoluta	Blue Flax Lily
Lomandra multiflora	Many-flowered Matrush
Chloris venticosa	Tall Windmill Grass
Laxmannia gracilis	Wire Lily
Gahnia aspera	Rough Saw-sedge
Aristida vagans	Threeawn Speargrass
Austrodanthonia sp.	A Wallaby Grass
Austrostipa scabra ssp. *falcata*	Speargrass
Cymbopogon refractus	Barbwire Grass
Glycine tabacina	Glycine
Desmodium gyroides	Bush Lucerne
Kennedia prostrata	Running Postman
Chorizema cordatum	Heart-leaf Flame Pea

Note: ^ Species identified for the Montrose Tree Screening project. * *Sowing rates for tree and shrub species, pasture species will be in consultation with WCPL rehabilitation specialist.*

Provisional Species Lists for Pasture	
Scientific Name	**Common Name**
Native Species List*	
Austrodanthonia sp.	Bunderra Wallaby Grass
Austrodanthonia caespitosa	Ringed Wallaby Grass
Austrodanthonia richardsonii cv. Hume	Hume Wallaby Grass
Austrodanthonia richardsonii cv. Taranna	Taranna Wallaby Grass
Austrodanthonia setacea	Smallflower Wallaby Grass
Austrostipa aristiglumis or *Austrostipa bigeniculata*	Plains Grass
Austrostipa scabra	Speargrass
Austrostipa verticillata	Slender Bamboo Grass
Dichelachne micrantha	Shorthair Plumegrass
Elymus scaber	Common Wheatgrass
Lachnagrostis filiformis	Blown Grass
Aristida ramosa	Wiregrass
Bothriochloa macra/decipiens	Redgrass/Pitted Bluegrass
Chloris truncata	Windmill Grass
Chloris ventricosa	Tall Windmill Grass
Cymbopogon refractus	Barbed Wire Grass
Dichanthium sericeum	Queensland Bluegrass
Digitaria brownii	Cotton Panic Grass
Digitaria divaricatissima	Umbrella Grass
Eriochloa pseudoacrotricha	Early Spring Grass
Panicum decompositum	Native Millet
Panicum effusum	Hairy Panic
Glycine tabacina	Glycine
Desmodium gyroides	Bush Lucerne
Vittadinia gracilis	Woolly New Holland Daisy
Chrysocephalum apiculatum	Yellow Buttons
Cover Crop and Pasture Species List	
Common Name	**Rate (kg/ha)**
Green Panic	0 - 4
Digit Grass	0 - 3
Setaria	0 - 3
Couch	2 - 4
Kikuyu[1]	0 - 4
Lucerne	4 - 8
White Clover	2 - 3
Medic	0 - 4
Annual Ryegrass	0 - 8
Perennial Ryegrass	0 - 6
Subterranean Clover	0 - 5
Tall Fescue	0 - 5
Phalaris	0 - 5
Cocksfoot	0 - 4
Woolly Pod vetch	0 - 5
Cover Crop Species List	
Common Name	**Rate (kg/ha)**
Oats	0 - 20
Japanese Millet	0 - 10

Notes:. *Sowing rates will be subject to availability, sowing time, seasonal conditions and landscape, and will be determined in consultation with the WCPL rehabilitation specialist.

[1] As recommended by OEH (now BCD), Kikuyu would not be planted within 50 metres of woodland restoration areas to enable woodland plants to become established.

Provisional Species List for Riparian Zones*	
Scientific Name	**Common Name**
Trees	
Allocasuarina verticillata	Drooping Sheoak
Angophora floribunda	Rough-barked Apple
Casuarina glauca	Swamp Oak
Eucalyptus dawsonii	Slaty Gum
Eucalyptus moluccana	Grey Box
Eucalyptus teretitornis	Forest Red Gum
Melaleuca decora	A Honeymyrtle
Shrubs	
Acacia decora	Western Silver Wattle
Acacia decurrens	Green Wattle
Acacia falcata	Sickle Wattle
Acacia filicifolia	Fern-leaf Wattle
Acacia implexa	Hickory Wattle
Bursaria spinosa	Blackthorn
Grasses and Herbs	
Austrodanthonia sp.	Wallaby Grass
Aristida ramosa	Wiregrass
Chloris truncata	Windmill grass
Chloris venticosa	Tall Windmill Grass
Cyperus exaltatus	Giant Sedge
Dianella revoluta	Blue Flax Lily
Gahnia aspera	Rough Saw-sedge
Glycine tabacina	Glycine
Glycine clandestina	Twining Glycine
Imperata cylindrica	Blady Grass
Juncus usitatus	Common sedge
Juncus prismocarpus	Branching Rush
Paspalidium jubiflorum	Warrego Grass
Lomandra multiflora	Many-flowered Matrush
Lomandra filiformis	Mat rush
Microleana stipoides	Weeping Grass
Poa labillardierei	White tussock
Poa sieberiana	Tussock
Themeda triandra	Kangaroo Grass

Notes:. *Sowing rates will be subject to availability, sowing time, seasonal conditions and landscape, and will be determined in consultation with the WCPL rehabilitation specialist.

APPENDIX I
WCPL SURFACE DISTURBANCE PERMIT

WA-SAH-PER-305.22 SURFACE DISTURBANCE PERMIT

The Surface Disturbance Permit is to be used when assessing and approving mine related activities requiring ground disturbance within exploration and mining leases

SDP Number:	

Activity Description:					
Responsible Person:			**Statutory Area Manager:**		
Project Start:			**Project Finish:**		
Disturbance Area (ha):		**Easting:**		**Northing:**	

ALL PERMITS REQUIRE A FIGURE SHOWING RELEVANT: ABORIGINAL ARCHAEOLOGY, THREATENED ECOLOGICAL COMMUNITIES, MONITORING LOCATIONS, DEVELOPMENT CONSENT, MOP, MINING/EXPLORATION LEASE AND LAND OWNERSHIP.

Approvals and Constraints	**Y**	**N**	**N/A**	**Boundaries and Conditions**	**Y**	**N**	**N/A**
For exploration activities, are regulatory approvals/notifications required?	☐	☐	☐	Is the proposed activity ***located outside*** the following boundaries:			
Landholder notification/access agreement required?	☐	☐	☐	Wambo land ownership	☐	☐	☐
Flora/fauna or archaeological constraints?	☐	☐	☐	AHIP	☐	☐	☐
Erosion and Sediment Control Implementation Plan (ESCIP) required? *Review pre- and post-disturbance flow paths.*	☐	☐	☐	Mining and/or Exploration Leases	☐	☐	☐
Will any surface infrastructure be impacted? (e.g. access tracks, pipelines, monitoring)	☐	☐	☐	Approved Surface Development boundary	☐	☐	☐
Dust, noise, and/or lighting impacts?	☐	☐	☐				
Does the SDP boundary require fencing?	☐	☐	☐	Is the proposed activity ***inconsistent*** with the following conditions:			
Topsoil resource identification and an appropriate stockpile location required? *If YES, complete Topsoil Stripping Permit*	☐	☐	☐	MOP	☐	☐	☐
Are exotic flora species (weeds) present? *If YES, undertake follow-up weed inspection and control post disturbance.*	☐	☐	☐	Development Consent/s	☐	☐	☐
Activity within 40m of a riparian zone and/or on waterfront land?	☐	☐	☐	Environmental Management Plans	☐	☐	☐
Is an Excavation Permit required?	☐	☐	☐	Relevant regulation and planning policies eg. SEPP	☐	☐	☐
Activity within the notification areas for tailings dams?	☐	☐	☐				
Is rehabilitation required prior to SDP Completion Sign Off?	☐	☐	☐				

IF YES WAS ANSWERED TO ANY OF THE ABOVE; FURTHER APPROVALS, CONTROLS OR DUE DILIGENCE ASSESSMENTS MAY BE REQUIRED. ATTACH COPIES OF ALL ADDITIONAL WORKS.

Comments and Conditions

SDP Approval			
Role	**Name**	**Signature**	**Date**
Responsible Person			
Environment and Community Manager			

FOR TEMPORARY ACTIVITIES (<3 MONTHS) THE RESPONSIBLE PERSON MUST ENSURE THE DISTURBANCE AREA IS REHABILITATED, WITH TOPSOIL REPLACED, SEEDED AND WEED INSPECTION/CONTROL UNDERTAKEN AS NEEDED, PRIOR TO SDP COMPLETION SIGN OFF.

PHOTOS OF THE REHABILITATION SHALL BE PROVIDED TO THE ENVIRONMENT AND COMMUNITY MANAGER PRIOR TO SIGN OFF.

Rehabilitation Completion Sign Off for Temporary Activities (<3 months)			
Role	**Name**	**Signature**	**Date**
Responsible Person			
Environment and Community Manager			

ALL UNNECESSARY INFRASTRUCTURE, EQUIPMENT AND MATERIALS ARE TO BE REMOVED AND THE SITE LEFT IN A CLEAN AND TIDY MANNER.

SDP Completion Sign Off			
Role	**Name**	**Signature**	**Date**
Responsible Person			
Environment and Community Manager			

ONCE THE SDP COMPLETION HAS BEEN SIGNED OFF, THE ENVIRONMENT AND COMMUNITY MANAGER SHALL FILE IN THE SITE SDP REGISTER.

APPENDIX J
BIOMETRIC MONITORING DATA SHEET

Monitoring Data Sheet			
Monitoring Point Number		**Date**	
Vegetation Community			
1. Site Photo(s)Taken			
2. Floristic BioMetric attributes			
Native cover			
Overstorey:			
Midstorey:			
Groundcover(grass):			
Groundcover (shrub):			
Groundcover (other):			
Native species richness:			
Proportion of canopy species regenerating			
Exotic cover			
3. Opportunistic observations	**GPS coordinates**	**Photo number**	**Observations**
Natural regeneration of disturbed areas			
Threatened species sightings			
Fire event/fuel			
Weeds			
Pest animals			
Visitor impact/vehicles			
Rubbish dumping			

APPENDIX K
VEGETATION AND BURROW CLEARANCE PROTOCOL

WAMBO COAL
VEGETATION AND BURROW CLEARANCE PROTOCOL

Document No. WA-ENV-PRO-506.1
May 2020

Document Control

Document No.	WA-ENV-PRO-506.1
Title	Vegetation and Burrow Clearance Protocol
General Description	Protocol for clearing vegetation and wombat burrows at WCPL
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	June 2016	Original as part of Biodiversity Management Plan	Harry Egan	Steve Peart	
2	July 2017	Response to DPE comments	Harry Egan	Steve Peart	
3	May 2020	Revised as part of BMP revision (V1). Added burrow clearing protocols (document title changed) and review/ reporting section and updated legislative references. Removed seed collection & weed control (covered in BMP)	WCPL & ELA	Nicole Dobbins	

1.0 Purpose

The purpose of this Vegetation and Burrow Clearance Protocol (VBCP) is to outline the approved procedure for the disturbance and removal of vegetation on Wambo Coal Pty Ltd (WCPL) owned land.

Implementation of this protocol will minimise impacts on both non-threatened and threatened flora and fauna as listed under the Threatened Species Conservation Act 1995 (TSC Act) or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

2.0 Scope

This VBCP relates to all clearing activities undertaken at WCPL. The VBCP forms part of WCPL's Biodiversity Management Plan and has been developed in accordance with DA 305-7-2003.

3.0 Procedure

The VBCP consists of the following steps:

- Delineation of Disturbance Area;
- Pre-Clearance Surveys;
- Clearing Process and Fauna Management Strategies; and
- Habitat Feature Salvage.

3.1 Delineation of Disturbance Area

Land disturbance and rehabilitation will occur progressively as detailed in the 2003 EIS and the WCPL Open Cut Mining Operations Plan/Rehabilitation Management Plan (MOP/RMP). The amount of disturbed land at any one time will primarily be associated with the advancing open pit and active mine waste rock emplacement areas.

The proposed disturbance area will be identified by the project manager in consultation with the Environmental Department as part of the Surface Disturbance Permit process. The extent of disturbance will be selected to minimise or prevent impact to adjacent flora and archaeological sites.

The extent of disturbance will be demarcated by GPS and made visible using temporary fencing, marking tape or GPS guided dozer dependant on the particular project.

3.2 Pre Clearance Surveys

Pre-clearance surveys undertaken by the Environmental Advisor or ecological consultant involve the inspection of flora communities located within proposed disturbance areas. The survey aims to identify habitat features and threatened or endangered fauna and flora as listed under the BC or EPBC Acts.

Habitat features generally consist of hollow bearing trees or other features (fallen logs and rock features) which may provide habitat to birds, mammals and reptiles. Wombat burrows are also known to occur on site.

In the event that any threatened flora or fauna species are observed during the habitat assessment the *WA-ENV-PRO-506.2 Threatened Species Management Protocol* is initiated.

3.3 Clearing Process and Fauna Management Strategies

3.3.1 Vegetation clearing

A two stage vegetation clearing process has been adopted at WCPL to mitigate harm to fauna. The steps have been developed to mitigate harm to fauna occupying habitat features and consist of the following steps:

- Potential habitat features are identified during a pre clearance survey and are marked with either an 'H' or marking tape in consultation with the project manager and operator;
- Surrounding trees are felled and the habitat tree is disturbed (nudged) with equipment to encourage relocation;
- The habitat tree is left for 24 hours overnight to promote self-relocation of fauna and then soft felled the following day;and
- The habitat tree is either mulched or stored for use on rehabilitation sites.

3.3.2 Wombat burrow clearing

A specific burrow clearing protocol has been developed by WCPL to mitigate harm to wombats during the clearing process. The process is aimed to avoid excavation of occupied burrows by encouraging self-relocation of wombats through identification of burrows during pre clearance, confirmation of use, and exclusion. The process is as follows:

- Wombat burrows are identified and marked with stake and marking tape during the pre clearance survey in consultation with the project manager and operator;
- Pre clearance survey should include surrounding area to ensure burrow availability for Wombat self-relocation;
- To determine if burrows are active, use infrared cameras or soft-blocking the entrance using sticks placed lightly over the entrance so that the animal can enter or exit, but the dislodged sticks will provide confirmation of use;
- Permanently block inactive burrows using rocks or logs, or excavate inactive burrow from entrance to termination;
- Place one-way doors on active burrows, so animal can exit but not re-enter, and continue camera monitoring of door;
- Inspect cameras and doors for exit but no re-entry, and ensure no new entry burrows have been dug nearby; and
- Excavate empty burrows from entrance to termination.

The location of habitat features and above procedures are to be communicated to operators by the project manager prior to the commencement of clearing activities.

3.4 Habitat Feature Salvage

Habitat features from disturbed areas such as rocks or hollow bearing trees and logs may be stored in designated areas for relocation onto rehabilitation areas where possible. These features will provide habitat for ground dwelling native fauna.

4.0 Review and Reporting

As this Procedure forms an appendix to the WCPL BMP, this Procedure will be reviewed during any review of the BMP (refer Section 11 of the BMP).

All reporting, including reporting of environmental incidents, will be undertaken in accordance with the requirements of WCPL's various approvals (refer Section 11 of the BMP).

5.0 Responsibilities

Responsibilities under the Vegetation and Burrow Clearance Protocol are detailed below in **Table 1**.

Table 1: Vegetation and Burrow Clearance Protocol Responsibilities

No	Task	Responsibility
1	Delineation of Disturbance Area	Project Manager
2	Pre Clearance Survey	Environmental Advisor
4	Clearing Process & Fauna Management Strategies	Environmental Advisor and Project Manager
5	Habitat Feature Salvage	Environmental Advisor and Project Manager

APPENDIX L
THREATENED SPECIES MANAGEMENT PROTOCOL

WAMBO COAL
THREATENED SPECIES MANAGEMENT PROTOCOL

Document No. WA-ENV-PRO-506.2
May 2020

Document Control

Document No.	WA-ENV-PRO-506.2
Title	Threatened Species Management Protocol
General Description	Threatened Species Management at WCPL
Document Owner	Environment & Community Manager

Revisions

Rev No	Date	Description	By	Checked	Signature
1	July 2016	Original as part of Biodiversity Management Plan	Harry Egan	Steve Peart	
2	July 2017	Responses to DPE comments	Harry Egan	Steve Peart	
3	May 2020	Revised as part of BMP revision (V1). Added review/ reporting section and updated legislative references	WCPL & ELA	Nicole Dobbins	

1.0 Purpose

The purpose of this Threatened Species Management Protocol (TSMP) is to outline the approved procedure for the management of threatened or endangered fauna and flora species within Wambo Coal Pty Ltd (WCPL) owned land.

Implementation of this protocol will minimise impacts on both non-threatened and threatened flora and fauna as listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2.0 Scope

This TSMP is triggered by the discovery of threatened or endangered flora and fauna as part of pre-clearance inspection completed as part of the WCPL *WA-ENV-PRO-506.1 Vegetation and Burrow Clearance Protocol* (VBCP). The TSMP dictates the required management measures to be undertaken for the management of threatened or endangered communities. The TSMP forms part of WCPL's Biodiversity Management Plan and has been developed in accordance with DA 305-7-2003.

3.0 Procedure

The TSMP consists of the following steps:

- Observation/Surveys for Threatened Species;
- Threatened species management strategies;
    - Avoiding Remnant Woodland Enhancement Areas;
    - Threat Abatement;
    - Capture and Release;
    - Relocation;
    - Reuse and Provision of Habitat Resources; and
- Consultation and Reporting.

3.1 Observation/Surveys for Threatened Species

Pre-clearance surveys of proposed disturbance areas (where threatened species may be located) will be undertaken as part of the VBCP by a suitably qualified ecologist or the WCPL Environmental Advisor. Surveys of rehabilitation and offset areas are also undertaken annually as part of the WCPL annual rehabilitation monitoring program.

3.2 Threatened Species Management Strategies

Management strategies to mitigate or prevent impacts to identified threatened species will be determined on a case by case basis. Some examples of possible management strategies are provided below.

3.2.1 Avoiding Remnant Woodland Enhancement Areas

As per Condition B72 of DA 305-7-2003, WCPL shall not undertake any activities within the RWEA other than the following:

- Approved underground mining operations

- Exploration and ancillary disturbance activities under an approved Biodiversity Management Plan or Conservation Agreement
- Environmental management, environmental monitoring or other monitoring required under this consent or under an approved management plan or monitoring program
- Rehabilitation activities under an approved Extraction Plan

Prior to any disturbance within the RWEA WCPL will seek approval from:

- The Federal Minster of the Department of the Environment for any proposed disturbance activities in RWEA A
- The Planning Secretary for Department of Planning, Industry and Environment (DPIE) for any proposed disturbance activities in all RWEA Areas

WCPL will also ensure that proposed activities are conducted in accordance with relevant conditions of DA 305-7-2003 and the Conservation Agreements (as described in the WCPL Biodiversity Management Plan).

3.2.2 Threat Abatement

Threat abatement is the implementation of management strategies at the site to alleviate threatening processes. Actions may include:

- Activity modification to reduce or prevent impacts;
- Scheduling of vegetation clearance activities; and/or
- Relocation of identified species.

Strategies will be dependent on the degree of flexibility provided by mine planning and practicality of available options. Where there is some flexibility in the location of the disturbance (for example some access tracks and exploration drill holes) and the extent of the threatened species or its habitat is limited, WCPL will relocate the disturbance to avoid impacts

3.2.3 Capture and Release

Capture and relocation of identified threatened fauna will be attempted where conditions allow utilising accepted trapping techniques. Captured fauna will be released into suitable habitat as identified by a qualified ecologist. All capture and relocation activities will be undertaken by a suitably qualified and licensed ecologist.

3.2.4 Relocation

As identified above, all relocation of threatened fauna will be undertaken by a suitably qualified and licensed ecologist. The ecologist will identify suitable habitat for relocation, this should be the nearest suitable habitat to the capture site and in an area that is not likely to be impacted in the future. The release site should be within WCPL landholding. Release should only be undertaken at an appropriate (safe) time of day for the relevant species (to be determined by ecologist based on licence conditions).

3.2.5 Reuse and provision of habitat resources

Habitat features such as tree hollows, logs and bush rocks should be salvaged during clearing operations, where possible, and retained for re-use at the same location if rehabilitation is to occur, or in other rehabilitation areas.

3.3 Consultation and Reporting

The activities conducted as a result of the TSMP will be undertaken under the guidance of the supervising ecologist in consultation with WCPL Environment and Community Manager (E&C Manager) or delegate. The results of actions undertaken as part of the TSMP will be reported in the Annual Review.

Regulatory authorities will be consulted with as required in compliance with the Biodiversity Management Plan and DA 305-7-2003.

4.0 Review and Reporting

As this Procedure forms an appendix to the WCPL BMP, this Procedure will be reviewed during any review of the BMP (refer Section 11 of the BMP).

All reporting, including reporting of environmental incidents, will be undertaken in accordance with the requirements of WCPL's various approvals (refer Section 11 of the BMP).

5.0 Responsibilities

Responsibilities under the TSMP are detailed below in **Table 1**.

Table 1: TSMP Responsibilities

No	Task	Responsibility
1	Implementation of the WCPL Vegetation and Burrow Clearance Protocol	Environmental Advisor
2	Implementation of Threatened Species Management Strategies	Environmental Advisor and Environment and Community Manager
3	Consultation and Reporting	Environmental Advisor and Environment and Community Manager

APPENDIX M
ASSESSMENT OF POTENTIAL ENVIRONMENTAL CONSEQUENCES FOR SOUTH BATES EXTENSION UNDERGROUND MINE

ASSESSMENT OF POTENTIAL ENVIRONMENTAL CONSEQUENCES FOR SOUTH BATES EXTENSION UNDERGROUND MINE

M.1 Longwalls 17 to 24

In accordance with Schedule 2 Condition B7 of Development Consent (DA 305-7-2003), this appendix presents an assessment of the potential environmental consequences of the Longwalls 17 to 24 Extraction Plan in relation to biodiversity, incorporating any relevant information that has been obtained since the consent for these longwalls.

Longwalls 17 to 24 are shown on **Figure M-1**.

M.2 Flora

FloraSearch (2017) recorded one critically endangered ecological community (CEEC) listed under the EPBC Act (Central Hunter Valley Eucalypt Forest and Woodland) and two endangered ecological communities (EECs) listed under the BC Act (Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions and the Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions) above the South Bates Extension Underground Mine.

In the South Bates Extension Underground Mine, the Central Hunter Grey Box – Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions EEC is equivalent to the Central Hunter Valley Eucalypt Forest and Woodland CEEC (listed under the EPBC Act) and is collectively referred to as the Central Hunter Grey Box – Ironbark Woodland EEC/CEEC.

In accordance with Condition 36A of the Development Consent[2], a Groundwater Dependent Ecoystem Study was undertaken in 2018. Hunter Eco (2019) undertook an inspection on 3 October 2018, during which the floristic content along drainage lines was documented with particular attention given to North Wambo Creek and an area mapped by FloraSearch (2017) as containing predominantly *Melaleuca decora*.

Hunter Eco (2019) concluded that the riparian vegetation along North Wambo Creek (mapped by FloraSearch [2017] as Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions) does not meet the definition of a threatened ecological community under the *Biodiversity Conservation Act, 2016*. Other key conclusions are as follows (Hunter Eco, 2019):

- The quality of the riparian community is moderate to poor primarily as a consequence of historic clearing and ongoing grazing.
- The alluvium in the vicinity of the North Wambo Creek riparian vegetation is currently unsaturated.
- Of the riparian North Wambo Creek species, River Oak (*Casuarina cunninghamiana*) is the most likely to have 'facultative' groundwater dependence, with a likely reliance on water facilitated by surface water flow down North Wambo Creek and possible temporary saturation of the alluvium during wetter conditions.

[2] Following approval of the Groundwater Dependent Ecosystem Study by DPIE, this condition was removed from the Development Consent (DA 305-7-2003) as part of the updates made following determination of the United Wambo Joint Venture Project (Modification 16).

- South Bates Extension is unlikely to reduce the long-term ability for the River Oak vegetation community to temporarily access groundwater.
- There is unlikely to be a long-term detrimental effect on the River Oak along North Wambo Creek.

In regard to potential environmental consequences on flora, FloraSearch (2017) stated:

> *Mine subsidence effects on the surface associated with the Modification, are expected to vary slightly according to the depth of cover above the coal seam and surface features such as steep narrow ridge lines. Surface cracking of soils may potentially occur over most of the lower flat areas within the Modification, however would likely be less prevalent as depth of cover increases towards the southern escarpment.*
>
> *...*
>
> *The Subsidence Assessment prepared for the Modification indicates an increase in the area of 'topographic depressions' would occur (generally in areas of Derived Grasslands), potentially leading to increased ponding of water on the surface which may result in vegetation death in ponded areas. Increased ponding is also expected to occur on North Wambo Creek which may adversely impact riparian vegetation.*

Overall, FloraSearch (2017) considered it to be unlikely that vegetation above the South Bates Extension Underground Mine would be adversely affected by soil cracking due to mine subsidence.

The Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions overlies Longwall 24 in the vicinity of North Wambo Creek.

Based on the layout of Longwalls 17 to 24 considered by MSEC (2017), there was a predicted increase in the area of topographic depressions, potentially leading to increased ponding of water on the surface (and subsequently resulting in vegetation death in ponded areas). Modelling by MSEC (2017) also indicated that ponding could develop in North Wambo Creek as a result of the formation of topographical depressions due to subsidence and tilting.

FloraSearch (2017) noted there may be some potential impacts to a small area of woodland vegetation (0.25 ha) associated with the potential for surface ponding. There was also the potential for impacts to riparian vegetation along North Wambo Creek due to changes in stream flow.

MSEC (2020) reviewed the predictions for topographical depressions and concluded that mining-induced topographical depressions are predicted to develop above the finishing (i.e. north-eastern) ends of Longwalls 21 to 24. Due to the changes to the longwall layout, the locations of the predicted topographical depressions do not coincide with any mapped woodland.

Further, MSEC (2018; 2019; 2020) predict the subsidence parameters for Longwalls 17 to 24 will be the same as or slightly less than the maxima previously provided in the South Bates Extension Underground Mine Modification Environmental Assessment (WCPL, 2017). As such, environmental consequences on flora are expected to be generally consistent with those presented in the South Bates Extension Underground Mine Modification Environmental Assessment (WCPL, 2017).

M.2.1 Warkworth Sands Woodland Endangered Ecological Community

The Development Consent (DA 305-7-2003) includes performance measures specific to the Warkworth Sands Woodland EEC.

Mapping of the Warkworth Sands Woodland EEC by Orchid Research (2003) indicates that the community has a patchy, yet extensive distribution on lands to the east of Wollombi Brook around Warkworth and between Wollombi Brook and Wallaby Scrub Road. The closest occurrence of Warkworth Sands Woodland EEC is more than 4 km away from the South Bates Extension Underground Mine area.

MSEC (2018; 2020) predicts that far-field horizontal movements resulting from the extraction of Longwalls 17 to 24 are not expected to be associated with any significant strains.

Given the absence of the Warkworth Sands Woodland EEC from the vicinity of the South Bates Extension Underground Mine, the Warkworth Sands Woodland EEC is not expected to experience impacts resulting from the extraction of Longwalls 17 to 24.

M.2.2 White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland Endangered Ecological Community/Critically Endangered Ecological Community

The Development Consent (DA 305-7-2003) includes performance measures specific to the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland EEC/CEEC.

Mapping of the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland EEC/CEEC by Orchid Research (2003) indicates that the community is represented by scattered occurrences of Yellow Box (*Eucalyptus melliodora*) in small isolated groups and individuals along both sides of Wollombi Brook, and near the North Wambo Creek Diversion.

Revised vegetation mapping by FloraSearch (2017) indicates that occurrences of Yellow Box and Blakely's Red Gum within or close to the South Bates Extension Underground Mine area are generally considered to be components of other communities. FloraSearch (2017) concludes that there is no White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland EEC/CEEC within the South Bates Extension Underground Mine area.

MSEC (2018; 2020) predicts that far-field horizontal movements resulting from the extraction of Longwalls 17 to 24 are not expected to be associated with any significant strains.

Given the absence of the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland EEC/CEEC from the vicinity of the South Bates Extension Underground Mine, the White Box, Yellow Box, Blakely's Red Gum Woodland/Grassy White Box Woodland EEC/CEEC is not expected to experience impacts resulting from the extraction of Longwalls 17 to 24.

M.2.3 Central Hunter Valley Eucalypt Forest and Woodland

The Development Consent (DA 305-7-2003) includes performance measures specific to the Central Hunter Valley Eucalypt Forest and Woodland EEC/CEEC.

Mapping by FloraSearch (2017) indicates that the community occurs within the South Bates Extension Underground Mine area.

FloraSearch (2017) considered it unlikely that vegetation would be adversely affected by soil cracking caused by subsidence. This conclusion is supported by inspection of previously undermined areas above the North Wambo Underground Mine, which showed that despite evidence of surface cracking of the soil, the condition of the vegetation on the undermined area was not noticeably different from that on adjacent similar unmined areas and showed no signs of dieback (FloraSearch, 2017). FloraSearch (2017) also noted that the South Bates Extension Underground Mine may result in some potential impacts to a small area of woodland vegetation (0.25 ha) associated with the potential for surface ponding. The majority of this area is associated with the natural section of North Wambo Creek.

MSEC (2018; 2019; 2020) have reviewed the subsidence predictions for Longwalls 17 to 24 and concluded that the maximum predicted subsidence parameters are the same as or lower than the South Bates Extension Underground Mine. FloraSearch (2017) concluded that the South Bates Extension Underground Mine, including Longwalls 17 to 24, is unlikely to have a significant impact on threatened flora species, populations, ecological communities or critical habitat.

Monitoring of environmental consequences against performance indicators and measures relating to threatened ecological communities in the vicinity of Longwalls 17 to 24 is discussed in Section 5.4 of the BMP.

M.2.4 Conservation Areas (including the proposed Wambo offset area under SSD 7142)

The Development Consent (DA 305-7-2003) includes performance measures for the conservation areas (including the proposed Wambo offset area under SSD 7142).

Conservation areas in the vicinity of South Bates Extension Underground Mine include RWEA D, RWEA D Extension and the proposed Wambo offset area under SSD 7142. These areas extend across Longwalls 17 to 24, and are largely comprised of the Central Hunter Valley Eucalypt Forest and Woodland EEC/CEEC. Impacts to the conservation areas would be similar to those predicted for the Central Hunter Valley Eucalypt Forest and Woodland EEC/CEEC.

Monitoring of environmental consequences against performance indicators and measures relating to threatened ecological communities in the vicinity of Longwalls 17 to 24 is discussed in Section 5.4 of the BMP.

M.2.5 Threatened Populations

No flora populations listed in the schedules of the BC Act or EPBC Act have been found in targeted searches or other sampling conducted over the South Bates Extension Underground Mine area (FloraSearch, 2017).

Any disturbance in the South Bates Extension Underground Mine area (e.g. for remediation) will be conducted in accordance with the VBCP and TSMP, which includes procedures in the event that threatened flora populations are identified.

M.2.6 Threatened Flora Species

No flora species listed in the schedules of the EPBC Act or the BC Act have been found in targeted searches or other sampling conducted over the South Bates Extension Underground Mine area (FloraSearch, 2017).

Assessments of Significance were undertaken by FloraSearch (2017) to determine the impacts of the South Bates Extension Underground Mine on five potentially occurring threatened flora species, including the:

- White-flowered Wax Plant (*Cynanchum elegans*);
- Slaty Red Gum (*Eucalyptus glaucina*);
- Brown Pomaderris (*Pomaderris brunnea*);
- Small-flower Grevillea (*Grevillea parviflora subsp. Parviflora*); and
- Illawarra Greenhood (*Pterostylis gibbosa*).

The Assessments of Significance indicated that the South Bates Extension Underground Mine is unlikely to have a significant adverse impact on the species, if they were present (FloraSearch, 2017).

Any disturbance in the South Bates Extension Underground Mine area (e.g. for remediation) will be conducted in accordance with the VBCP and TSMP, which includes procedures in the event that threatened flora species are identified.

M.3 Fauna

Eco Logical (2017) concluded that the potential impacts from the South Bates Extension Underground Mine on threatened fauna species are not considered to be significant due to the minor extent of predicted subsidence and the limited area of grassland vegetation to be cleared.

Any disturbance in the South Bates Extension Underground Mine area (e.g. for remediation) will be conducted in accordance with the VBCP and TSMP.

M.4 Aquatic Ecosystems

North Wambo Creek is an ephemeral creek, with surface water flow only occurring during, and for short periods of time after, rainfall events. An assessment of the stream and riparian biota in North Wambo Creek in 2003 (Resource Strategies, 2003) made the following observations:

> *North Wambo Creek is an intermittent stream. At the time of sampling, North Wambo Creek was characterised by a flowing pool-riffle or pool-run sequence near the confluence with Wollombi Brook; a series of isolated pools in the middle reaches and a dry channel in the upper reaches.*
>
> *…*
>
> *North Wambo Creek has been highly disturbed by historic and present grazing activities. The adjacent land use along North Wambo Creek consists of pasture for cattle grazing. Stock access has led to areas of bank destabilisation and erosion, trampling of riparian and aquatic vegetation and the introduction of cattle wastes into flowing and standing water bodies. These impacts were particularly evident around larger water bodies such as the large pool at site NW7 (Figure HD-3). They were however also evident at smaller pools such as those found in the middle reaches of North Wambo Creek. The impacts of cattle were noticeably absent near the confluence of North Wambo Creek with Wollombi Brook due to fencing, steep slopes and lack of pasture.*
>
> *…*

The SIGNAL A values for North Wambo Creek sites ranged from 4.6 to 5.6 and from 4.5 to 5.5 for Wambo Creek sites. The individual values suggest the water quality at these sites is "possibly mildly polluted" to "probably moderately polluted" (Chessman, 1995; Chessman et. al., 1997). The SIGNAL A values calculated for the pooled stream data (i.e. stream value) for North Wambo Creek and Wambo Creek were 5.4 and 5.3, respectively. The water quality results for North Wambo Creek and Wambo Creek indicate both streams had similar water quality characteristics at the time of sampling and support the SIGNAL A assessment (refer Section HD4.4).

A more recent assessment of North Wambo Creek and the North Wambo Creek Diversion concluded the following (Niche, 2016):

The ephemeral nature of this stream (i.e. the natural variation in flow) is the controlling factor determining the invertebrates found at this location, however sedimentation from previous land use and input from the stream diversion, is likely to exert some influence on community composition. North Wambo sites below the diversion scored in Band B and C, while within the diversion Site 1 Stage 2 and Site 12 (Stage 3) scored in Band D. Considering the catchment condition, it is reasonable to expect a stream health below reference quality (particularly within the stream diversion), with realistic long term expectations of aquatic health likely to be aligned with Band B.

The communities present particularly within the diversion consisted predominately of adult Hemiptera, Coleopterans, and Dipteran larvae. Poor stream health is expected for a recently established drainage channel, however it is encouraging that water is being retained and providing some habitat for pioneering invertebrates. It is expected that recovery of stream health will be a slow process and take a minimum of ten years to recover to a level comparable to pre- realignment condition.

There are no permanent pools along North Wambo Creek above the South Bates Extension Underground Mine. There are shallow pools that occur after flow and typically dry up within a few weeks due to evaporation and seepage.

Subsidence associated with the South Bates Extension Underground Mine may result in temporary changes in surface flow and water quality prior to remediation activities. There is not expected to be significant additional impacts on habitat availability for aquatic biota or water supplies for riparian zone vegetation and other biota with the implementation of the proposed remediation measures.

Advisian (2016) concluded that any effect of the reduction in total flow would not be detectable from the current variation in the flow regime. Advisian (2016) also concluded there is not expected to be any measurable change in the range of total suspended solids concentrations downstream of the South Bates Extension Underground Mine once any scour protection works have been implemented.

Therefore, there is not expected to be significant impacts on habitat availability for aquatic biota, instream organic matter processing rates or water supplies for riparian zone vegetation and other biota.

The North Wambo Creek is located partically above Longwalls 23 and 24 and the North Wambo Creek Diversion is located partially above Longwall 17 and adjacent to the finishing ends of Longwalls 18 to 20 (MSEC, 2018; 2019; 2020). Potential impacts to the North Wambo Creek and North Wambo Creek Diversion include cracking in the stream bed and fracturing of bedrock. MSEC (2018; 2019; 2020) concluded that it would be necessary to remediate the larger surface cracking within the alignment of the North Wambo Creek Diversion after the extraction of the longwalls directly beneath them.

Given the restricted aquatic habitat present in North Wambo Creek and North Wambo Creek Diversion, it is expected that environmental consequences on aquatic ecosystems would be consistent with the South Bates Extension Underground Mine Modification Environmental Assessment (WCPL, 2017).

M.5 Wollemi National Park

The visual landscape in the vicinity of the Wambo Coal Mine is dominated by the Wollemi National Park escarpment and the forested landforms that rise behind the escarpment. The escarpment rises above 600 metres (m) Australian Height Datum (AHD) and peaks at Mount Wambo (approximately 650 m AHD). Cliffs associated with the Wollemi National Park escarpment are shown in **Figures M-1 and M-2**.

Other cliffs in the vicinity of South Bates Extension Underground Mine are addressed in the Land Management Plan for Longwalls 17 to 24.

The Development Consent (DA 305-7-2003) includes performance measures specific to the Wollemi National Park.

In regard to potential environmental consequences on the Wollemi National Park escarpment, the South Bates Extension Underground Mine Environmental Assessment (WCPL, 2017) stated:

> *These cliffs are located outside of the 26.5° angle of draw associated with the Modification longwalls. MSEC (Appendix A) concludes these cliffs are not predicted to experience any significant conventional tilts, curvatures or strains. While these cliffs associated with the Wollemi National Park escarpment could experience low level far-field horizontal movements, it is unlikely that the cliffs would be adversely impacted (Appendix A).*

MSEC (2018) predicts the following for Longwalls 17 to 20:

> *The predicted vertical subsidence for the Cliffs Associated with the Wollemi Escarpment are less than 20 mm ... Whilst these cliffs could experience very low-levels of vertical subsidence, they are unlikely to experience measurable conventional tilts, curvatures or strains, even if the predicted vertical subsidence were exceeded by a factor of 2 times.*
>
> *...*
>
> *The Cliffs Associated with the Wollemi Escarpment are located at a minimum distance of 290 m from these completed WYLW11 to WYLW13 and WMLW14. There were no adverse impacts observed due to the extraction of these longwalls.*
>
> *...*
>
> *…it is not expected that there would be adverse impacts on the Cliffs Associated with the Wollemi Escarpment … resulting from the extraction of WYLW17 to WYLW20.*

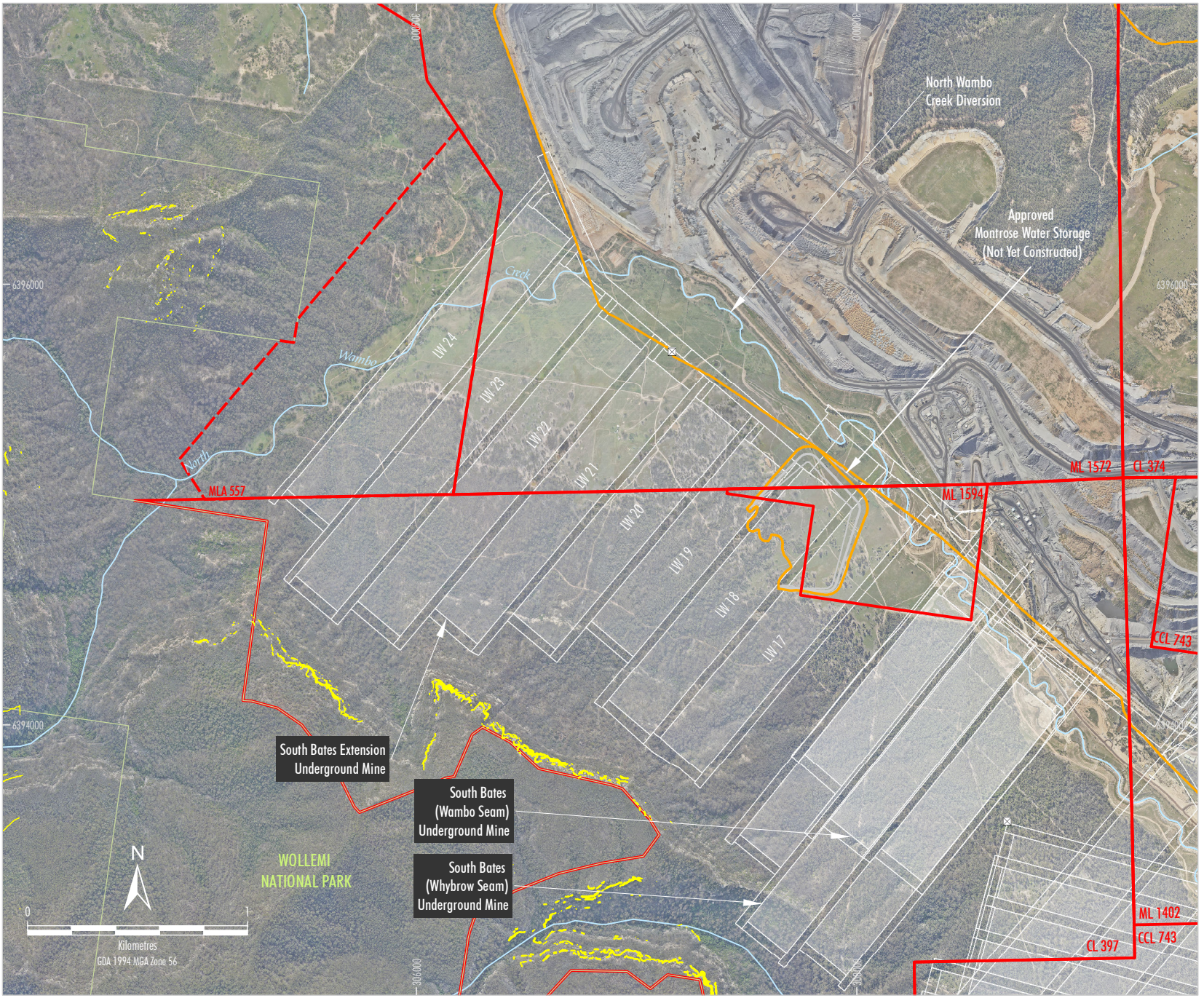
MSEC (2019) concluded the following with regards to the updated layout for Longwalls 17 to 20:

> *The Wollemi Escarpment is located south-west of WYLW17 to WYLW20. The cliffs associated with the escarpment and the nearby intermediate level cliffs are more than 1.5 km from the modified finishing ends of the longwalls. The low level cliffs (i.e. not associated with the escarpment) are located directly above the south-western end of WYLW20. These cliffs are more than 1.0 km from the modified longwall finishing ends.*
>
> *At these distances, the predictions and assessed levels of potential impact for the cliffs do not change due to the proposed modifications to the finishing ends of WYLW17 to WYLW20.*

MSEC (2020) concluded the following with regards to the updated layout for Longwalls 21 to 24:

> *The Cliffs Associated with the Wollemi Escarpment and the Intermediate Level Cliffs are predicted to experience less than 20 mm vertical subsidence. While these cliffs could experience very low level vertical subsidence, they are not expected to experience measurable tilts, curvatures or strains.*
>
> *…*
>
> *The maximum predicted subsidence effects for the Cliffs Associated with the Wollemi Escarpment, Intermediate Level Cliffs and Low Level Cliffs, based on the current longwall layout (i.e. Report No. MSEC1080), are the same as the maximum predicted values based on the layout adopted in the SBEUM Modification and Report No. MSEC848. The predicted subsidence effects for the cliffs have not changed as the longwall commencing ends have remained the same.*

Given the sensitivity of the escarpment and associated cliffs, performance indicators and a monitoring program have been developed for the Wollemi National Park escarpment as summarised in Section 5.4 of the BMP.



LEGEND

- Mining and Coal Lease Boundary
- Mining Lease Application Boundary
- National Park Boundary
- Existing/Approved Surface Development Area
- Approved Underground Development
- Ventilation Shaft
- Cliffs associated with Wollemi National Park Escarpment

Source: WCPL (2020); NSW Spatial Services (2019); MSEC (2016)
Orthophoto: WCPL (May 2019)

Peabody

WAMBO COAL MINE

Wollemi National Park Escarpment Near Longwalls 17 to 24

WAM-09-15_SBX EP_LW21-24_MP_BioMP_202C

APPENDIX N
SUMMARY OF COMMITMENTS

Note: The list of commitments in this appendix is in addition to those explicitly required by Development Consent conditions. The list includes commitments within the BMP and associated appendices, including:

- **Appendix F: Remnant Woodland Enhancement Area Exploration Drilling Procedure (Version 3)**
- **Appendix G: Management Strategy (2020 to 2025 onwards)**
- **Appendix H: Species lists for Rehabilitation (from the WCPL MOP/RMP)**
- **Appendix K: Vegetation and Burrow Clearance Protocol (Version 3)**
- **Appendix L: Threatened Species Management Protocol (Version 3)**

BMP Section	Commitment	Timing
1.1 & 4.1	Secure RWEA E under a conservation agreement pursuant to section 69B of the *National Parks and Wildlife Act 1974* (or public positive covenant and/or restriction on the use of land) by 31 July 2018, or an alternate timeframe agreed with the Planning Secretary of DPIE.	Now
2.3	In accordance with Conditions B7(f) and B75(b) WCPL will consult with the BCD during preparation of this iteration of the BMP.	As required
4.1	Revegetation Areas and Buffer/Grazing Areas are subject to continual change and will be managed in accordance with this BMP.	As required
5	A monitoring program (Section 7.0) will be implemented to monitor the Mine's progress against the developed Completion Criteria.	As required
5.2 & Appendix G	WCPL will aim for exotic plant cover within the Conservation Areas that does not exceed the percentages described in Table 11.	As per Table 11
5.3	Failure to progress towards completion criteria for three consecutive years will trigger further investigation.	As required
5.4	Report on progress against the Subsidence Impact Performance Measures and Indicators (Table 14) in the Annual Review.	Annually
	If a performance measure has been exceeded, WCPL will implement a Contingency Plan.	As required
6.1.1.1	Once finalised, the Conservation Agreement (CA) for RWEA E will be registered pursuant to section 69F of the *National Parks and Wildlife Act 1974.*	As required
	The outcomes of the CAs will be reported in the Annual Review	Annually
6.1.1.3	WCPL will not undertake non permitted activities within the RWEAs unless provided for under the CA (see Section 6.1.1.3) or with prior written consent of the Chief Executive (BCD).	Ongoing
6.1.1.4 and Appendix L (Section 3.2.1)	WCPL will not undertake any mining operations (except approved underground mining operations) or other activities within RWEAs, other than: · Activities approved in this BMP; · Environmental management, environmental monitoring or other monitoring required by DA305-7-2003 or under an approved management plan or monitoring program; and · Rehabilitation activities under an approved Extraction Plan (see Section 6.1.4).	Ongoing

BMP Section	Commitment	Timing
6.1.1.4.1 & 6.3.2.3	WCPL will continue to implement a pest control program in the RWEAs and adjacent grazing land to control the occurrence of pests. Additionally WCPL will participate in community pest animal control programs, and encourage neighbours to implement pest animal control programs.	Ongoing
6.1.1.4.2	WCPL will: · Maintain all existing fences within the RWEAs; · Maintain existing access tracks in the RWEAs to a maximum width of 2m; · Maintain existing access trails in the RWEAs to a maximum width of 4m with 1m either side permissible for clearing; and · Construction of any new internal fence, access track or trail only with prior written approval from BCD or DPIE (excluding cases of emergency, e.g. bushfire risk/control).	Ongoing
6.1.1.4.3	The standard protocols outlined in the Bushfire Management Plan will be followed in the event of a bushfire, including contacting the NSW RFS regarding all fires at the Mine.	Ongoing
	WCPL will only undertake fire management activities that are permitted in the RWEAs.	As required
	WCPL will also implement one hazard reduction burn during low risk fire season in consultation with NSW Rural Fire Services. This burn will take into account the recommended fire intervals given in the *Bush Fire Environmental Assessment Code for New South Wales* (Rural Fire Service February 2006) and the guidelines contained in the *Threatened Species Hazard Reduction Lists for the Bush Fire Environmental Assessment Code* or equivalent replacements.	During low risk fire season
6.1.1.4.5	WCPL will follow current best practice advice regarding the management of threatened species when carrying out any activities within the Conservation area.	As required
6.1.1.4.6	WCPL will undertake all revegetation in RWEAs using indigenous plants to maintain the vegetation structure in keeping with the identified vegetation community, using species produced from material sourced locally and without fertilisers, where the ability to regenerate naturally within a reasonable time frame has been lost, or to prevent soil erosion.	As required
6.1.1.4.8	0.09 ha of Grey Box-Slaty Box Woodland re-growth has been approved for disturbance for exploration drilling of Gas18_6 in RWEA B (refer to Figure 10). Existing access tracks will be utilised, trimming of overhanging branches will be necessary to enable access by the drill rig. Part of the access track is located within Spotted Gum – Narrow-leaved Ironbark – Grey Box Woodland.	As required
	Update BMP if Gas18_6 proceeds for future mine dewatering.	As required

BMP Section	Commitment	Timing
	If required WCPL will review and revise the BMP to include the following: · Strategies to avoid clearing of Warkworth Sands Endangered Ecological Community and minimise the extent of clearing in other ecological communities for gas drainage infrastructure in the RWEAs prior to development of any gas drainage infrastructure in the RWEAs; and/or · Strategies for the minimisation of impacts of exploration activity in the RWEAs, prior to any further disturbance for exploration activities in the RWEAs (i.e. in addition to Gas18_6).	If and as required
	No clearing within RWEA A without the approval of the Commonwealth Minister for the Environment.	Ongoing
6.1.1.4.10	Recording and management of any newly identified Aboriginal Objects within the RWEAs will be undertaken in consultation with BCD (and the Aboriginal community where applicable).	As required
6.1.1.4.11	Research projects will be discussed with BCD before being carried out.	As required
6.1.1.4.12	WCPL will comply with the following conditions when carrying out or maintaining development (including existing fire trails, access trails and infrastructure): · Clear a corridor not greater than 3 metres wide during construction or for maintenance for the installation of fences or other agreed rural structures; · Construct and maintain fences to ensure they are stock proof; · Move fallen timber and any other obstructions to maintain access; · Undertake underground mining beneath the RWEA within CL 743 and ML 1594; · Where clearing is necessary, undertake all works in a manner that minimises disturbance to soil and hydrological characteristics; and · Remove old fences and close unwanted tracks within the RWEAs and facilitate restoration of native vegetation by allowing natural regeneration.	As required
6.1.2	As per the approved Mining Operations Plan, WCPL will rehabilitate identified open cut mining areas in compliance with the Mixed Pasture/Woodland (Domain D) and Woodland Corridor (Domain E) rehabilitation objectives.	In accordance with MOP/RMP schedule
6.1.2.1	Where possible, seed collection and propagation activities will contribute to revegetation associated with the rehabilitation of WCPL disturbance areas.	Ongoing
6.1.2.2	Domestic stock may be introduced to rehabilitation area dependent on future monitoring results showing achievement of relevant completion criteria. In this instance ongoing monitoring and management will occur to ensure sustainable grazing practices are implemented.	As required

BMP Section	Commitment	Timing
	The following mitigation measures will be undertaken to manage the impacts of grazing by domestic stock: • Stock grazing will not be undertaken in areas of high biodiversity values. • Where livestock are being used to remove vegetation by crash grazing the following principles will be considered: o Allow the stock to feed intensively in a defined area only for short periods o Undertake crash grazing between autumn and mid-spring o Manage the movement of livestock using fencing (temporary or permanent) o Monitor feed levels so that overgrazing does not occur. • Where possible ground cover will be maintained towards 100% • The grazing pressure from other herbivores (e.g. kangaroos, wallabies, rabbits and hares) is to be reviewed in the context of the domestic stocking rate that can be utilised.	As required
6.1.2.3	Procedures and recording requirements will be developed for the re-establishment of logs and rock within Management Domains.	As required
6.1.2.4	Assisted natural regeneration will be utilised in areas where there is a viable seed bank of native species present within the topsoil of cleared areas.	As required
6.1.2.5	Direct seeding will be utilised on freshly shaped or existing rehabilitation areas that are not believed to have an adequate natural seed bank within disturbed topsoil to meet LFA completion criteria. Application of seed by hand or machinery will follow preparation of the surface.	Ongoing
6.1.2.6	Tubestock planting will be utilised where it is considered natural regeneration of native species is unlikely to occur in a timely manner. This will be determined on a case by case basis. Species composition and rates for tubestock planting will be reflective of the adjacent and pre-clearing vegetation community type with seedlings propagated from local provenance seed stock where possible.	Ongoing
6.1.3	Ongoing management of the North Wambo Creek Diversion (NWCD) will be consistent with the Domain 7 management actions and objectives as outlined in the MOP/RMP.	Ongoing
6.2	The impacts of subsidence monitoring within the RWEAs and along the Wollemi National Park Cliff line will be undertaken as part of the annual fauna and flora monitoring program as detailed in Section 7.0. Identified impacts will be assessed as detailed in Section 5.4.	Annually
6.3.1	Boundary fence integrity will be inspected during a fenceline audit completed every three years (next audit scheduled for 2022).	Every 3 years i.e. the next audit is due 2022
	Periodic fence line inspections will continue and maintenance will be conducted as required.	Ongoing
	New fencing erected within or on the boundary (including repairs to existing fence lines where required) of the RWEAs will use post and two or three strand non-barbed (plain) wire only. If required boundary fences to these areas may use a top barbed wire (or electric fencing) to protect the fence from neighbouring grazing cattle.	As required

BMP Section	Commitment	Timing
	In order to reduce the risk of injury to native fauna, existing fencing within the boundaries of the Domains will be removed in areas where it is providing no benefit to revegetation outcomes.	As required
6.3.2	The collection of locally sourced native seed will be carried out annually by a licensed provider with the Florabank guidelines (Florabank 1999 and 2000) used to guide the seed collection process.	Ongoing
	The seed collection program will take into account seasonality of seed availability and the specific target seed lists required to establish the various vegetation classes onsite.	Ongoing
6.3.2.1	Rehabilitation of the mine waste rock emplacements and other areas of disturbance will be conducted progressively over the life of the mine and will be scheduled to minimise the disturbed area at any point in time.	Ongoing
	Revegetation of open cut mining disturbed areas will be undertaken in accordance with the approved WCPL MOP/RMP.	Ongoing
6.3.2.2	WCPL will implement an annual weed treatment plan. This plan will be updated annually based on management actions undertaken and results of monitoring and inspections. The key aspects of the program include: • Weed control activities undertaken by a qualified and experienced bush regeneration contractor in accordance with the annual weed treatment plan; • Annual inspections and floristic monitoring of the RWEAs and Revegetation Areas during biodiversity monitoring; • An annual weed survey (if required); • An annual weed management report documenting the weed control activities undertaken prepared by a qualified bush regeneration contractor; • Updates to the annual weed treatment plan based on the results of monitoring, inspections and surveys.	Annually
	In addition to this, an annual routine weed management program will be implemented whereby herbaceous weed species are treated to prevent further spread. Treatment of all weeds will be undertaken by suitably qualified and experienced personnel.	Annually
6.3.3	Routine inspections of the RWEAs and Revegetation Areas will include monitoring of potential waste management issues, including illegal dumping of waste, and removal of waste if/when required. All waste removed from these areas will be managed in accordance with WCPL's Waste Management Plan.	Quarterly
6.3.4	Routine inspections of the RWEAs and Revegetation Areas will include monitoring of potential erosion, sedimentation and soil management issues. All erosion and sediment control works will be carried out in accordance with WCPL's Erosion and Sediment Control Plan.	Quarterly
6.3.5	Nest boxes will be monitored every second year to record data on their usage and identify any maintenance required to ensure they continue to provide potential habitat.	Every 2 years
6.4	WCPL will implement the Management Strategy, included in Appendix G.	As per strategy
6.5.1	WCPL will continue to implement the Surface Disturbance Permit (SDP) process for all land disturbance activities on undisturbed or rehabilitated land. The SDP is attached as Appendix I.	As required

BMP Section	Commitment	Timing
6.5.2	Implement the Vegetation and Burrow Clearance Protocol (VBCP) to minimise impacts on both non-threatened and threatened flora and faunas on all WCPL managed land. The VBCP is attached as Appendix K.	As required
6.5.3	Implement the Threatened Species Management Protocol (TSMP) to facilitate implementation of threatened species management strategies to minimise the potential impacts on threatened flora and fauna species. The TSMP is attached as Appendix L.	As required
6.6	Opportunistic inspections of Domains and RWEAs will be undertaken by an Environmental Representative in accordance with the Management Strategy (Appendix G). These inspections will identify potential fencing, access track, weed and pest management and maintenance requirements. Records of inspections will be maintained by the Environmental Representative and actions will be assigned to relevant personnel as required.	As required
7.2	WCPL will implement the biodiversity monitoring program detailed in Table 19.	Ongoing
	WCPL will establish new biodiversity monitoring sites in 2020 at the following locations: - Reference Sites - 2 permanent biometric quadrats, 2 bird monitoring sites - NWCD Extension Area - 2 permanent biometric quadrats - Pasture Rehabilitation - 2 permanent biometric quadrats - South Bates Extension - 4 permanent biometric quadrats, 4 bird monitoring sites	2020
7.2.1	Monitoring of biodiversity in the RWEAs will be undertaken in accordance with the requirements of the CAs and DA305-7-2003 (Condition B75(h)). These requirements are summarised in Table 20.	As per Table 20
	In compliance with the CAs a qualified ecologist will be engaged to undertake the monitoring in the RWEAs each year.	Annually
	A monitoring report on the RWEAs will be produced by WCPL's ecologist each year and submitted to the Chief-Executive (BCD) within 14 days of it being received by WCPL.	Within 14 days of it being received by WCPL
7.2.1.1	A photo will be taken at each photo point (exact location and bearing) annually during each monitoring event, to allow subsequent comparison and assessment.	Annually
7.2.1.2 & 7.2.1.4	A walk through assessment will be undertaken during the monitoring event to record opportunistic sightings within the RWEAs. This assessment will include a review of specific RWEA enhancement strategies (Section 6.1) to monitor their effectiveness.	Annually
7.2.1.3	BioMetric data will be collected at each of the quadrat monitoring sites listed in Table 19. Results will be compared to baseline and benchmark quadrat data and reported in the Annual Review. The Monitoring Data Sheet in Appendix J will be used to record the Biometric Monitoring Data.	Annually
7.2.1.4	The monitoring of indicator species will be used to qualitatively validate BioMetric and LFA monitoring results. Avifauna (as an indicator species) will be monitored to assess the effectiveness of management measures in maintaining species richness and increase the relative abundance of woodland birds within Management Domains (except grazing). Systematic surveys at a selection of representative sites already established for Biometric monitoring will be utilised (Table 19).	Annually

BMP Section	Commitment	Timing
	Fauna species diversity and abundance will be monitored annually in spring.	Annually (Spring)
	Additional avifauna monitoring undertaken in winter during alternate years (starting 2016) will target the Swift Parrot (*Lathamus discolor*) and the Regent Honeyeater (*Xanthomyza phrygia*). The actual total period over which monitoring will occur will be dependent on the ultimate mine life.	2 Yearly, starting in 2016 (Winter)
	Monitoring will be undertaken in accordance with the techniques described in Table 22.	Ongoing
7.2.2	WCPL will revegetate areas of the Mine to woodland, pasture and/or riparian vegetation, as described in the WCPL MOP/RMP. A number of techniques, such as visual monitoring, LFA and Biometric monitoring will be utilised to monitor the progress of the revegetation of disturbance areas.	Ongoing
7.2.2.1	Visual monitoring of revegetation will be undertaken to ensure vegetation is establishing and to determine the need for any maintenance and/or contingency measures (such as the requirement for supplementary plantings, erosion control and weed and animal pest control).	Ongoing
7.2.2.2	LFA and Biometric Monitoring will be adopted as the primary monitoring methodologies to assess revegetated landscape stability and progress towards quantitative completion criteria targets. Monitoring will be undertaken annually as per the locations detailed in Table 19 and Figure 13, and consistent with the methodology outlined in Section 7.1. Areas that have progressed beyond the landform establishment phase will transition to Biometric monitoring as described in Section 6.1.3.	Annually
7.2.3.1	Bed and bank stability monitoring will be undertaken annually by surveying consultants. Written assessment will be completed, detailing any areas of significant erosion, bare soil and subsidence along each creek line.	Annually
7.2.3.2	Riparian vegetation monitoring will be undertaken annually along North Wambo Creek, South Wambo Creek and Stoney Creek using cross sectional and longitudinal transect surveys.	Annually
	Visual assessment of the impact of erosion and subsidence will also be included as part of an ongoing photographic record.	Annually
7.2.3.3	Freshwater macro-invertebrate monitoring will be undertaken at identified monitoring locations targeting critical creek lines, every five years.	Every 5 years i.e. next due 2021
7.2.4	Areas overlying existing underground workings or proposed underground mining areas are subject to annual subsidence monitoring inspections.	Annually
7.2.5.1	Biometric monitoring of GDE's will be undertaken. BioMetric data will be collected at each of the quadrat monitoring sites listed in Table 19. Results will be compared to baseline and benchmark quadrat data (refer Appendix C) and reported in the Annual Review. The Monitoring Data Sheet in Appendix J will be used to record the Biometric Monitoring Data.	Annually
7.2.5.2	Photo monitoring of GDEs will be undertaken at points identified in Table 23.	Annually

BMP Section	Commitment	Timing
7.2.5.3	Tree measurements will be undertaken for 30 River Oak trees along North Wambo Creek. Monitoring locations are provided in Table 24.	Annually
7.2.5.4	The extent of the River Oak Riparian Tall Woodland community along the upper reach of North Wambo Creek will be mapped annually using the latest available aerial imagery and rapid data points collected on the ground. Any changes in the extent of the community will be reported in the Annual Review.	Annually
7.3	Monitoring results will be collated after each monitoring round and compared against the Completion Criteria and Performance Targets in Section 5.0. If monitoring results show that targets are not being met, the TARPs in Section 8.0 will be implemented.	After each monitoring round
	All monitoring results are filed by the Manager Environment and Community (ECM) and/or Environmental Representative within the document control system.	Ongoing
	Records are maintained at the Mine for at least four years after the monitoring or event to which they relate took place, as required by law. All records are kept in a legible form, or in a form that can readily be reduced to a legible form.	For at least 4 years after the monitoring event
	Monitoring results for the annual biodiversity monitoring program are included in WCPL's Annual Review reports, which are publicly available on WCPL's website. Where relevant, statistical analysis (including any underlying assumptions) will also be included in the Annual Review reports.	Annually
8.2	WCPL will assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Section 5.0.	As required
8.2	Where any exceedance of these criteria and/or performance measures has occurred, WCPL will, at the earliest opportunity: · Take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; · Consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and · Implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.	As required
	WCPL will notify the Chief-Executive (BCD) in writing as soon as possible after becoming aware of the deterioration of any of the Conservation Values, or of any threat to the Conservation Values.	As required
8.3	WCPL will implement the Trigger Action Response Plan (TARP) for Native Vegetation and Habitat Complexity (Biometric) (Table 25) if: - the score obtained during the annual monitoring round has stagnated or is retreating from completion target range for three consecutive years.	If and when trigger reached
8.3	WCPL will implement the TARP for Landscape Function Analysis (LFA) - Landscape Stability (Table 27) if: - there is <5% annual improvement or significant decline in LFA Score (from previous monitoring round).	If and when trigger reached
8.3	WCPL will implement the TARP for Subsidence (Table 28) if: - the biodiversity performance measure in Section 5.4 has been exceeded, or is likely to be exceeded.	If and when trigger reached

BMP Section	Commitment	Timing
8.4	If a non-compliance of any approval condition is identified, WCPL will investigate the noncompliance and implement corrective actions as required. Reporting of non-compliances will be undertaken in accordance with WCPL's statutory requirements	As required
	A review of the effectiveness of the corrective or preventative action will be undertaken within one month of the occurrence of the incident and the relevant procedures will be updated as required.	Within one month of the incident
9	All personnel and contractors at the Mine undergo General Induction Training before being allowed to commence work at the Mine. This includes specific training in flora and fauna risks, the location of Domains, vegetation clearance protocols (including Surface Disturbance Permits), cultural heritage and rehabilitation.	As required
	Employees and permanent full-time contractors also undergo specific training undertaken as tool-box talks. This type of training is provided on an as-needed basis.	As required
5.4 & 10 and Appendix F (Section 5.0)	All biodiversity related community complaints received by WCPL will be recorded within the Community Complaints Register.	As required
	The E&C Manager will investigate the complaint, which will include, where possible, contacting the complainant within 24 hours to discuss the complaint.	Within 24hrs of a complaint
	A review of the effectiveness of the corrective or preventative actions will be conducted within a month of the complaint and the relevant work procedures updated if required.	Within 1 month of a complaint
	Preliminary investigations will commence as soon as practicable upon receipt of a complaint to establish if WCPL is responsible. All efforts will be made to determine the likely causes contributing to the complainant's concerns.	As soon as practicable upon receipt of a complaint
	WCPL will attempt to address the complainant's concerns such that a mutually acceptable outcome is achieved. However if required, WCPL may refer the matter to the Planning Secretary for resolution.	As required
	WCPL will retain a copy of the Community Complaints Register for at least four years.	For at least 4 years from the date of the complaint
	The E&C Manager will ensure the latest Community Complaints Register is posted on the WCPL website.	Monthly
11	WCPL will review the performance of the biodiversity monitoring program outlined in the BMP annually.	Annually (31 Dec)

BMP Section	Commitment	Timing
11.1	WCPL will undertake a complete review of the BMP: - Every two years; - When there are changes to consent or licence conditions relating to biodiversity; - Prior to new underground mining areas being developed; - Following significant biodiversity related incidents at WCPL; - Following continual exceedance of completion criteria; - Following submission of an Annual Review; - Following an independent environmental audit which requires BMP review; or - If there is a relevant change in technology, practice or legislation The revised BMP will be re-submitted to the Planning Secretary for approval as required by Condition D7 of DA305-7-2003.	Every 2 years or as required (refer Section 11.1)
	A copy of the revised BMP will be submitted to the Federal Minister for Environment for approval, in accordance with Condition 5 of EPBC approval 2003/1138.	Every 2 years or as required (refer Section 11.1)
11.2	Prior to the end of March each year, WCPL will review the environmental performance of the Mine and submit an Annual Review report to the DPIE. The Annual Review will be prepared in accordance with Project Approval Requirements. A copy of the Annual Review will be forwarded to other relevant government agencies, including BCD.	Annually (by 31 March)
11.3 and Appendix G	After each Monitoring Event, WCPL's Ecologist will produce a monitoring report on the Conservation Area, in accordance with the requirements of Annexure D of WCPL's Conservation Agreements (refer Section 11.3 of the BMP).	Annually (by 1 March)
	The Monitoring Report will be submitted to the Chief-Executive (BCD) within 14 days of it being received by WCPL.	Within 14 days of it being received by WCPL
11.4	Every 5 years WCPL will commission an Independent Audit of the compliance with the conditions of EPBC 2003/1138, in accordance with Condition 4 of EPBC 2003/1138. This audit will be undertaken in accordance with the requirements listed in Section 11.4 of the BMP.	Every 5 years i.e. next audit due 2024
	Upon direction from the Minister, WCPL will ensure that an independent audit of compliance with the conditions of EPBC 2016/7816 is undertaken and a report submitted to the Minister, in accordance with Condition 7 of EPBC 2016/7816.	As required
11.5	By the end of October 2020, and every 3 years, unless the Planning Secretary directs otherwise, WCPL will commission an Independent Environmental Audit of the Mine. This audit will be undertaken in accordance with the requirements listed in Section 11.5 of the BMP.	Oct 2020 then every 3 years

BMP Section	Commitment	Timing
11.6	A comprehensive summary of the biodiversity monitoring results will be made publicly available at WCPL's website. Information on the website will be updated regularly as required by DA305-7-2003. WCPL will also ensure that any information relevant to biodiversity management is uploaded to the website (and kept up to date).	As required
11.7	All reportable incidents (that are causing or threatening material harm to the environment) will be reported via the EPA's Environmental Line on 131 555 by the E&C Manager in accordance with WCPL's Pollution Incident Response Management Plan (PIRMP).	Immediately after becoming aware of the incident
	For all other incidents that do not cause or threaten material harm to the environment associated with the Mine, WCPL will notify the Planning Secretary and any other relevant agencies as soon as practicable after WCPL becomes aware of the incident.	As soon as practicable after becoming aware of the incident
	Within 7 days of the date of the incident, WCPL will provide the Planning Secretary and any relevant agencies with a detailed report on the incident.	Within 7 days of the date of the incident
Appendix F (Section 2)	All exploration activities within the RWEAs will be undertaken in accordance with the conditions of WCPL's development approvals, direction from the DPIE and relevant mining and coal leases	As required
Appendix F (Section 4.2)	Prior to the commencement of exploration and disturbance activities detailed in Section 3, WCPL will notify the DPIE in writing of its intent to undertake the proposed works.	Prior to exploration activities occurring
Appendix F (Section 4.2)	No exploration activities are permitted to occur without written consent from the DPIE. Exploration within RWEA A will require additional approval from the Commonwealth Department of Environment.	Prior to exploration activities occurring
Appendix F (Section 4.3)	Where proposed drill sites have been approved by the DPIE, they will undergo a pre disturbance assessment as part of the WCPL Surface Disturbance Permit WA-SAH-PER-305.23 (SDP) and with consideration to the NSW DPIE, Resources Regulator (RR) guideline *ESG5: Assessment Requirements for Exploration Activities* (DPIE RR, 2015).	Prior to disturbance
	A close out inspection of the site on completion of works will be undertaken by a site geologist and member of WCPL's Environmental Department post-rehabilitation to ensure the site is rehabilitated to a high standard as part of the SDP process. Any corrective actions arising from the inspection will be documented and actions taken to rectify any issues.	Following completion of work
Appendix F (Section 4.4)	Prior to site entry and at the start of each day all vehicles must be clean and inspected as part of a pre start inspection to confirm the mechanical condition of the plant is satisfactory.	Prior to site entry and at the start of each day

BMP Section	Commitment	Timing
	Access to and from drill sites will be via approved pre-existing tracks identified during the SDP process.	Ongoing
	These tracks will be inspected during and after the completion of activities to determine that no spills are present and tracks are left in a satisfactory condition.	During and after the completion of activities
Appendix F (Section 4.5)	As exact disturbance will vary slightly on a site by site basis, specific controls and rehabilitation measures will be detailed in the site specific SDPs.	As required
Appendix F (Section 4.5.1)	Wherever practicable, existing native vegetation will be retained and vegetation clearance avoided at all drill sites and along designated access tracks. Where vegetation clearance is unavoidable WCPL will limit vegetation removal to • Trimming of tree limbs <100mm in diameter, that may inhibit access along access tracks; and • Removing suspended branches that pose a safety risk; and • Removing fallen trees from access tracks. Removed vegetation will either be mulched or retained for onsite habitat if suitable.	As required
Appendix F (Section 4.5.2)	Earthworks required for the installation of annular bags will generally consist of a single cubic meter excavation and will be located within a pre disturbed area such as an access track.	As required
Appendix F (Section 4.5.3)	Measures that will be implemented to manage erosion and sedimentation resulting from exploration activities in the RWEAs will generally include: • Identifying waterways and drainage lines in close proximity of the site, prior to commencement of any proposed disturbance; • Diverting clean water away from disturbed areas e.g. through the use of silt bags upslope of the work site; • Installing appropriate sediment controls to manage dirty water runoff from disturbed areas (as detailed within the site specific SDP); • Inspecting and maintaining sediment controls on a regular basis as well as before and after rain events, to ensure they work efficiently; and • Restricting the use of unsealed roads and access tracks during wet weather to prevent damage to that track or road (unless roads/tracks area designed and constructed for wet weather use).	As required
Appendix F (Section 4.6.1)	All works will be completed utilising water carts and track/tyred drill rigs. Ancillary support vehicles, such as trucks for transporting drill rods and light vehicles for transporting workers and miscellaneous tools and materials, will also be utilised at each drill site.	As required
Appendix F (Section 4.6.2)	In accordance with WCPL's exploration licence conditions, boreholes will be constructed/ maintained and decommissioned in accordance with standards equivalent to or exceeding the *Minimum Construction Requirements for Water Bores in Australia* (NUDLC 2012).	As required

BMP Section	Commitment	Timing
	WCPL will ensure that the construction, operation, maintenance and decommissioning of boreholes does not cause or enhance: • Hydraulic connection between aquifers; • Contamination or cross-contamination of aquifers; • The escape of natural or noxious gases; • The uncontrolled surface discharge of ground waters; • Collapse of the surrounding surface; or • Hazards to persons, stock and wildlife.	As required
	The drill hole casing will be completed with steel and will allow for the removal of the casing at the completion of the exploration activities.	As required
	Drilling water will be obtained locally from a fresh water fill point. This will be the only water utilised for the drilling process and will be used in the above ground sumps to mix the drilling products.	As required
Appendix F (Section 4.6.3)	Only biodegradable products, such as those listed in Table 1 (or alternate supplier equivalent), will be used during drilling operations in RWEAs.	As required
	Safety Data Sheets for these products will be retained on site at all times. Any additional drilling products that may be required will be considered environmentally low risk products.	As required
Appendix F (Section 4.6.4)	WCPL will ensure the operational noise generated by exploration drilling in RWEAs does not exceed the noise criteria detailed in WCPL's Noise Management Plan. All drilling will be conducted during day time hours only.	As required
Appendix F (Section 4.6.5)	WCPL will ensure that the following measures are implemented in accordance with Condition B46 of DA305-7-2003 and WCPL's Air Quality and Greenhouse Gas Management Plan (AQGGMP): • Best management practice is employed for dust control onsite; • Air quality impacts are minimised during adverse meteorological conditions and extraordinary events; and • Compliance with the relevant conditions of consent.	As required
Appendix F (Section 4.6.6)	Measures that will be implemented to manage waste and hazardous materials from approved exploration activities include the following: • Appropriate bins on site for general waste; • Suitably sized pumps with appropriate erosion and sediment controls will be used to capture all drilling fluid from drilling activities. The drilling fluid will be reused and on completion of drilling activities will be pumped out for disposal at an appropriate facility or other destination; • Equipment and/or materials to capture drips and spills will be used during the transfer of chemicals, fuels and oils and when maintaining oil or fuel filled components; • All chemicals, fuels and oils (excluding those contained within plant and equipment and those for personal use) will be: o Stored and handled in accordance with the relevant Material Safety Data Sheet and Australian Standard for the material; o Stored in appropriate containers that are in good condition and labelled to clearly identify the stored product; and	As required

BMP Section	Commitment	Timing
	o Kept in a facility or area which is capable of containing at least 100% of the largest container capacity stored within that area.	
Appendix F (Section 4.6.7)	Decommissioning and sealing of boreholes and site rehabilitation will be consistent with the DPIE *Exploration Code of Practice: Rehabilitation and Exploration Code of Practice: Environmental Management* (DPIE RR, 2015).	As required
	As part of the SDP process, a close out inspection will be undertaken by a site geologist and member of WCPL's Environmental Department to ensure the site is rehabilitated to a high standard. Any corrective actions arising from the inspection will be documented and actions taken to rectify any issues.	Following completion of work
Appendix F (Section 6.0)	A register of completed and proposed works within the RWEA current from 1 January 2016 will be maintained to assist DPIE with the assessment of cumulative impacts. This register is included as Appendix A.	As required
Appendix F (Section 6.0), Appendices K and L (Section 4.0)	This Procedure will be reviewed during any review of the BMP	During review of BMP
	All reporting, including reporting of environmental incidents, will be undertaken in accordance with the requirements of WCPL's various approvals (refer Section 11 of the BMP).	As required
Appendix G	WCPL will implement the management strategy described in Appendix G of the BMP.	As per Appendix G
Appendix H	Sowing rates will be subject to availability, sowing time, seasonal conditions and landscape, and will be determined in consultation with the WCPL rehabilitation specialist.	Ongoing
	As recommended by BCD, Kikuyu would not be planted within 50 metres of woodland restoration areas to enable woodland plants to become established.	Ongoing
Appendix K (Section 3.1)	The proposed disturbance area will be identified by the project manager in consultation with the Environmental Department as part of the Surface Disturbance Permit process. The extent of disturbance will be selected to minimise or prevent impact to adjacent flora and archaeological sites. The extent of disturbance will be demarcated by GPS and made visible using temporary fencing, marking tape or GPS guided dozer dependant on the particular project.	Prior to disturbance
Appendix K (Section 3.2) and Appendix L (Section 3.1)	Pre-clearance surveys of flora communities located within proposed disturbance areas will be undertaken by the Environmental Advisor or ecological consultant.	Prior to clearing
Appendix K (Section 3.2)	If threatened flora or fauna species are observed during the habitat assessment the Threatened Species Management Protocol will initiated.	Prior to clearing
Appendix K (Section 3.3)	WCPL will implement the vegetation clearing process in Section 3.3 of the VBCP. The location of habitat features and the vegetation clearing process will to be communicated to operators by the project manager prior to the commencement of clearing activities.	Prior to clearing

BMP Section	Commitment	Timing
	Long term fauna management strategies such as the placement of nesting or roosting boxes will be implemented as detailed in the Biodiversity Management Plan.	As required
Appendix L (Section 3.1)	Pre-clearance surveys of proposed disturbance areas will be undertaken as part of the VBCP by a suitably qualified ecologist or the WCPL Environmental Advisor.	Prior to clearing
	Surveys of rehabilitation and offset areas are also undertaken annually as part of the WCPL annual rehabilitation monitoring program.	Annually
Appendix L (Section 3.2)	Management strategies to mitigate or prevent impacts to identified threatened species will be determined on a case by case basis.	As required
Appendix L (Section 3.2.1)	Prior to any disturbance within the RWEA WCPL will seek approval from: · The Federal Minster of the Department of the Environment for any proposed disturbance activities in RWEA A · The Planning Secretary for Department of Planning, Industry and Environment (DPIE) for any proposed disturbance activities in all RWEA Areas.	Prior to disturbance
	WCPL will also ensure that proposed activities are conducted in accordance with relevant conditions of DA 305-7-2003 and the Conservation Agreements (as described in the WCPL Biodiversity Management Plan).	As required
Appendix L (Section 3.2.2)	WCPL will implement threat abatement strategies as required, to alleviate threatening processes. Strategies will be dependent on the degree of flexibility provided by mine planning and practicality of available options. Where there is some flexibility in the location of the disturbance (for example some access tracks and exploration drill holes) and the extent of the threatened species or its habitat is limited, WCPL will relocate the disturbance to avoid impacts.	As required
Appendix L (Section 3.2.3)	Capture and relocation of identified threatened fauna will be attempted where conditions allow utilising accepted trapping techniques. Captured fauna will be released into suitable habitat as identified by a qualified ecologist. All capture and relocation activities will be undertaken by a suitably qualified and licensed ecologist.	As required and where possible
Appendix L (Section 3.3)	The activities conducted as a result of the TSMP will be undertaken under the guidance of the supervising ecologist in consultation with WCPL Environment and Community Manager (E&C Manager) or delegate.	As required
	The results of actions undertaken as part of the TSMP will be reported in the Annual Review.	Annually
	Regulatory authorities will be consulted with as required in compliance with the Biodiversity Management Plan and DA 305-7-2003.	As required