YANCOAL
兖煤澳大利亚有限公司
MOOLARBEN COAL

UG4 LONGWALLS 409 TO 414 BIODIVERSITY MANAGEMENT PLAN

Version	Issue Date *(Month/YYYY)*	Revision Detail *(Include the main areas reviewed, trigger / why the change)*	Author(s)	Review Team
1	October 2024	Original BMP for the UG4 Longwalls 409 to 414 Extraction Plan	MCO	MCO
2	January 2025	Updated to Address Agency Consultation	MCO	MCO
3	April 2026	Minor Administrative Updates for Consistency Across the UG4 Longwalls 409 to 414 Extraction Plan	MCO	MCO

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF ATTACHMENTS

1.0 INTRODUCTION

The Moolarben Coal Complex is an open cut and underground coal mining operation located approximately 40 kilometres (km) north of Mudgee in the Western Coalfield of New South Wales (NSW) (**Figure 1**).

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Complex on behalf of the Moolarben Joint Venture. MCO is a wholly owned subsidiary of Yancoal Australia Limited.

The UG4 Underground Mine (UG4) is a component of the approved Moolarben Coal Complex (**Figure 2**). First workings for UG4 commenced in October 2020 (**Figure 3**). Secondary extraction in UG4 of the first Longwall (LW) 401 commenced in July 2022. LW401 to 407 were completed in January 2026. The extraction of LW409 to 414 (hereafter referred to as LW409-414) within UG4 is scheduled to commence in September 2026.

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 and continue to be carried out in accordance with Project Approval (05_0117) (Moolarben Coal Project Stage 1) (as modified) and Project Approval (08_0135) (Moolarben Coal Project Stage 2) (as modified).

1.1 PURPOSE AND SCOPE

This UG4 Longwalls 409 to 414 Biodiversity Management Plan (LW409-414 BMP) has been prepared to satisfy the requirements of Condition 77(i), Schedule 3 of Project Approval (05_0117) for the management of potential impacts to aquatic and terrestrial flora and fauna due to secondary extraction of LW409-414.

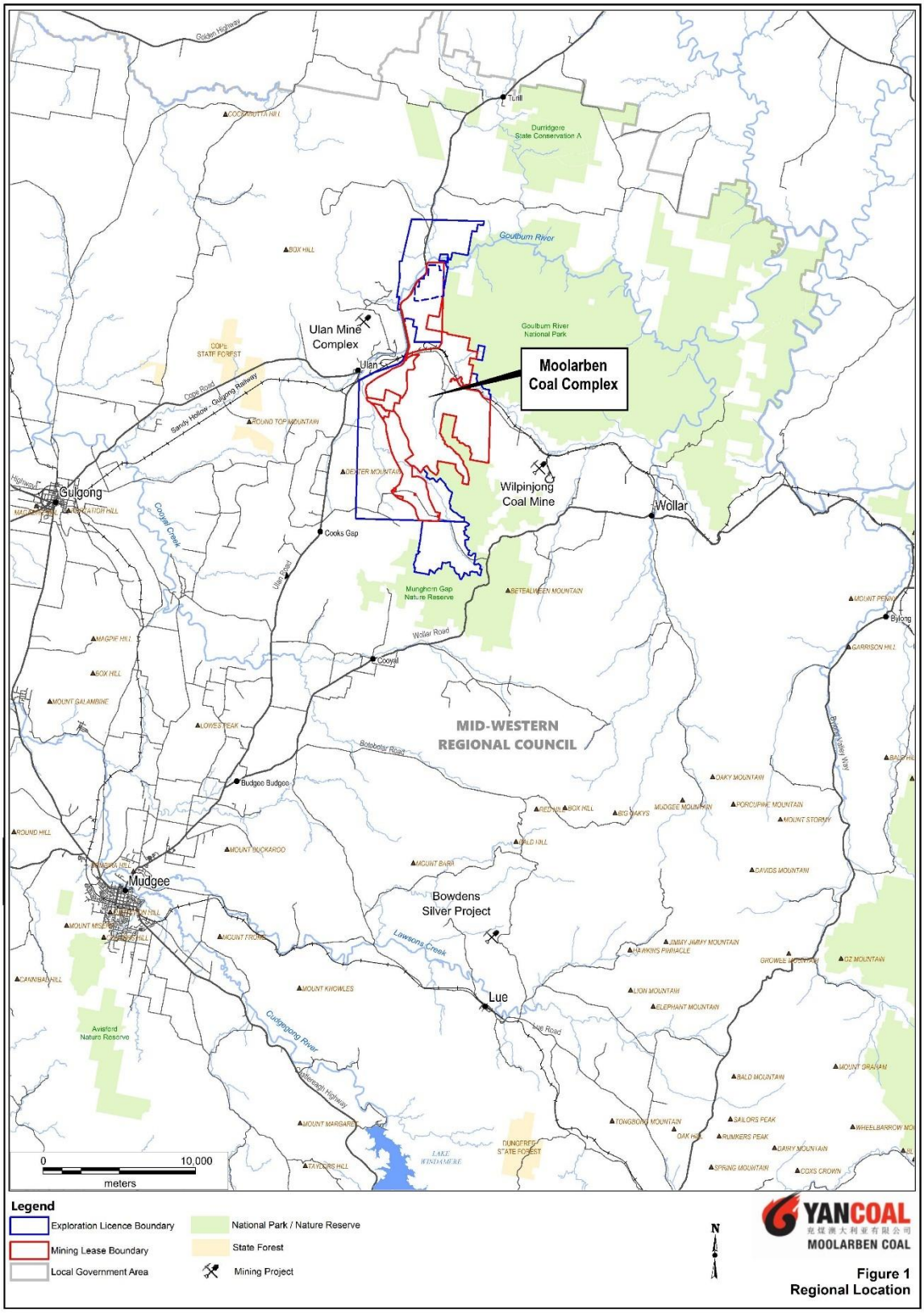
This LW409-414 BMP forms a part of the Extraction Plan developed for LW409-414 of the approved UG4. This LW409-414 BMP has been prepared by MCO, with input from suitably qualified experts including Niche Environment and Heritage Pty Ltd (Niche) and Mine Subsidence Engineering Consultants (MSEC), to satisfy the requirements of Project Approval (05_0117) (as modified) and the *Extraction Plan Guideline* (NSW Department of Planning and Environment [DPE], 2022). The appointment of the team of suitably qualified and experienced persons (which includes representatives of MCO, Niche and MSEC) was endorsed by the Secretary of the Department of Planning, Housing and Infrastructure (DPHI) on 9 May 2024 and 28 June 2024 (**Attachment 2** of the Extraction Plan).

Purpose: This LW409-414 BMP outlines the management of potential environmental consequences on aquatic and terrestrial flora and fauna resulting from the extraction of LW409-414.

Scope: This LW409-414 BMP covers aquatic and terrestrial flora and fauna within the LW409-414 Study Area[1] (**Figure 3**).

[1] The LW409-414 Study Area is defined as the area of land within the furthest extent of the 26.5 degree (°) angle of draw and 20 millimetres (mm) predicted subsidence contour.

Figure 1: Regional Location



Document	Version	Issue Date	Status	Author
MCO_UG4_LW409-414_BMP	3	April 2026	Approved	MCO

Figure 2: Moolarben Coal Complex Layout

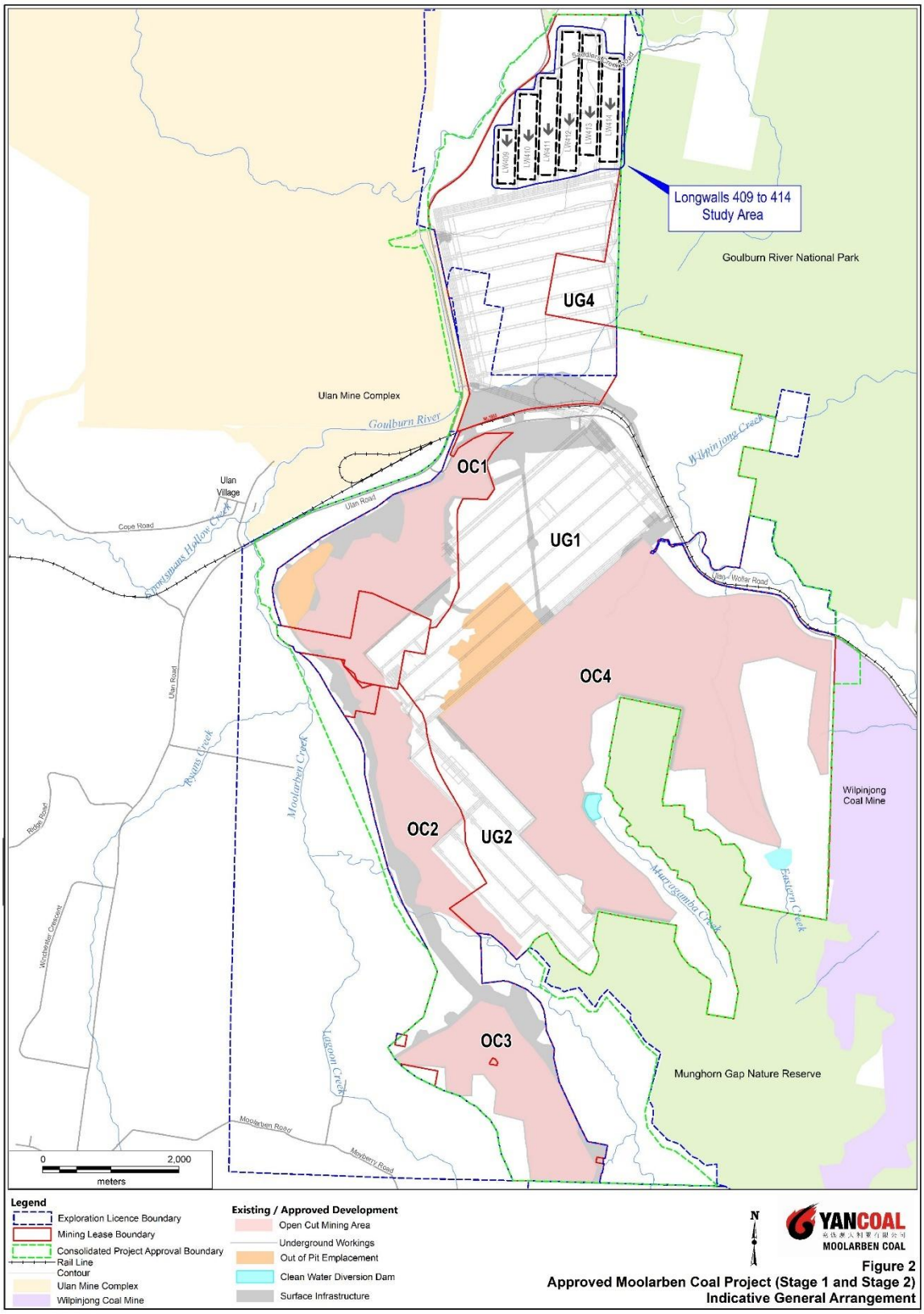
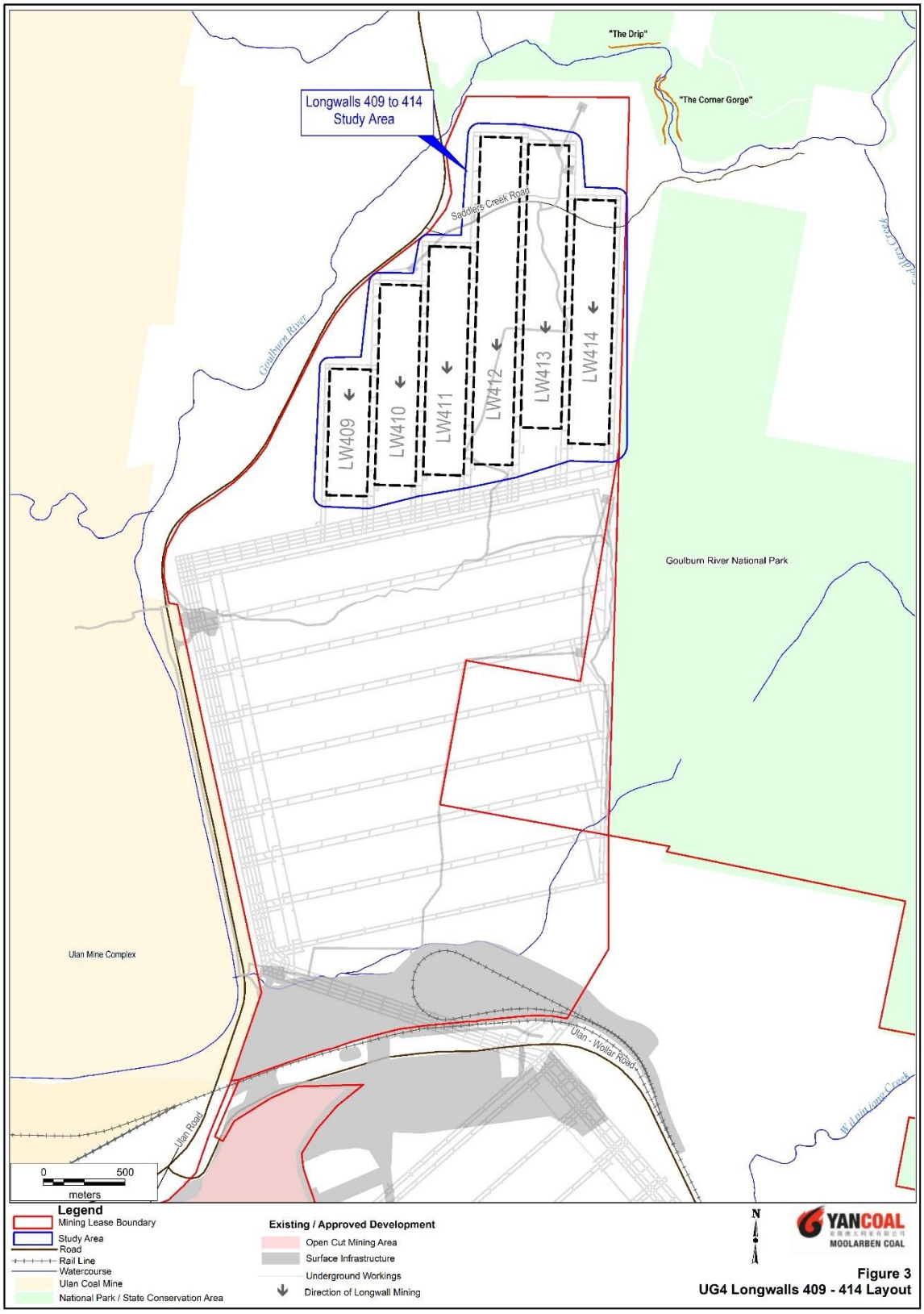


Figure 3: UG4 Longwalls 409 to 414 Layout



A complex-wide Biodiversity Management Plan (complex-wide BMP) has been developed to manage aquatic and terrestrial flora and fauna across the Moolarben Coal Complex (including the LW409-414 Study Area covered by this LW409-414 BMP). A LW401-408 BMP has also been developed to manage aquatic and terrestrial flora and fauna within the LW401-408 Study Area. The approved complex-wide BMP and LW401-408 BMP are publicly available on Yancoal's website (yancoal.com.au/our-sites/moolarben/moolarben-coal-documents).

To avoid duplication of existing Environmental Management Plans, this LW409-414 BMP references components of the approved complex-wide BMP. Where there is any overlap in monitoring or management measures in this LW409-414 BMP with the complex-wide BMP or the LW401-408 BMP, the measures described in this Plan will supersede them (once approved). Any update required to other management plans once this LW409-414 BMP is approved would occur separately.

1.2 STRUCTURE OF THE LONGWALLS 409 TO 414 BIODIVERSITY MANAGEMENT PLAN

The remainder of the LW409-414 BMP is structured as follows:

Section 2 Describes the review and update of the LW409-414 BMP.

Section 3 Outlines the statutory requirements applicable to the LW409-414 BMP.

Section 4 Summarises the predicted subsidence impacts and environmental consequences resulting from the secondary extraction of LW409-414.

Section 5 Details the performance measures and indicators that will be used to assess environmental performance in relation to aquatic and terrestrial flora and fauna.

Section 6 Describes the monitoring program.

Section 7 Describes the potential management measures that could be implemented to remediate any identified impacts to aquatic and terrestrial flora and fauna.

Section 8 Provides a Contingency Plan to manage any unpredicted impacts and their consequences and describes the Trigger Action Response Plan (TARP) management tool.

Section 9 Describes the Annual Review, audits, regular reporting, improvement of environmental performance and collect sufficient baseline data for future Extraction Plans.

Section 10 Outlines the management and reporting of incidents.

Section 11 Outlines the management and reporting of complaints.

Section 12 Outlines the management and reporting of non-compliances with statutory requirements.

Section 13 Lists the references cited in this LW409-414 BMP.

2.0 LONGWALLS 409 TO 414 BIODIVERSITY MANAGEMENT PLAN REVIEW AND UPDATE

In accordance with Condition 5, Schedule 5 of Project Approval (05_0117), this LW409-414 BMP will be reviewed as follows:

> *5. Within 3 months of the submission of:*
>
> *(a) the submission of annual review under condition 4 above;*
>
> *(b) the submission of an incident report under condition 7 below;*
>
> *(c) the submission of an audit under condition 9 below; or*
>
> *(d) any modification of this approval,*
>
> *the Proponent shall review and, if necessary, revise the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval.*

2.1 ACCESS TO INFORMATION

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), MCO will make the approved LW409-414 BMP publicly available on the Yancoal's website.

3.0 STATUTORY REQUIREMENTS

MCO's statutory obligations are contained in:

- the conditions of the Project Approval (05_0117) (as modified);
- the conditions of Commonwealth Approvals (EPBC 2007/3297, EPBC 2013/6926, EPBC 2008/444 and EPBC 2017/7974);
- relevant licences and permits, including conditions attached to the Environment Protection Licence (EPL) No. 12932 and mining leases (MLs) (i.e. ML 1605, ML 1606, ML 1628, ML 1691 and ML 1715); and
- other relevant legislation.

Obligations relevant to this LW409-414 BMP are described below.

3.1 ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 PROJECT APPROVAL

Condition 77(i), Schedule 3 of Project Approval (05_0117), requires the preparation of a Biodiversity Management Plan as a component of the Extraction Plan (i.e. this LW409-414 BMP). In addition, Conditions 77(n), 77(p) and 78, Schedule 3 and Condition 3, Schedule 5 of Project Approval (05_0117) outline general management plan requirements that are applicable to the preparation of this LW409-414 BMP. **Table 1** presents the relevant Project Approval requirements and indicates where they are addressed within this LW409-414 BMP.

Table 1: Biodiversity Management Plan Requirements

Project Approval (05_0117) Condition	LW409-414 BMP Section
Condition 77, Schedule 3	
1. The Proponent shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Secretary. Each extraction plan must:	
...	
(i) include a Biodiversity Management Plan, which has been prepared in consultation with OEH, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on aquatic and terrestrial flora and fauna, with a specific focus on threatened species, populations and their habitats; endangered ecological communities; and water dependant ecosystems;	**This document and complex-wide BMP**
...	
(n) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Table 14 and 15, or where any such exceedances seem likely;	**Section 8**
...	
(p) include a program to collect sufficient baseline data for future Extraction Plans.	**Section 9.3**
Condition 78, Schedule 3	
78 The Proponent shall ensure that the management plans required under conditions 5(g)-(l) above include:	
(a) an assessment of the potential environmental consequences of the Extraction Plan incorporating any relevant information that has been obtained since this approval; and	**Sections 4**
(b) a detailed description of the measures that would be implemented to remediate predicted impacts.	**Section 7**
Condition 3, Schedule 5	
3. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
a) detailed baseline data	**Sections 4.4.1, 4.5.1, 4.6 and 4.7**
b) a description of:	
• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);*	**Section 3**
• *any relevant limits or performance measures/criteria;*	**Section 5**
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;*	**Section 5**
c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	**Section 7**
d) a program to monitor and report on the:	**Sections 6 and 9**
• *impacts and environmental performance of the project;*	
• *effectiveness of any management measures (see c above);*	
e) a contingency plan to manage any unpredicted impacts and their consequences;	**Section 8**
f) a program to investigate and implement ways to improve the environmental performance of the project over time;	**Sections 9**
g) a protocol for managing and reporting any:	
• *incidents;*	**Section 10**
• *complaints;*	**Section 11**
• *non-compliances with statutory requirements; and*	**Section 12**
• *exceedances of the impact assessment criteria and/or performance criteria; and*	**Section 8**
h) a protocol for periodic review of the plan.	**Section 2**

3.2 OTHER LEGISLATION

MCO operates the Moolarben Coal Complex consistent with Project Approval (05_0117) (as modified) and Project Approval (08_0135) (as modified) and any other legislation that is applicable under the *Environmental Planning and Assessment Act 1979*.

The following Acts may be applicable to, but are not limited to, the conduct of the Moolarben Coal Complex:

- *Crown Land Management Act 2016;*
- *Fisheries Management Act 1994;*
- *Heritage Act 1977;*
- *Coal Mine Subsidence Compensation Act 2017;*
- *Mining Act 1992;*
- *National Parks and Wildlife Act 1974;*
- *Biodiversity Conservation Act 2016* (BC Act);
- *Protection of the Environment Operations Act 1997;*
- *Roads Act 1993;*
- *Water Act 1912;*
- *Water Management Act 2000;*
- *Work Health and Safety Act 2011;* and
- *Work Health and Safety (Mines and Petroleum Sites) Act 2013.*

Relevant licences or approvals required under these Acts will be obtained as required.

4.0 PREDICTED SUBSIDENCE IMPACTS AND ENVIRONMENTAL CONSEQUENCES

4.1 LONGWALLS 409 TO 414 EXTRACTION SCHEDULE

LW409-414 and the area of land within the Study Area are shown on **Figure 3**. Longwall extraction will occur from the north to south for each panel. The longwall layout includes approximately 260 metre (m) panel widths (void) with 35 m width pillars (solid). The provisional extraction schedule for LW409-414 is provided in **Table 2**.

Table 2: Provisional Extraction Schedule

Longwall	Estimated Start Date	Estimated Duration (months)	Estimated Completion Date
LW409	September 2026	3	November 2026
LW410	December 2026	3	March 2027
LW411	April 2027	3	July 2027
LW412	August 2027	4	December 2027
LW413	January 2028	4	May 2028
LW414	June 2028	4	September 2028

Note: In June 2026, the extraction timing was administratively updated to ensure consistency with the approved June versions of the LW409-414 Water Management Plan and LW409-414 Subsidence Monitoring Program. This update does not otherwise amend the approved April version of this Plan.

4.2 REVISED SUBSIDENCE AND IMPACT PREDICTIONS

Revised subsidence predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, have been prepared by MSEC (2024) incorporating any relevant information obtained since approval (e.g. additional data from underground mining in UG1 and LW401-408 to date), in accordance with Condition 77(e), Schedule 3 of Project Approval (05_0117).

The LW409-414 BMP has incorporated the revised subsidence predictions and impacts from the *Moolarben Project Stage 1 – Longwalls 409 to 414 – Subsidence Predictions and Impact Assessments for the Natural and Built Features in Support of the Extraction Plan* (MSEC, 2024) and *Moolarben UG4 Longwall 409-414 Biodiversity Technical Report* (Niche, 2024) which are summarised in **Sections 4.4** to **4.7**.

4.3 ENVIRONMENTAL RISK ASSESSMENT

An Environmental Risk Assessment (ERA) was conducted for four of the key component plans of the LW409-414 Extraction Plan (Water Management Plan, Biodiversity Management Plan, Heritage Management Plan and Land Management Plan), to provide appropriate consideration to risk assessment and risk management in accordance with the *Extraction Plan Guideline* (DPE, 2022).

The ERA workshop for LW409-414 was held on 2 May 2024, facilitated by independent specialist, AXYS Consulting Pty Ltd. A representative of the relevant suitably qualified and experienced experts (endorsed by the Secretary of the DPHI) for the Biodiversity Technical Report and relevant MCO personnel participated in the ERA.

The ERA indicated that risks relevant to biodiversity in the LW409-414 Study Area were in the "Low" category, and it was expected that the risks could be managed with implementation of the appropriate mitigation, management and/or control measures.

4.4 FLORA

4.4.1 Baseline Data

Previous ecological survey work undertaken at the Moolarben Coal Complex, relevant to the LW409-414 Study Area, includes:

- Detailed Ecological Impact Assessments prepared by Moolarben Biota (2006) for Stage 1 of the Moolarben Coal Project.
- UG4 Ancillary Works Modification – Biodiversity Development Assessment Report, prepared by Eco Logical Australia (2019).
- Moolarben UG4 – Longwall 401-408 Biodiversity Technical Report (Niche, 2021).

Vegetation Communities

The vegetation within the LW409-414 Study Area had previously been stratified into vegetation association subunits (Moolarben Biota, 2006). In 2021, preliminary vegetation mapping was conducted, and Plant Community Types (PCTs) assigned, by Niche when searching for suitable reference sites for the UG4 LW401-408 project.

In addition to the previous ecological surveys, a baseline assessment to collect biodiversity data was undertaken by Niche between March to May 2024. The baseline biodiversity data collected was used for both monitoring and vegetation mapping purposes. The floristic composition and cover scores collected were used to aid in the allocation of PCTs in accordance with the NSW vegetation classification database (NSW Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2024a) and determine baseline condition.

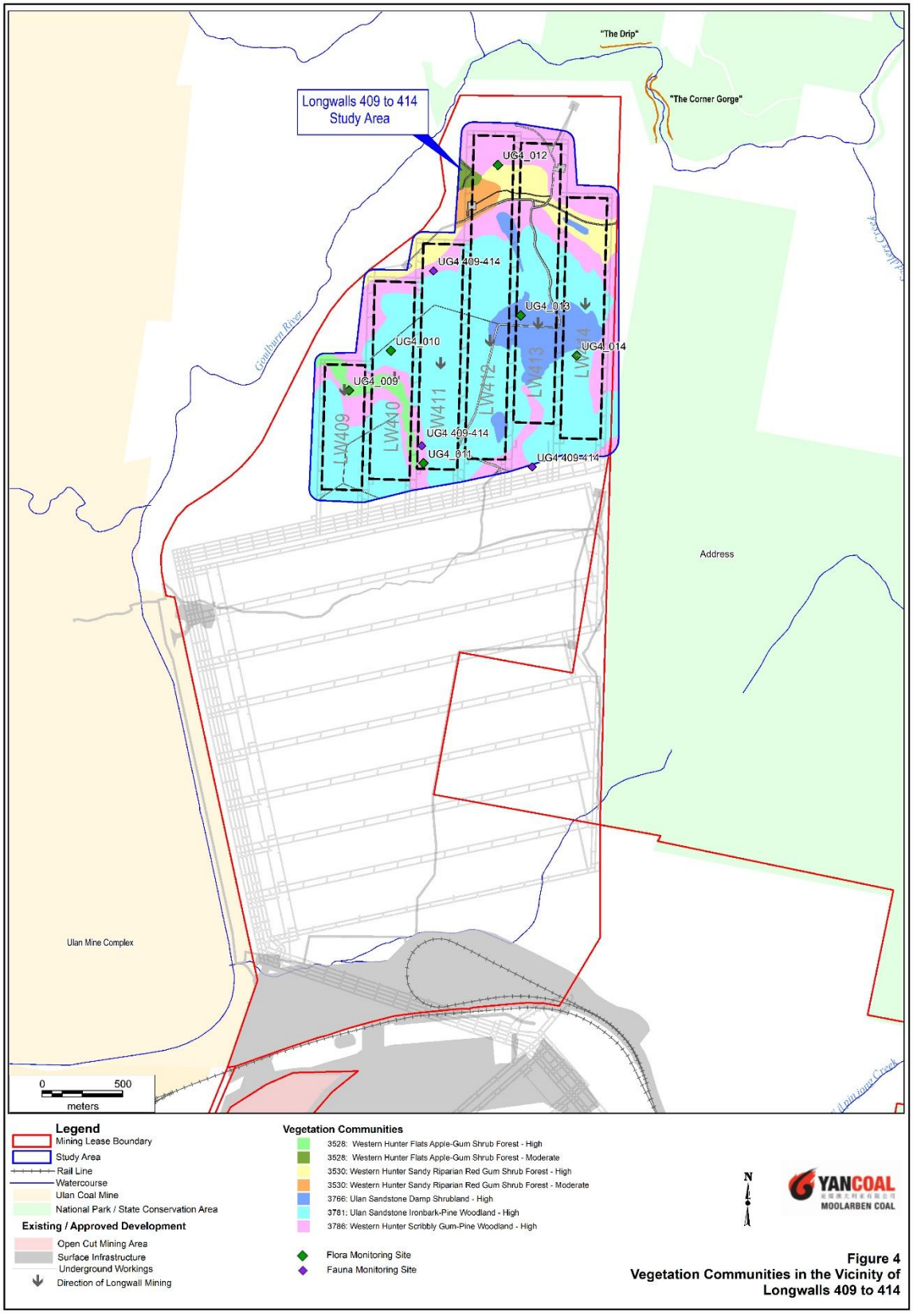
The field validated vegetation mapping determined the following PCTs are present within the LW409-414 Study Area (**Figure 4**):

- PCT 3528: *Western Hunter Flats Apple-Gum Shrub Forest*.
- PCT 3530: *Western Hunter Sandy Riparian Red Gum Shrub Forest*.
- PCT 3766: *Ulan Sandstone Damp Shrubland*.
- PCT 3781: *Ulan Sandstone Ironbark-Pine Woodland*.
- PCT 3786: *Western Hunter Scribbly Gum Pine Woodland*.

Threatened Ecological Communities

No PCTs within the LW409-414 Study Area are associated with Threatened Ecological Communities (TECs).

Figure 4: Vegetation Communities in the Vicinity of Longwalls 409 to 414



Threatened Flora

No threatened flora species were detected within the Study Area during the Stage 1 EIS (Moolarben Biota, 2006). However, a population of *Androcalva procumbens* (listed as Vulnerable under the BC Act and EPBC Act) is known from a location within the Study Area (DCCEEW, 2024b), and was identified at that location during the baseline assessment survey undertaken by Niche to inform the *Moolarben UG4 Longwall 409-414 Biodiversity Technical Report* (Niche, 2024). The population is comprised of five individuals in PCT 3781 and occurs approximately 30 m south of LW413 and approximately 12 m south of the predicted angle of draw.

Existing Vegetation Condition

The baseline assessment reviewed the existing condition of the vegetation within the Study Area, identifying the following (Niche, 2024):

- Reduced canopy cover and PCT structural integrity due to previous dieback events as a result of the 2017 – 2020 prolonged drought.
- Increased epicormic growth cover due to previous drought stress.
- Minimal herbaceous weed cover.
- Minimal evidence of feral pigs, including rooting behaviour and scats.

4.4.2 Predicted Subsidence Impacts and Environmental Consequences

Natural vegetation, which covers the majority of the Study Area, would be subjected to the full range of subsidence movements predicted by MSEC (2024) across the LW409-414 Study Area. The predictions and impact assessments provided in this Extraction Plan are based on the Extraction Plan Layout (**Figure 3**). The Extraction Plan Layout is the same as the Approved Layout, with the exception of LW413, which will be shorter at the southern end by 125 m, and LW414, which will be 20 m shorter at the northern end.

MSEC (2024) compared the maximum predicted subsidence parameters due to the extraction of LW409-414 based on the Extraction Plan Layout with the maximum predictions due to the extraction of LW409-414 based on the Approved Layout (**Table 3**).

Table 3: Comparison of Maximum Predicted Total Conventional Subsidence Parameters based on the Approved Layout and Extraction Plan Layout for LW409-414

Layout	Subsidence[1] (mm)	Tilt[2] (mm/m)	Hogging Curvature[3] (km^{-1})	Sagging Curvature[3] (km^{-1})
Approved Layout	1900	40	2.0	1.6
Extraction Plan Layout	1900	40	2.0	1.6

Source: MSEC (2024).

mm/m = millimetres per metre, km^{-1} = 1/kilometres.

1 Subsidence refers to vertical displacements of the ground.

2 Tilt is the change in the slope of the ground as a result of differential subsidence and is calculated as the change in subsidence between two points divided by the distance between those two points.

3 Curvature is the second derivative of subsidence, the rate of change of tilt, and is calculated as the change in tilt between two adjacent sections of the tilt profile divided by the average length of those sections.

The predicted total subsidence based on the Extraction Plan Layout is the same as that for the Approved Layout. The predicted total curvature and tilt based on the Extraction Plan Layout is the same as the Approved Layout (MSEC, 2024). MSEC (2024) concluded that the potential impacts on natural vegetation would be the same as those assessed based on the Approved Layout.

Predicted subsidence impacts on biodiversity values of the LW409-414 Study Area are expected to be limited to the extent of longwall panels, being localised in nature (MSEC, 2024). It has been determined that secondary extraction at LW409-414 will not significantly impact the biodiversity values within the Study Area (Niche, 2024).

A summary of the predicted subsidence impacts on biodiversity values includes (Niche, 2024):

Native Vegetation

- *Predicted subsidence impacts are not expected to result in a significant reduction to the PCTs' species diversity and cover, or structural integrity within the Study Area. This assumption is based on the results of UG4 LW401-408 monitoring (Niche 2023), in addition to the nature of predicted subsidence impacts described by MSEC (2024).*

Threatened Flora

… the predicted subsidence impacts are not likely to adversely affect the population of Androcalva procumbens within the Study Area.

4.5 TERRESTRIAL FAUNA

4.5.1 Baseline Data

Ecological surveys undertaken for the Stage 1 EIS (Moolarben Biota, 2006) and subsequent surveys identified the following threatened fauna species on or adjacent to the LW409-414 Study Area (Niche, 2024):

Mammals

- Corben's Long-eared Bat *Nyctophilus corbeni* (Vulnerable, EPBC Act and BC Act) formerly Greater Long-eared Bat *Nyctophilus timoriensis*
- Eastern Cave Bat *Vespadelus troughtoni* (Vulnerable, BC Act)
- Large Bent-winged Bat *Miniopterus orianae oceanensis* (Vulnerable, BC Act) formerly Eastern Bentwing-bat
- Large-eared Pied Bat *Chalinolobus dwyeri* (Endangered, EPBC Act and BC Act)
- Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris* (Vulnerable, BC Act)

Birds

- Black-chinned Honeyeater – eastern subspecies *Melithreptus gularis gularis* (Vulnerable, BC Act)
- Brown Treecreeper – eastern subspecies *Climacteris picumnus victoriae* (Vulnerable, BC Act)
- Diamond Firetail *Stagonopleura guttata* (Vulnerable, BC Act)
- Dusky Woodswallow *Artamus cyanopterus cyanopterus* (Vulnerable, BC Act)
- Gilbert's Whistler *Pachycephala inornata* (Vulnerable, BC Act)

- Glossy Black Cockatoo *Calyptorhynchus lathami* (Vulnerable, BC Act)
- Hooded Robin – south-eastern form *Melanodryas cucullata cucullata* (Vulnerable, BC Act)
- Painted Honeyeater *Grantiella picta* (Vulnerable, BC Act and EPBC Act)
- Powerful Owl *Ninox strenua* (Vulnerable, BC Act)
- Speckled Warbler *Cthonicola sagittata* (Vulnerable, BC Act)
- Square-tailed Kite *Lophoictinia isura* (Vulnerable, BC Act)
- Varied Sittella *Daphoenositta chrysoptera* (Vulnerable, BC Act).

4.5.2 Predicted Subsidence Impacts and Environmental Consequences

An analysis of the predicted subsidence impacts on biodiversity values has been undertaken by Niche and has determined that the majority of potential impacts in relation to fauna are predominantly indirect impacts to fauna habitat values, with direct impact limited to potential injury or death of a small number of individuals due to subsidence induced rock fall or collapse (Niche, 2024).

A summary of the predicted subsidence impacts on biodiversity values includes (Niche, 2024):

Threatened Species, populations and habitats (Cave Dwelling Microbats)

- *Predicted subsidence impacts relevant to threatened cave-dwelling microbats utilising the study area include localised surface tension cracking, cliff line instability and rock fall which may impact on potential roosting/breeding habitat.*
- *Habitat features utilised by cave-dwelling bats were observed in minor cliff lines above LW 410, 411 and 412, and in the cliff line (CL3) to the south of LW 413.*
- *Predicted subsidence impacts to CL3 and minor cliff lines may result in impacts to cave-dwelling microbats. Impacts may include reductions in habitat suitability and extent in addition to potential injury or mortality to individuals as a result of subsidence induced rock fall. The subsidence impacts are not expected to significantly reduce the suitability or extent of existing habitat for cave-dwelling microbats such that it would adversely affect the lifecycle of these species or cause these species to become extinct within the locality.*
- *Habitats suitable for cave-dwelling microbats were identified in MCO biodiversity offset sites within the locality including the Red Hills Biodiversity Offset Area 1 (BOA1) with additional habitat available in the adjacent Goulburn River National Park (GRNP) to the east. Baseline assessment data indicates that cave-dwelling microbat species are currently utilising suitable habitat in the BOA1 site, demonstrating its suitability as potential refuge for microbat species affected by predicted subsidence impacts.*

Threatened Species, populations and habitats (Birds)

- *Predicted subsidence impacts relevant to threatened bird species utilising the study area include localised surface tension cracking and altered overland flow which may impact health, abundance and diversity of foraging resources and sheltering resources.*

- *Alterations to hydrology resulting from surface tension cracking or surface ponding may result in localised short-term reduction in the extent and quality of foraging habitat. Impacts to foraging habitat are not expected to significantly impact species within the locality as bird species are highly mobile and are likely to seek alternative foraging habitat elsewhere within the surrounding landscape. Baseline assessment data indicates that bird species are currently utilising foraging habitat in BOA 1, demonstrating its suitability as an alternative foraging resource. Additional high quality foraging resources are available in the adjacent GRNP and vegetated surrounds. Based on the above, it is unlikely that subsidence impacts will result in the long-term reduction of foraging habitat such that it would adversely affect the lifecycle of these species or cause these species to become extinct within the locality.*
- *Predicted subsidence impacts are expected to be localised in nature (i.e., tree fall), and are not expected to significantly reduce breeding habitats (i.e., suitable tree hollows) within the Study Area.*

4.6 AQUATIC FAUNA

Most of the creeks and drainages in the Moolarben Coal Complex area are ephemeral or intermittent. Literature reviews and aquatic ecology studies undertaken at the Moolarben Coal Complex indicate that there are no threatened aquatic plants, fish or macroinvertebrate species or populations (as listed under EPBC Act or under the NSW *Fisheries Management Act 1994*) listed or found in the upper Goulburn River (Ecovision Consulting, 2008; Marine Pollution Research, 2017; MCO, 2020).

4.7 GROUNDWATER DEPENDENT ECOSYSTEMS

There are two types of Groundwater Dependent Ecosystem (GDEs): ecosystems that are dependent in whole or in part on water reserves held in the ground and those dependent on the surface expression of groundwater (Eamus *et al*., 2006).

The Drip is a GDE with local cultural and community significance. The groundwater seepage is observed in a cliff on the northern side of the Goulburn River and is derived from the perching of groundwater in zones that are exposed in the cliff faces. The perching occurs in the Triassic Narrabeen Group sediments and is formed by accumulations of groundwater above less permeable horizons in the Triassic sequence to the north of the Goulburn River. As described above, the perched aquifer is effectively disconnected from the underlying regional water table and therefore depressurisation caused by mining of LW409-414 will not impact the water supply to the Drip (Australasian Groundwater and Environmental Consultants Pty Ltd [AGE], 2024).

Mapping from the GDE Atlas (Bureau of Meteorology, 2024) identifies the Goulburn River as a low to moderate potential aquatic GDE as well as vegetation identified as low to high potential terrestrial GDEs in the vicinity of UG4. The significant depth to water in more elevated areas of the catchments such as the UG4 area where the depth to the water table is approximately 25 m to 65 m indicates that GDEs are unlikely to be present within the LW409-414 area (AGE, 2024).

Springs and groundwater seeps in nearby creek valleys and localised pools and soaks along the creeks support riparian vegetation. None of these features constitute high priority GDEs listed under the Water Sharing Plans relevant to the Moolarben Coal Complex (AGE, 2024).

No GDEs have been identified in the LW409-414 Study Area.

5.0 PERFORMANCE MEASURES AND PERFORMANCE INDICATORS

Condition 77 (i), Schedule 3 of Project Approval (05_0117) requires the management of potential and/or environmental consequences of the proposed secondary workings on aquatic and terrestrial flora and fauna, with a specific focus on threatened species, populations and their habitats; endangered ecological communities and water dependent ecosystems.

Fauna species selected for monitoring are those which are considered to occur in habitats sensitive to direct impacts (DPIE, 2020). In the Study Area, this consists of geological features such as caves, crevices and fissures in associated with CL3 and other minor cliff lines (Niche, 2024).

Performance indicators have been developed to assess subsidence impacts on threatened flora and threatened fauna. MCO will assess LW409-414 against the following biodiversity performance indicators shown in **Table 4**.

Table 4: LW409-414 BMP Performance Indicators

Biodiversity Value	Performance Indicator
Threatened flora (*Androcalva procumbens*)	Threatened flora remains present within the Study Area.
Threatened fauna (Threatened Cave-dwelling bat species)	Reduction of species abundance at impact site is not greater than at reference sites for four consecutive years in conjunction with observed impacts to habitat directly related to subsidence.

Source: Niche (2024)

Section 6 describes the monitoring that will be conducted to assess LW409-414 against the relevant biodiversity performance indicators.

Section 8 provides a Contingency Plan in the event biodiversity performance indicators are exceeded.

6.0 MONITORING

The objective of biodiversity monitoring is to evaluate the vegetation and fauna habitat condition of the LW409-414 Study Area (including recovery and or enhancement of native vegetation) and to identify appropriate management actions to be applied, where required. Sections 8.1 to 8.4 of the complex-wide BMP describe monitoring of noxious and environmental weeds, vertebrate pests, access and rehabilitation, respectively. Monitoring to be undertaken specific to this LW409-414 BMP is described below.

6.1 SUBSIDENCE PARAMETERS

Subsidence parameters will be measured in accordance with the LW409-414 Subsidence Monitoring Program (LW409-414 SMP). In summary, surveys will be conducted to measure subsidence movements in three dimensions using a total station survey instrument or Global Navigation Satellite System (GNSS) monitoring. Subsidence movements will be measured along subsidence lines that have been positioned across the general landscape, as well as continuously at GNSS monitoring sites.

6.2 SUBSIDENCE IMPACTS

A monitoring program has been developed based on recommendations from Niche (2024) to monitor the impacts of the secondary extraction of LW409-414 on aquatic and terrestrial flora and fauna (and, in particular, threatened fauna and threatened flora). The monitoring is based on baseline monitoring prior to mining and for two years following longwall mining beneath the monitoring location. Key components of the monitoring program are summarised in **Table 5.**

Table 5: UG4 LW409-414 Biodiversity Monitoring Program Overview

Monitoring Component	Parameter	Timing/Frequency	Responsibility
Pre-mining			
UG4 subsidence monitoring as described in the LW409-414 SMP	As described in the LW409-414 SMP.	Prior to the commencement of LW409 extraction.	Underground Technical Services Manager
Floristic monitoring plots	Floristic survey at specific locations in the Study Area and Reference Area consisting of a 50 x 20 m plot containing a nested 20 x 20 m plot along a fixed transect. The composition, structure and functional attributes of the PCT present and additional tree stress data will be recorded.	During spring, prior to longwall extraction beneath monitoring plots.	Environment and Community Manager
Photo point monitoring	Two photographs (portrait and landscape) to be taken at the established pickets at the start and end of each 50 m transect of all study and reference sites.	During spring, prior to longwall extraction beneath monitoring sites.	Environment and Community Manager
Acoustic monitoring (Microbats)	Four acoustic devices targeting bats (three in the Study Area and one in the Reference Area) to be deployed for four nights.	During survey season (November to January[2]), prior to longwall extraction beneath monitoring sites.	Environment and Community Manager

[2] Survey season specifically targets Large-eared Pied Bat.

Table 5 (Continued): UG4 LW409-414 Biodiversity Monitoring Program Overview

Monitoring Component	Parameter	Timing/Frequency	Responsibility
Threatened flora monitoring	A population count of threatened flora, a description and photograph detailing population health will be described, quantified, and photographed.	During spring, prior to longwall extraction.	Environment and Community Manager
During and After Mining			
UG4 subsidence monitoring as described in the LW409-414 SMP	As described in the LW409-414 SMP.	During mining of LW409-414.	Underground Technical Services Manager
Floristic monitoring plots	Floristic survey at specific locations in the Study Area and Reference Area consisting of a 50 x 20 m plot containing a nested 20 x 20 m plot along a fixed transect. The composition, structure and functional attributes of the PCT present and additional tree stress data will be recorded. Any evidence of subsidence within the 50 x 20 m plot will be quantified, described and photographed.	Annually during spring, for two years following longwall extraction beneath monitoring plots.	Environment and Community Manager
Photo point monitoring	Two photographs (portrait and landscape) to be taken at the established pickets at the start and end of each 50 m transect of all study and reference sites.	Annually during spring, for two years following longwall extraction beneath monitoring sites.	Environment and Community Manager
Acoustic monitoring (Microbats)	Four acoustic devices targeting bats (three in the Study Area and one in the Reference Area) to be deployed for four nights.	Twice per survey season (November to January), for two years following longwall extraction beneath monitoring sites.	Environment and Community Manager
Threatened flora monitoring	A population count of threatened flora, a description and photograph detailing population health, and any evidence of subsidence in proximity will be described, quantified, and photographed.	Annually during spring until the completion of LW414.	Environment and Community Manager

The monitoring results will be:

- Used to assess the potential environmental consequences of an observed subsidence impact (**Section 6.3**).
- Used to identify appropriate management measures, where relevant (**Section 7.0**).
- Used to assess compliance with the biodiversity performance indicators (**Section 5.0**).

In the event monitoring identifies any subsidence related impacts on aquatic or terrestrial flora and fauna, the relevant details will be recorded and reported where required in accordance with Project Approval (05_0117) (**Section 10.0**). More detailed information regarding monitoring methods is provided in **Sections 6.2.1** to **6.2.4** below.

6.2.1 Floristic Plots

Six permanent floristic monitoring plots have been established within the Study Area. The placement of the monitoring plots was stratified such that one was placed in each PCT across UG4 LW409-414 (**Figure 4**).

An additional six permanent reference sites have also been established in corresponding vegetation classes at the nearby Red Hills Biodiversity Offset Area 1 (BOA1) (Reference Area). The reference site data will be utilised as a control for comparative analysis, to allow for the identification of confounding factors in the monitoring results.

Monitoring via the assessment of the study sites and associated reference sites is to take place every spring from commencement of works, over the duration of secondary extraction, extending for at least two years once mining has been completed beneath each monitoring site. Annual data analysis will contain the following:

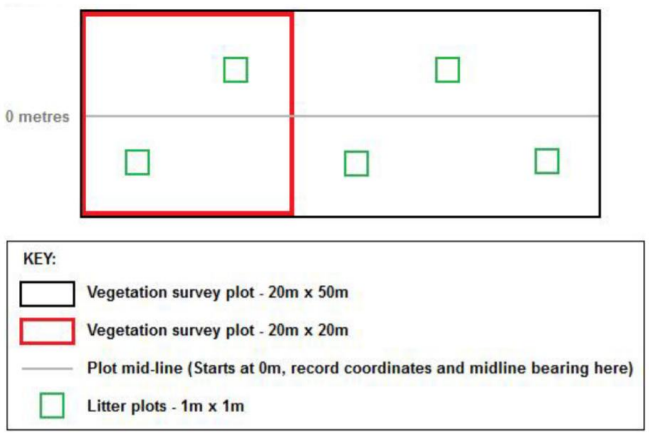
- A qualitative and quantitative analysis of the current Vegetation Integrity Score (VIS), composition, structure and function scores at the study sites as compared to those collected during the baseline and years prior.
- A qualitative and quantitative analysis of the current VIS, composition, structure and function scores at the reference sites as compared to those collected during the baseline and years prior.
- A qualitative and quantitative analysis of changes in the VIS at the study site as compared to that observed in the associated reference sites (control).

Each study and reference site is to consist of a 20 x 50 m plot (centred around a central 50 m transect) and a nested 20 x 20 m quadrat (refer to **Plate 1** below). Each site has been permanently marked with a capped star picket at the start and end, to ensure that the bearing remains consistent and to aid in site identification for future monitoring rounds.

Data recorded within each 20 x 20 m nested quadrat is to consist of:

- A record of each native and exotic species present.
- Projected foliage cover of all species in increments of 0.1-1, 1-10 then 5% increments capped at 100%.
- Abundance of all species recorded within the quadrat measured at 1, 2, 3, 4, 5 ,6, 7, 8, 9, 10, 20, 50, 100, 500, 1000 or a specified number greater than 1000 if required.
- A record of the structural layer/s occupied by each species including the dominant species occupying the canopy, mid-storey and ground layers.

Plate 1: Floristic plot layout as per the *NSW Biodiversity Assessment Method (BAM) 2020 Operational Manual - Stage 1* (DPIE, 2020)



Data recorded within each 20 x 50 m plot is to consist of:

- Presence or absence of canopy species within the following Diameter at Breast Height (DBH) size increments: <5 centimetres (cm), 5-10 cm, 11-20 cm, 21-30 cm, 31-40 cm, 41-50 cm, 51 – 80 cm).
- Number of large trees (>50 cm DBH).
- Number of hollow-bearing trees.
- Length of coarse woody debris measured in metres.
- Cover (%) of epicormic foliage relative to total cover of foliage within the plot.
- Cover (%) of discoloured canopy foliage relative to total cover of healthy foliage within the plot.
- Cover (%) of dieback relative to live vegetation within the plot and the PCT patch.
- Cover value (%) of bare branches.
- Count of any stags encountered within the plot.
- Evidence of subsidence impacts (cracking or ponding) described and photographed.
- Extent of subsidence impacts (cracking or ponding) as a percent of the plot area.
- Landscape characteristics recorded at each plot to include percentage cover of surface rock, cryptograms and bare soil.

6.2.2 Photo-point Monitoring

A photo point will be established at the start and end of the central 50 m transect of all study and reference sites. During the spring baseline monitoring and each subsequent monitoring round, two photographs (portrait and landscape) are to be taken at the start and end of the central transect.

The photographs, alongside the VIS and additional vegetation stress data, will be used as a visual record to compare any changes in vegetation integrity to the baseline and previous years monitoring.

6.2.3 Monitoring for Threatened Fauna Species – Microbat Activity

Passive monitoring using acoustic devices is to be undertaken to assess potential impacts to threatened microbats previously recorded in the Study Area. Passive monitoring via acoustic device is easily replicated and analysed and can be used to determine changes over time in abundance, diversity, habitat preference, foraging guild and activity of target microbat species. The diversity, abundance, habitat preference, foraging guild or residency of microbat species within the Study Area may be a useful surrogate for detecting subsidence related impacts in correlation with visible signs of cracking or ponding.

Monitoring of threatened microbat activity will be undertaken twice per survey season (November to January). Monitoring will include:

- Study Area – installation of three Anabat acoustic devices (or equivalent) in proximity of identified microbat habitat for four nights.
- Reference Area – installation of one Anabat acoustic device (or equivalent) in proximity of identified microbat habitat for four nights.

The acoustic recordings will be used to identify the presence or absence of threatened microbat species in the Study Area and Reference Areas, and to approximate the abundance (based on activity and the number of passes) of each species. The results of subsequent monitoring rounds will be compared against the baseline and prior monitoring rounds to determine any changes to microbat presence and activity over time. Microbat presence and activity in the Study Area as compared to the Reference Area will also be compared.

6.2.4 Monitoring for Threatened Flora Populations – *Androcalva procumbens*

Monitoring of the *Androcalva procumbens* population will be undertaken annually in spring.
Monitoring will include:

- An estimated population count at each of the known locations
- A description of the population health alongside descriptive photographs.
- Any evidence of subsidence impacts in proximity to the population, including cracking and ponding, will be described, quantified and photographed.

Should an additional population of *Androcalva procumbens* or another threatened flora species be detected during subsequent monitoring rounds, their locations will be recorded, and the population will be monitored following the above outlined methods in the annual monitoring report. Should the above outlined methods be unsuitable for the species/population found, an alternative monitoring method will be implemented by a suitably qualified ecologist.

6.3 ENVIRONMENTAL CONSEQUENCES

MCO will compare the results of the subsidence impact monitoring against the biodiversity performance indicators (**Section 5.0**). In the event that any observed subsidence impacts exceed a performance indicator, additional monitoring and assessment will be undertaken (**Section 7.0**).

In the event that any observed subsidence impacts exceed the biodiversity performance indicators, MCO will assess the consequences of the exceedance in accordance with the Contingency Plan described in **Section 8.0** and Trigger Action Response Plan (TARP) developed for threatened fauna and threatened ecological communities (**Attachment 2**).

7.0 MANAGEMENT MEASURES

Biodiversity management at the Moolarben Coal Complex is currently undertaken in accordance with the complex-wide BMP. Section 6.0 of the complex-wide BMP details strategies to manage vegetation onsite and improve vegetation connectivity, and Section 7.0 of the complex-wide BMP describes specific biodiversity management measures.

In addition to the management measures detailed in Sections 6.0 and 7.0 of the complex-wide BMP, Niche (2024) has recommended a number of management measures that will be implemented, where appropriate in the LW409-414 Study Area. Management measures have been recommended for native vegetation, terrestrial fauna habitat, weed and additional monitoring, and are summarised in **Table 6**.

Table 6: Potential Management Measures

Potential Management Measures	
Measure	**Description**
Threatened fauna (cave-dwelling bat species)	• Recommended management measures for cave-dwelling microbat species include the following: ○ Site assessment to determine the level of impacts to cave-dwelling microbats. ○ Changes to the monitoring program and/or more intensive analysis to determine the causative factors and most appropriate minimisation, mitigation and/or remediation measures. ○ Installation of alternative roosting habitat for cave-dwelling microbats near CL3 and minor cliff lines identified. ○ Targeted survey of affected microbat species to gauge the outcomes of enacted measures. ○ Any other suitable restoration or corrective measures determined by a suitably qualified ecologist.
Threatened flora (*Androcalva procumbens*)	• Recommended management measures for threatened flora include the following: ○ Engagement of a suitably qualified bush regeneration contractor to collect seed from affected individuals for use in propagation and planting of seedlings in nearby undisturbed areas of associated habitat. ○ Increased monitoring of threatened flora populations and habitat to measure the outcomes of enacted measures. ○ Any other suitable restoration or corrective measures determined by a suitably qualified ecologist.
Habitat management – Roosting habitat	• Specific fauna habitat management measures will depend on the species/fauna habitat features potentially impacted. • Recommended management measures include the following: ○ In the event that significant reductions in fauna foraging habitat for fauna species known to occur on site are observed, it is recommended that supplementary planting of preferred foraging species be undertaken. • Any other suitable restoration or corrective measures determined by a suitably qualified ecologist.

Table 6 (Continued): Potential Management Measures

Potential Management Measures	
Measure	**Description**
Habitat management – Native vegetation	• The type of native vegetation management measures required to remediate potential subsidence impacts will depend on the identity and functional role of affected flora species and the nature of the impact. • Potential management measures may include the following: ○ Supplementary planting focused on restoring the structural layer using species representative of the PCT mapped in the area. ○ Implementation of remediation as deemed necessary. ○ Extension of the monitoring program duration and additional study sites ○ Tracking the success of implemented management measures, via the analysis of vegetation integrity, composition, structure and function scores at the established study sites. ○ Retention of stags and dead shrubs utilised by fauna and mycorrhizal fungi on which some species, particularly orchids, are dependent upon. ○ Any other suitable restoration or corrective measures determined by a suitably qualified ecologist.
Weed management	• In the event that monitoring results indicate the presence of a novel priority weed incursion or an increase to cover or abundance of existing weed incursions such that it is likely to impact the VIS of the affected PCT, weed management measure should continue to be undertaken in accordance with the BMP (MCO, 2020). • Vehicles utilising the overland sections of the study area should remain on established/mapped tracks at all times to reduce the likelihood of introducing weed propagules into unaffected bushland.
Additional monitoring	• In the event that any of the performance measures (**Section 5.0**) are exceeded, additional monitoring may be required. • Additional monitoring methods to be employed will depend on the exact nature of the exceedance and the impacted biodiversity value. • Additional monitoring methods should be determined by a suitably qualified ecologist.

Source: After Niche (2024)

The implementation of management measures (**Table 6**) will be considered with regard to the specific circumstances of the subsidence impact (e.g. the location, nature and extent of the impact) and the assessment of environmental consequences. The implementation of management measures will be related to the scale of impact and the ability to, and value in, undertaking mitigation measures on a case by case basis.

The requirement and methodology for any subsidence remediation techniques will be determined in consideration of:

- Potential impacts of the unmitigated impact, including potential risks to public safety and the potential for self-healing or long-term degradation.
- Potential impacts of the remediation technique, including site accessibility and consideration of vegetation or habitat that would potentially be disturbed (e.g. avoidance of unnecessary disturbance).
- Potential impacts of remediation work, including determining whether remediation work will create no greater impact than the subsidence impact itself.

8.0 CONTINGENCY PLAN

In the event a biodiversity performance indicator relevant to aquatic and terrestrial flora and fauna (**Section 5.0**) is considered to have been exceeded or is likely to be exceeded, MCO will implement the Contingency Plan (detailed in Section 11.0 of the complex-wide BMP):

- The Environment and Community Manager will report the exceedance to the General Manager within 24 hours of assessment completion.
- MCO will report the exceedance of the performance measure to the DPHI and DCCEEW - Conservation Programs, Heritage and Regulation as soon as practicable after MCO becomes aware of the exceedance.
- MCO will identify an appropriate course of action with respect to the identified impact(s), in consultation with specialists and relevant agencies, as necessary. For example, identification of proposed contingency measure(s) and a program to review the effectiveness of the contingency measures. Contingency measures will be developed in consideration of the specific circumstances of the exceedance and the assessment of environmental consequences.
- MCO will submit the proposed course of action to the DPHI for approval.
- MCO will implement the approved course of action to the satisfaction of the DPHI.
- MCO will report the exceedance of the performance measure and the success of the approved course of action as a component of the Annual Review (detailed in section 13.0 of the complex-wide BMP).

Examples of contingency measures/controls that relate to the subsidence performance measure (listed in Section 10.0 of the complex-wide BMP) include:

- Subsidence monitoring provides timely provision of data relating to impact of subsidence.
- Contingency budgetary allocation for remedial works associated with subsidence.
- 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.
- Revegetation and monitoring.
- Additional monitoring.

As described in Section 10.0 of the complex-wide BMP, relevant Extraction Plans for underground mining operations or subsequent revisions of this plan will describe in further detail how the subsidence related performance measure will be met.

8.1 TRIGGER ACTION RESPONSE PLAN

The framework for the various components of this LW409-414 BMP are summarised in the TARP shown in **Attachment 2**. The TARP illustrates how the various predicted subsidence impacts, monitoring components, performance indicators, and responsibilities are structured to achieve compliance with the relevant statutory requirements, and the framework for management and contingency actions.

The TARP comprise:

- baseline conditions;
- predicted subsidence impacts;
- trigger levels from monitoring to assess performance; and
- triggers that flag implementation of contingency measures.

The TARP system provides a simple and transparent snapshot of the monitoring of environmental performance and the implementation of management and/or contingency measures.

9.0 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

9.1 ANNUAL REVIEW

In accordance with Condition 4, Schedule 5 of Project Approval (05_0117) (as modified), MCO will conduct an Annual Review of operations conducted at the Moolarben Coal Complex (including the performance of this LW409-414 BMP) prior to 31 March for the preceding calendar year, or as otherwise agreed by the Secretary of the DPHI.

The Annual Review will:

- describe the works carried out in the previous calendar year, and the development proposed to be carried out over the current calendar year;
- include a comprehensive review of the monitoring results and complaints records of the Project over the previous calendar year, including a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - monitoring results of previous years; and
  - relevant predictions in the Environmental Assessment.
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the Project;
- identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the Project.

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), the Annual Review will be made available on the Yancoal's website. As described in **Section 2.0**, this LW409-414 BMP will be reviewed within three months of the submission of an Annual Review, and, if necessary, revised to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

9.2 AUDITS

In accordance with Condition 9, Schedule 5 of Project Approval (05_0117), the most recent independent environmental audit of the Moolarben Coal Complex was conducted in July 2024, and will continue to be conducted every three years. A copy of the independent environmental audit will be provided to the Secretary of the DPHI and made available on the Yancoal's website.

The independent environmental audit will be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary of the DPHI. The independent environmental audit will assess the environmental performance of the Project and assess whether it is complying with the requirements of Project Approval (05_0117), and any other relevant approvals, and recommend measures or actions to improve the environmental performance of the Project.

9.3 FUTURE EXTRACTION PLANS

In accordance with Condition 77(p), Schedule 3 of Project Approval (05_0117), MCO will collect baseline data for future Extraction Plans (e.g. for the next underground mining domain). In addition to the baseline data collection, consideration of the environmental performance and management measures, in accordance with the review(s) conducted as part of this LW409-414 BMP, will inform the appropriate type and frequency of monitoring of the assets relevant to any future Extraction Plan at the Moolarben Coal Complex.

10.0 INCIDENTS

An incident is defined in Project Approval (05_0117) as a set of circumstances that:

- causes or threatens to cause material harm to the environment; and/or
- breaches or exceeds the limits or performance measures/criteria in Project Approval (05_0117) (as modified).

In the event that an incident which causes, or threatens to cause, material harm to the environment occurs, the incident will be managed in accordance with the Pollution Incident Response Management Plan.

The reporting of incidents will be conducted in accordance with Condition 7, Schedule 5 of Project Approval (05_0117).

MCO will notify the Secretary of DPHI and any other relevant agencies of any incident associated with LW409-414 which causes or threatens to cause material harm to the environment immediately after MCO confirms that an incident has occurred. For any other incident associated with mining of LW409-414, MCO will notify the Secretary and any other relevant agencies as soon as practicable after becoming aware of the incident. Within seven days of the date of the incident, MCO will provide the Secretary of DPHI and any relevant agencies with a detailed report on the incident. The report will:

- describe the date, time and nature of the exceedance/incident;
- identify the cause (or likely cause) of the exceedance/incident;
- describe what action has been taken to date; and
- describe the proposed measures to address the exceedance/incident.

11.0 COMPLAINTS

MCO maintains a Community Complaints Line (Phone Number: 1800 556 484) that is dedicated to the receipt of community complaints. The Community Complaints Line is publicly advertised and operates 24 hours per day, seven days a week, to receive any complaints from neighbouring residents or other stakeholders.

MCO has developed a Community Complaints Procedure which details the process to be followed when receiving, responding to and recording community complaints. The Community Complaints Procedure is supported by a Complaints Database.

The Community Complaints Procedure is a component of the MCO Environmental Management Strategy which requires the recording of relevant information including:

- the nature of complaint;
- method of the complaint;
- relevant monitoring results and meteorological data at the time of the complaint;
- site investigation outcomes;
- any necessary site activity and activity changes;
- any necessary actions assigned; and
- communication of the investigation outcome(s) to the complainant.

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), the complaints register will be updated monthly and made available on the Yancoal's website.

12.0 NON-COMPLIANCES WITH STATUTORY REQUIREMENTS

A protocol for the managing and reporting of non-compliances with statutory requirements has been developed as a component of MCO's Environmental Management Strategy and is described below.

Compliance with all approvals, plans and procedures will be the responsibility of all personnel (staff and contractors) employed on or in association with the Moolarben Coal Complex.

The Environment and Community Manager (or delegate) will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in **Section 10.0**, MCO will notify the Secretary of the DPHI, and any other relevant agencies, of any incident associated with the LW409-414 immediately after MCO becomes aware of the incident. Within seven days of the date of the incident, MCO will provide the Secretary of the DPHI, and any relevant agencies, with a detailed report on the incident.

A review of MCO's compliance with all conditions of Project Approval (05_0117), mining leases and all other approvals and licenses will be undertaken prior to (and included within) each Annual Review. The Annual Review will be made publicly available on the Yancoal's website.

As described in **Section 9.2**, the most recent independent environmental audit was conducted in July 2024, and will be conducted every three years thereafter. A copy of the independent environmental audit will be provided to the Secretary of the DPHI and made available on the Yancoal's website.

13.0 REFERENCES

Australasian Groundwater and Environmental Consultants (2024) *UG4 LW409-414 Extraction Plan Groundwater Technical Report,* in Support of the Extraction Plan.

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Marine Pollution Research Pty Ltd (2017) *Moolarben Coal Complex Open Cut Optimisation Modification Impact Assessment for Controlled Mine Water Release to the Goulburn River NSW: Aquatic Ecology Assessment*.

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Niche Environment and Heritage Pty Ltd (2024) *Moolarben UG4 – Longwall 409-414 Biodiversity Technical Report,* report prepared for Moolarben Coal Operations Pty Ltd by Niche Environment and Heritage.

ATTACHMENT 1

UG4 LONGWALLS 409 TO 414 BIODIVERSITY MANAGEMENT PLAN
TRIGGER ACTION RESPONSE PLANS

UG4 Longwalls 409 to 414 Threatened Fauna (Cave-Dwelling Microbats) TARP

Condition	Normal		Level 1	Level 2
	Baseline Conditions	**Predicted Impacts**	**Implement Management Measures**	**Restoration/Contingency Phase**
Trigger	Ongoing management of threatened cave-dwelling microbats within the Study Area of LW409-414.	Subsidence parameters and environmental consequences as predicted for threatened cave-dwelling microbats (**Section 4.5**) within the Study Area.	Subsidence monitoring results identifies impacts that are greater than predicted. Assessment of biodiversity performance indicator for threatened cave dwelling microbats (**Section 5.0**) has not been triggered.	Subsidence monitoring results identifies impacts that are greater than predicted. Assessment of biodiversity performance indicator for threatened cave-dwelling microbats (**Section 5.0**) has been triggered.
Action	Establish baseline data, including: • Baseline monitoring for microbats using acoustic devices as described in **Section 6.0**; and • Pre-extraction subsidence survey as per the LW409-414 SMP.	Conduct monitoring of microbats, as described in **Section 6.0** and the LW409-414 SMP. Implement management measures, as required, in accordance with **Section 7.0**.	Management measures implemented with regard to the specific circumstances of the subsidence impact (e.g. the nature and extent of the impact) and in accordance with **Section 7.0**. Follow-up inspections will be conducted to assess the effectiveness of the management measures implemented and the requirement for any additional management measures.	Implement Contingency Plan including notifications as described in **Section 8.0**.
Frequency	During survey season (November to January), prior to longwall extraction beneath monitoring sites.	Twice per survey season (November to January), for two years following longwall extraction beneath monitoring sites.	As required, in accordance with **Section 7.0**.	As required, in accordance with **Section 8.0**.
Position of Decision Making	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.

UG4 Longwalls 409 to 414 Threatened Flora (*Androcalva procumbens*) TARP

Condition	Normal		Level 1	Level 2
	Baseline Conditions	**Predicted Impacts**	**Implement Management Measures**	**Restoration/Contingency Phase**
Trigger	Ongoing management of threatened flora species (i.e. *Androcalva procumbens*) within the Study Area of LW409-414.	Subsidence parameters and environmental consequences as predicted for threatened flora species (i.e. *Androcalva procumbens*) (**Section 4.5**) within the Study Area.	Subsidence monitoring results identifies impacts that are greater than predicted. Assessment of biodiversity performance indicator for threatened flora species (i.e *Androcalva procumbens*) (**Section 5.0**) has not been triggered.	Subsidence monitoring results identifies impacts that are greater than predicted. Assessment of biodiversity performance indicator for threatened flora species (i.e *Androcalva procumbens*) (**Section 5.0**) has been triggered.
Action	Establish baseline data, including: • Baseline monitoring for threatened flora within the Study Area as described in **Section 6.0**; and • Pre-extraction subsidence survey as per the LW409-414 SMP.	Conduct monitoring of threatened flora, as described in **Section 6.0** and LW409-414 SMP. Implement management measures, as required, in accordance with **Section 7.0**.	Management measures implemented with regard to the specific circumstances of the subsidence impact (e.g. the nature and extent of the impact) and in accordance with **Section 7.0**. Follow-up inspections will be conducted to assess the effectiveness of the management measures implemented and the requirement for any additional management measures.	Implement Contingency Plan including notifications as described in **Section 8.0**.
Frequency	During spring, prior to longwall extraction.	Annually during spring, until the completion of LW414.	As required, in accordance with **Section 7.0**.	As required, in accordance with **Section 8.0**.
Position of Decision Making	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.	Environment and Community Manager and Underground Technical Services Manager.