ULAN
UNDERGROUND

GLENCORE

# Appendix C: Biodiversity Management Plan Longwalls 30 & LWW6-LWW8

## Ulan Underground

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|---|---|
| **Document Number:** | ULNCX-111515275-3364 |
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# 1 Introduction

## 1.1 Extraction Plan Applicable Area

Ulan Coal Mines Pty Limited (UCMPL) has Extraction Plan approval for longwall (LW) panels LW30 & LWW6-LWW8, herewith referred to as the Application Area (**Figure 1**), for the Ulan Underground Mine (UUG).

## 1.2 Purpose and Scope

The purpose of this Biodiversity Management Plan for Longwalls 30 & LWW6 - LWW8 (BMP LW30 & LWW6-LWW8) is to outline the management strategies, controls and monitoring programs to be implemented for the management of flora and fauna in relation to potential environmental impacts resulting from secondary extraction within the Application Area.

This BMP LW30 & LWW6-LWW8 (this Plan) has been amended to incorporate the approved MOD4[1] mine plan which extend[2] the longwall panel lengths of LW30, LWW7 and LWW8. Amendments to this Plan are identified by red text. A summary of the predicted changes to potential subsidence effects, subsidence impacts and environmental consequences, as a result of the revised mine plan layout at UUG is provided in **Section 3.0**. There are no significant changes to the monitoring or management measures previously proposed, as a result of the revised layout of LW30, LWW7 and LWW8.

The scope of this Plan applies to flora and fauna potentially impacted as a result of mining within the Application Area (**Figure 2**).

The appointed team of suitably qualified and experienced experts which included representatives from Eco Logical Australia (Ecological) relevant to this plan, was endorsed by the Secretary of NSW Department of Planning, Industry and Environment (DPIE) on 27 June 2016 (Attachment 2 of the Extraction Plan).

[1] *Ulan Continued Operations Project - Modification 4 Longwall Optimisation Project Environmental Assessment (ELA, 2018)*
[2] As a result of MOD4, length of approximate extensions for LW30, LWW7 and LWW8 are 195m, 220m, 155m respectively.

***Figure 1 Extraction Plan LW30 & LWW6-LWW8 Application Area***

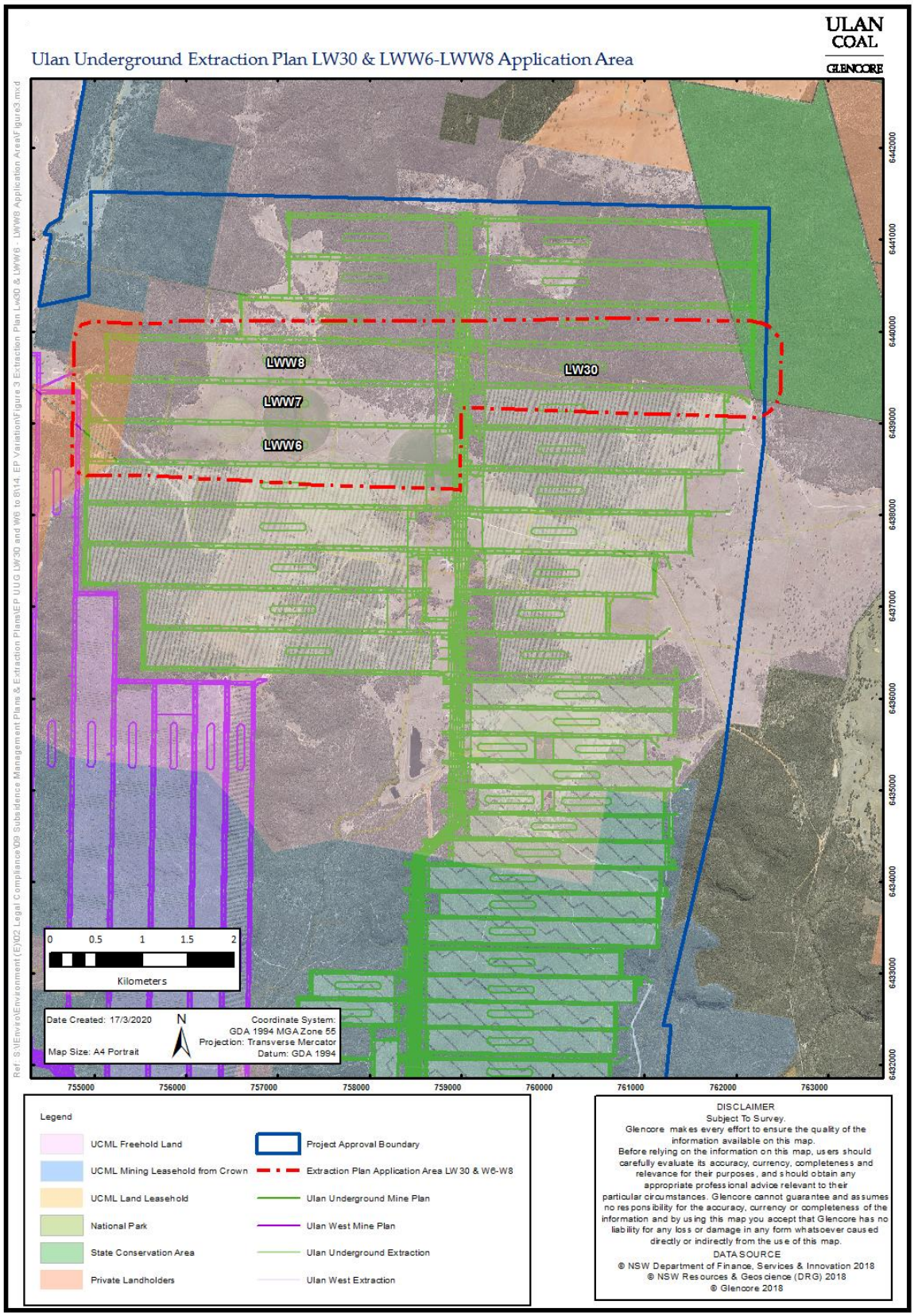
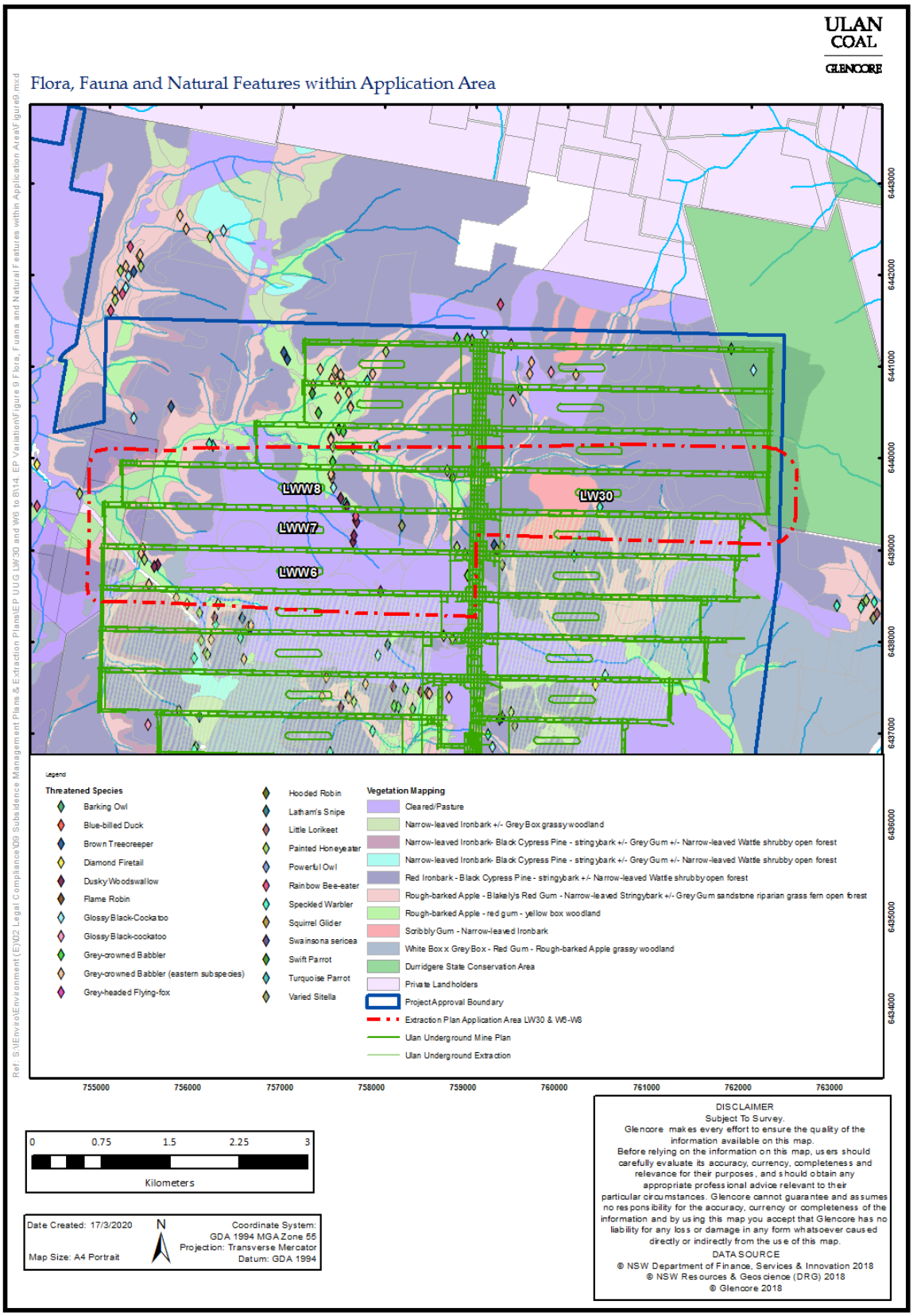


***Figure 2 Application Area Threatened Fauna, Vegetation Communities and Natural Features***



# 1.3 Description of Flora and Fauna within the Project Area

The following information has been summarised from the Biodiversity Management Plan (BMP)[3]. For more information and full descriptions of flora, fauna, threatened species and vegetation offset areas, please refer to the BMP and Appendix 8 of the 2009 Environmental Assessment (EA)[4].

## 1.3.1 Environmental Setting

The Project Area is located within both the Hunter River and Macquarie River catchments, and within both the Sydney Basin and Brigalow Belt South Bioregions. The Project Area is bisected by the Great Dividing Range, which crosses the Project Area north-east to south-west at a relative low point in the range that facilitates movement of biota between inland and coastal regions.

The majority of the Project Area lies in the Sydney Basin Bioregion, however the north-eastern corner lies in the southern parts of the Brigalow Belt South Bioregion. The NSW South Western Slopes Bioregion lies on the south-western boundary of the Project Area. Bioregions are 'relatively large areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems'. Thus the proximity of a number of bioregion boundaries so close to the Project Area means that a diverse range of flora and fauna assemblages are likely to occur in the local area, with a mixture of coastal and inland influences.

The coastal side of the Great Dividing Range is located within the Hunter River catchment and the components of the Project Area falling within this catchment lie in the upper reaches of Goulburn River sub-catchment. The land lying on the western side of the Great Dividing Range (i.e. with inland influences) lies within the Macquarie River catchment, mainly within the sub-catchment of the Talbragar River.

## 1.3.2 Vegetation Offset and Conservation Areas

There are two vegetation offset areas and two conservation management areas (**Figure 3**)[5] that provide an immediate ecological outcome to offset the identified impacts of the Project. The vegetation offset areas include:

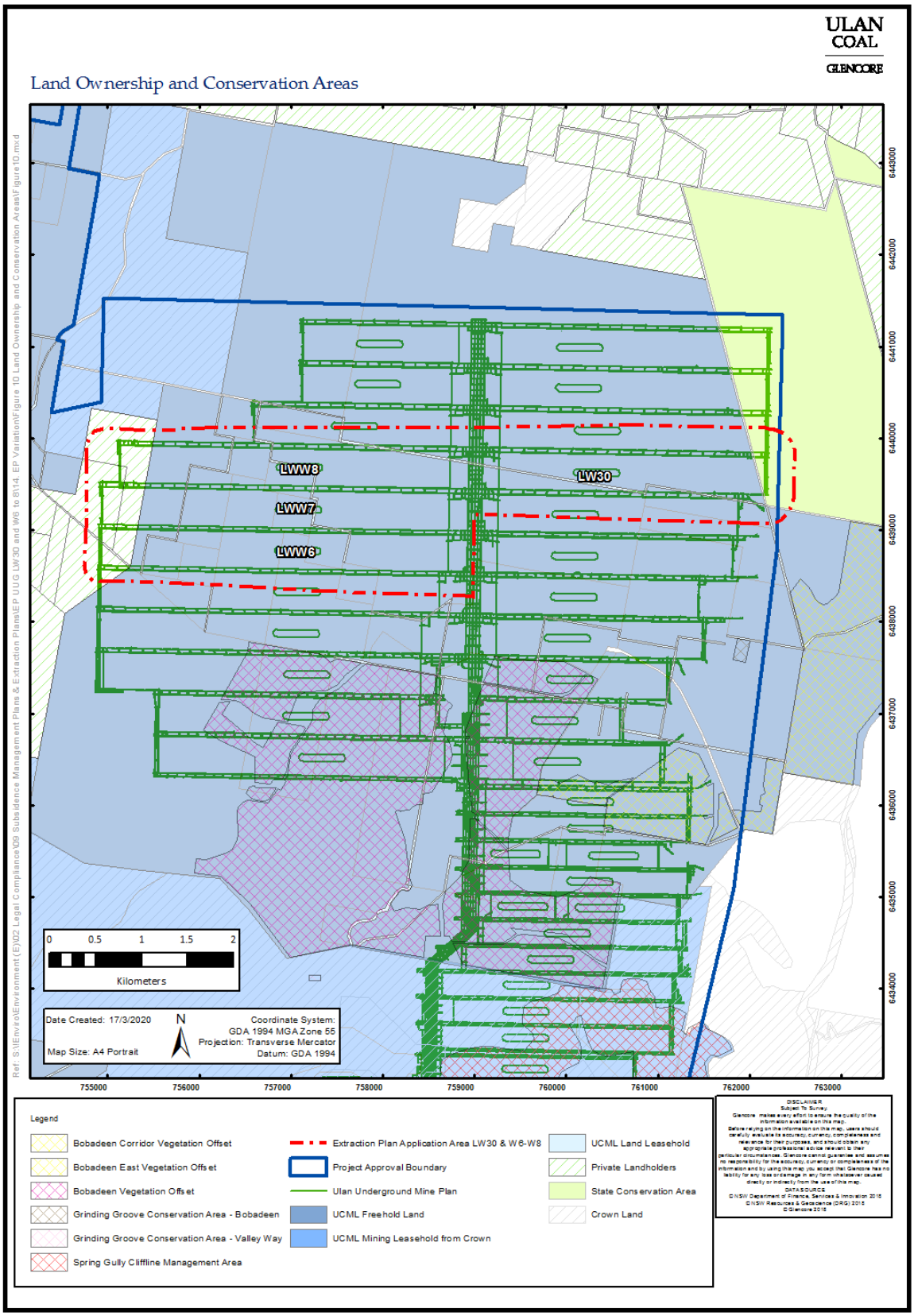
- The Bobadeen Vegetation Offset Area (1116 hectares including Bobadeen Vegetation Offset Corridor) which contains approximately 278 hectares of White Box Woodland EEC[6]/CEEC[7].
- The Bobadeen East Vegetation Offset Area (232 hectares) which contains approximately 169 hectares of White Box Woodland EEC/CEEC.

The conservation management areas include:

- The Brokenback Conservation Area (refer to HMP LW30 & LWW6-LWW8) which is approximately 58 hectares for the protection of a number of rock shelters and to mitigate loss of cliff line and bat cave habitat from potential subsidence.
- The Spring Gully Line Management Area which is approximately 273 hectares and provides protection of cliff line, caves or other structures that are likely to provide habitat for micro–bats.

[3] Biodiversity Management Plan ULNCX-111515275-225. Available on the Ulan Coal Website at http://ulancoal.com.au/EN/Environment/Pages/EnvironmentManagementPlan.aspx
[4] Ulan Coal - Continued Operations Environmental Assessment (2009)
[5] For more information about the three vegetation offset areas and two conservation management areas please refer to Section 3 of the BMP and Section 2 of the Offset Management Program[5].
[6] EEC = Endangered Ecological Community
[7] CEEC = Critically Endangered Ecological Community

***Figure 3 Land Ownership and Conservation Areas***



### 1.3.3 Flora Species of the Project Area

In total, 634 plant species (from 76 families) have been recorded in the Project Area from all surveys undertaken to date. Of these, 79 (12 per cent) are non-native species. Plants were recorded from all four major vascular plant classes: cycads, conifers, ferns and flowering plants. *Fabaceae* was the most speciose plant family, followed by *Poaceae* and *Asteraceae*. The most speciose genera were dominated by Acacia and Eucalyptus, with 28 and 20 species respectively. Shrubby growth-forms dominated the most speciose genera, ahead of grasses, forbs and trees.

Section 5.0 of the Ecological Assessment (Appendix 8 of the Project EA) provides the results of the flora survey of the Project Area. This includes detailed descriptions of the flora species recorded, vegetation communities, management history of the Project Area, as well as records of threatened flora species, endangered populations and EEC/CEECs within the Project Area.

Five noxious weed species (less than 1 per cent of the flora of the Project Area), as listed in the NSW Government Gazette No. 166, 23 December 2005 (NSW Government 2005), were recorded in the Project Area.

### 1.3.4 Fauna Species of the Project Area

The following information summarises the results of the fauna surveys completed within the Project Area. Further discussion on the fauna species recorded during surveys is contained within the Ecological Assessment (Appendix 8 of the Project EA). A total of 328 fauna species were recorded within the Project Area during surveys, including:

- 216 bird species (from 63 families), with the most common family being *Meliphagidae* (23 species) followed by *Acanthizidae* (17 species). One endangered bird species was recorded (swift parrot (Lathamus discolor)) and 21 vulnerable bird species were recorded. A total of 44 migratory species and 46 marine species were recorded. There were also five introduced birds recorded.
- 45 reptile species, with *Scincidae* being the most abundant family, followed by *Gekkonidae*. No threatened or introduced reptile species were recorded in the Project Area.
- Nineteen amphibian species, of which the most commonly represented family was *Myobatrachidae* (13 species). No threatened or introduced amphibian species were recorded in the Project Area.
- 48 mammal species, with the most common family being *Vespertilionidae* (micro-bats) that had fifteen species. Nine threatened mammal species were recorded (including six micro-bat species) and thirteen non-native mammal species were also identified.

### 1.3.5 Aquatic Species of the Project Area

There are five creeks situated within the Project Area (Spring Gully, Mona, Cockabutta, Bobadeen and Ulan Creeks) and two rivers that located nearby (Talbragar and Goulburn Rivers). The following information summarises the results of the aquatic surveys within these creeks and rivers. Further discussion on the aquatic habitats, flora and fauna recorded during surveys is provided in the Ecological Assessment (Appendix 8 of the Project EA).

A review of the literature identified five listed threatened aquatic species (Fisheries Management Act 1994) that could potentially occur within the Project Area, given their known distribution and habitat requirements:

- Purple spotted gudgeon (*Mogurnda adspersa*);
- Macquarie perch (*Macquaria australasica*);
- Silver perch (*Bidyanus bidyanus*);
- River snail (*Notopala sulineata*); and
- Trout cod (*Maccullochella macquariensis*)

Of the threatened fish species listed above, none were recorded, and potential for their occurrence is very low. The giant dragonfly (*Petalura gigantea*) is a semi-aquatic species that is listed as vulnerable

under the TSC Act. This species has not been recorded in the Project Area, and potential for occurrence is also very low.

## 1.3.6 Groundwater Dependent Ecosystems

Groundwater Dependent Ecosystems (GDEs) are ecosystems which have their species composition and their natural ecological processes determined by groundwater. Of these ecosystems, those potentially relevant to the Project Area include red gum forests (which occur in some riparian communities mapped within the project area), ecosystems in streams fed by groundwater and other terrestrial vegetation.

While there are potentially several examples of these ecosystems throughout the Project Area, these are generally not well-defined, blend into adjacent drier communities and are not significant GDEs such as hanging swamps and limestone cave systems, which are not present in the project area. There have been no records of such significant GDEs from ecological surveys completed within the Project Area to date.

## 1.3.7 Threatened Species/Communities and Endangered Populations

The following section provides brief information on the threatened species (flora and fauna), endangered populations and EEC/CEECs recorded from the Project Area (additional information can be found in the Ecological Assessment (Appendix 8 of the Project EA).

Four flora species and one EEC/CEEC endangered population have been identified through surveys of the Project Area (**Table 1** and **Figure 5**).

***Table 1 Threatened Flora Species and EEC/CEECs Recorded within Project Area****

| Species | Status |
|---|---|
| Ausfeld's wattle - *Acacia ausfeldii* | V (TSC) |
| *Homoranthus darwinioides* | V (TSC), V (EPBC) |
| Hoary sunray - *Leucochrysum albicans* var. tricolor | E (EPBC) |
| Pomaderris queenslandica - *Scant Pomaderris* | E (TSC) |
| White Box – Yellow Box – Blakely's Red Gum Woodland | EEC (TSC) |
| White Box – Yellow Box – Blakely's Red Gum Grassy Woodland & Derived Native Grassland | CEEC (EPBC) |

**Key:** E = Endangered V = Vulnerable EEC = Endangered Ecological Community CEEC = Critically Endangered Ecological Community TSC = Threatened Species Conservation Act 1995 EPBC = Environment Protection and Biodiversity Conservation Act 1999

**Notes*:** Field survey results from Umwelt –(2009), Mount King (2008), Gingra (1997 – 2009), Moolarben Coal Project (Moolarben Biota 2006) and Moolarben Coal Project Stage 2 (Ecovision 2008) and Eco Logical Australia (2015).

A total of 33 fauna species listed as threatened under the TSC Act have been recorded in the Project Area. This number includes four species also listed as threatened under the EPBC Act. In addition, nine migratory species as listed under the EPBC Act were recorded within the Project Area. **Table 2** documents the total number of records for each species from the Project Area. **Figure 4** shows the sightings of threatened and migratory species recorded within the Project Area.

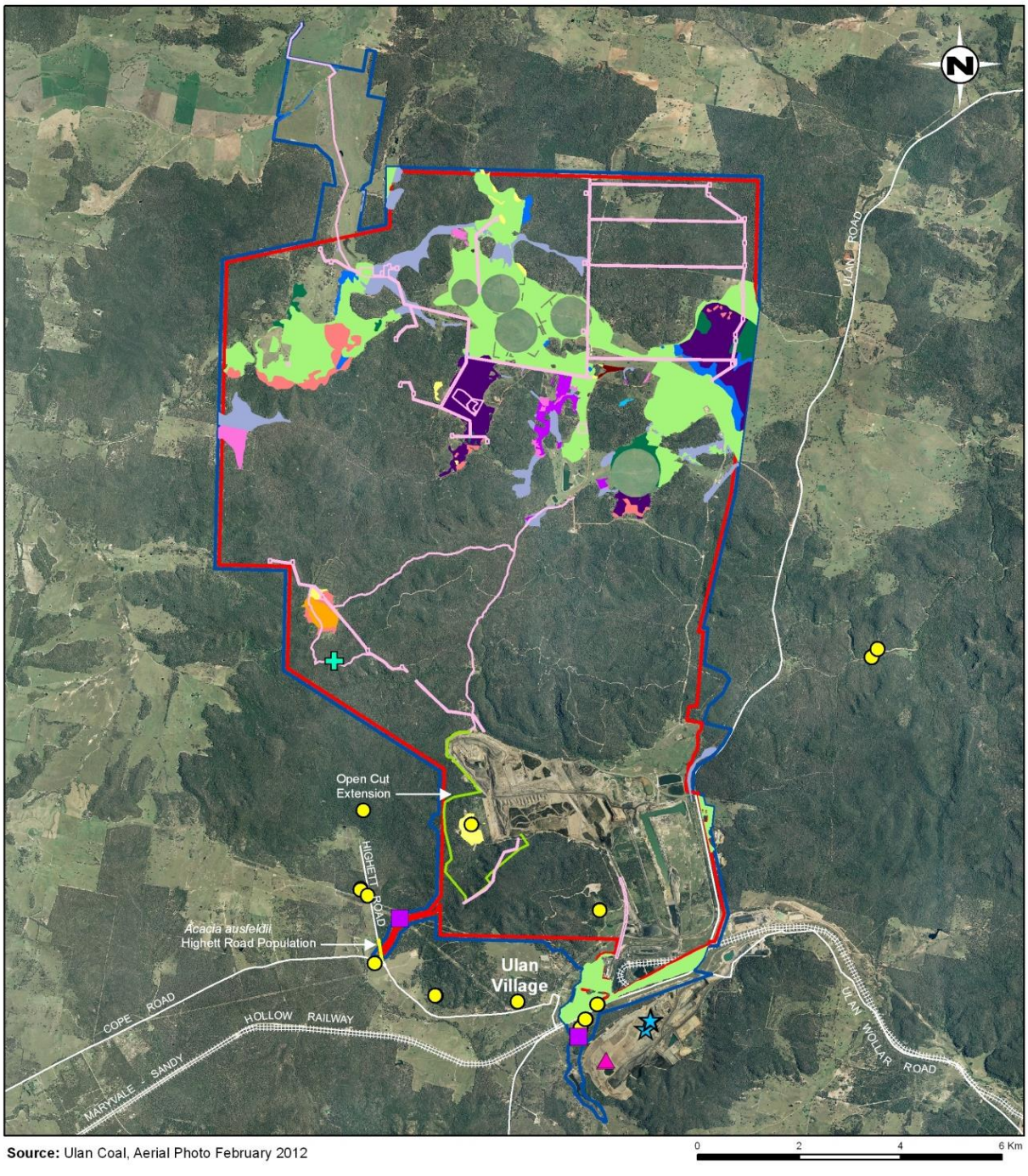
***Table 2 Threatened and Migratory Fauna Recorded in the Project Area***

| Species* | TSC Act 1995 | EPBC Act 1999 |
|---|---|---|
| blue-billed duck - *Oxyura australis* | V | MIG |
| magpie goose - *Anseranas semipalmata* | V | MAR |
| black-breasted buzzard - *Hamirostra melanosternon* | V | MIG |
| little eagle - *Hieraaetus morphnoides* | V | - |
| spotted harrier - *Circus assimilis* | V | - |
| gang-gang cockatoo - *Callocephalon fimbriatum* | V | - |
| glossy black-cockatoo - *Calyptorhynchus lathami* | V | - |
| little lorikeet - *Glossopsitta pusilla* | V | - |
| swift parrot - *Lathamus discolor* | E | E |
| turquoise parrot - *Neophema pulchella* | V | - |
| powerful owl - *Ninox strenua* | V | - |
| barking owl - *Ninox connivens* | V | - |
| hooded robin (south-eastern form) - *Melanodryas cucullata* | V | - |
| flame robin - *Petroica phoenicea* | V | - |
| scarlet robin - *Petroica boodang* | V | - |
| brown treecreeper (eastern subspecies) - *Climacteris picumnus victoriae* | V | - |
| painted honeyeater - *Grantiella picta* | V | - |
| black-chinned honeyeater (eastern subspecies) - *Melithreptus gularis* | V | - |
| speckled warbler - *Chthonicola saggitatus* | V | - |
| grey-crowned babbler (eastern subspecies) - *Pomatostomus temporalis* | V | - |
| diamond firetail - *Stagonopleura guttata* | V | - |
| varied sittella - *Daphoenositta chrysoptera* | V | - |
| white-browed woodswallow - *Artamus superciliosus* | V – PD** | - |
| brush-tailed rock-wallaby - *Petrogale penicillata* | V | - |
| squirrel glider - *Petaurus norfolcensis* | V | - |
| Koala - *Phascolarctos cinereus* | V | - |
| large-eared pied bat - *Chalinolobus dwyeri* | V | V |
| eastern cave bat - *Vespadelus troughtoni* | V | - |
| large-footed myotis - *Myotis adversus* | V | - |
| eastern bentwing-bat - *Miniopterus schreibersii oceanensis* | V | - |
| yellow-bellied sheathtail-bat - *Saccolaimus flaviventris* | V | - |
| greater long-eared bat - *Nyctophilus timoriensis* | V | V |
| little pied bat - *Chalinolobus picatus* | V | - |

**Key:** E = Endangered V = Vulnerable M = Migratory Marine = Marine Overfly

**Note:** Records did not come from sightings only. Vocal calls, scats, hair samples and other confirmed signs of presence were included as records. * By Umwelt surveys for the EA or previous surveys (primarily by Mount King (2008) and Fly By Night 2007, 2008a, 2008b, 2009). ** Species Preliminary Determination for Vulnerable Listing under the TSC Act has since been rejected.

***Figure 4 Threatened Flora within Approved Project Area***




**Source:** Ulan Coal, Aerial Photo February 2012

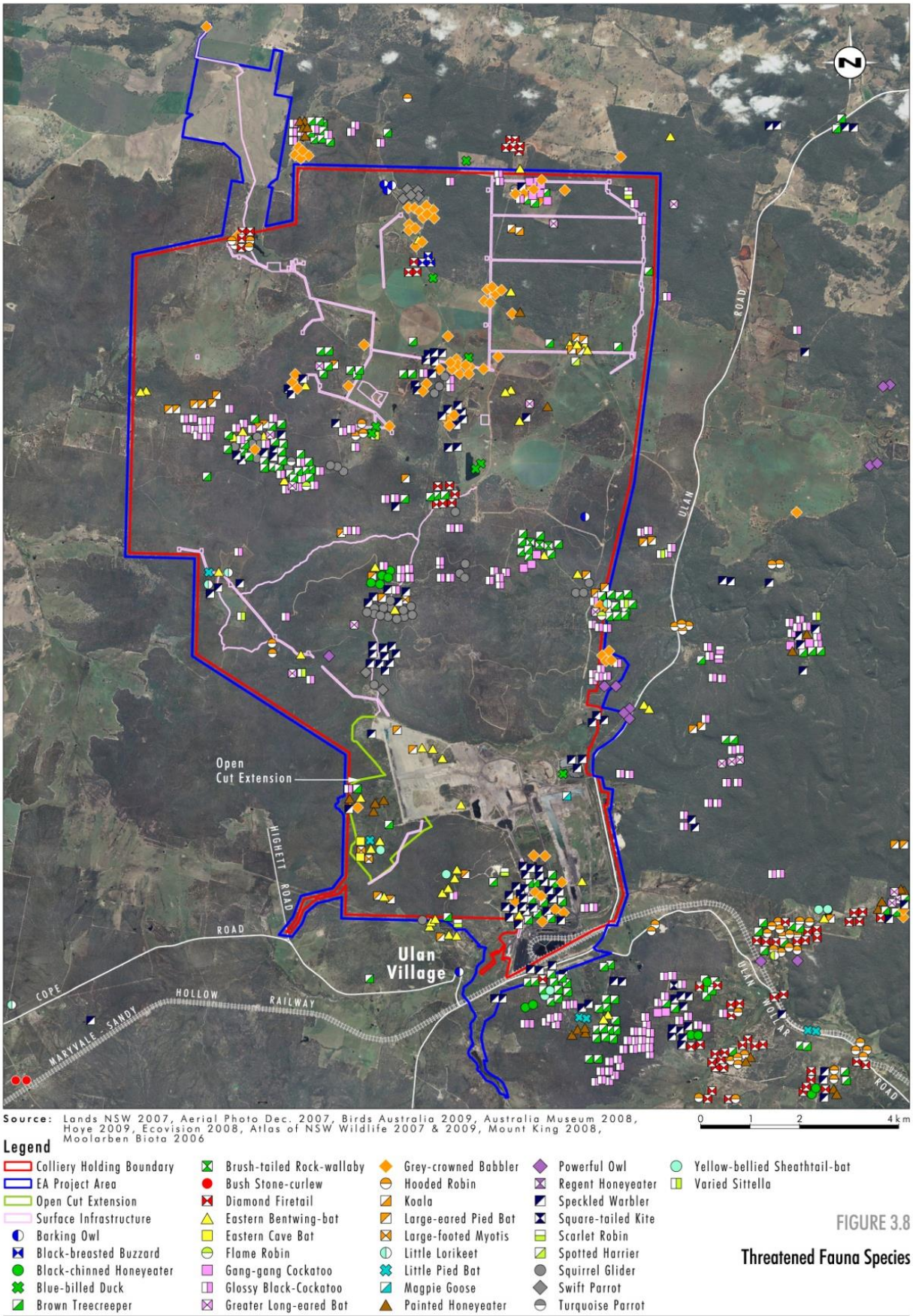
**Legend**

- Colliery Holding boundary
- EA Project Area
- Open Cut Extension
- Surface Infrastructure
- Blakelys Red Gum Open Forest
- Blakelys Red Gum Open Forest (regenerating)
- Blakelys Red Gum Open Forest Grassland
- Derived Native Grassland
- Grey Box Woodland*
- Grey Box Woodland (regenerating)*
- Grey Box Woodland Grassland*
- Modified White Box Woodland
- White Box Woodland
- White Box Woodland (regenerating)
- White Box Woodland Grassland
- Yellow Box - Red Gum Woodland
- *Acacia ausfeldii* Highett Road Population
- *Acacia ausfeldii*
- *Diuris tricolor*
- *Eucalyptus cannonii*
- *Homoranthus darwinioides*
- *Leucochrysum albicans* var. *tricolor*

* Some areas may meet Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia EEC or Inland grey box woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow BeltSouth bioregions EEC

**Threatened Flora Species and EEC/CEEC**

***Figure 5 Threatened Fauna Recorded within Project Area***



### 1.3.8 Threatened Species/Communities and Endangered Populations within Application Area

The following section provides a summary of the threatened species (flora and fauna), endangered populations and EEC/CEECs recorded within the Application Area.

Two EEC/CEECs and seven vulnerable fauna species have been recorded (**Figure 2**) within the Application Area.

There are two ECC/CEECs present within the Application Area. Blakely's Red Gum Woodland is present along sections of Mona Creek and its tributaries in the north and west of the Application Area. Derived Native Grassland is located within open grazing areas surrounding the irrigation pivots (**Figure 2**).

There have been seven vulnerable fauna species identified within the Application Area consisting of one microbat species, and 6 bird species including two migratory species, sighting locations are show on **Figure 2**.

The approved environmental impact as a result of subsidence on flora and fauna as described by the Project EA and subsequent environmental assessments are provided in **Section 3**.

The management and monitoring regarding subsidence induced impacts on flora and fauna are summarised in **Section 4**.

## 1.4 Structure of the BMP LW30 & LWW6-LWW8

This Plan references the key relevant components of existing approved biodiversity management plans, including:

- Biodiversity Management Plan (BMP[8])
- Appendix B of the BMP - Offset Management Program (OMP); and
- Bushfire Management Plan (BFMP[9])

Revisions of the above management plans approved by DPIE will be applied to the management of the Project Area including the Application Area.

**Table 3** identifies where the requirements of Condition 2, Schedule 5 of PA 08_0184 are addressed in this Plan. Sections of the BMP and BFMP relevant to this Plan are also summarised in **Table 3**.

The BMP and BFMP are available on the UCMPL website at:

https://www.ulancoal.com.au/en/environment/EnvironmentManagementPlan/Biodiversity%20Management%20Plan.pdf

The main text sections of this Plan are:

**Section 1** Provides an introduction to this Plan, including the purpose and scope of the BMP, relationship to the EMS and the document structure.

**Section 2** Describes the regulatory requirements, the subsidence performance measures relevant to this Plan and a summary of relevant legislation and stakeholder consultation.

**Section 3** Summarises the predicted subsidence impacts and environmental consequences resulting from the extraction of LW30 & LWW6-LWW8.

**Section 4** Describes the management, monitoring and evaluation measures that will be implemented and how monitoring data will be used to assess the relevant performance indicators and performance measures.

**Section 5** Provides a Contingency Plan to manage any unpredicted impacts and their consequences. Provides a Trigger Action Response Plan (TARP), which is a simple and transparent snapshot of the monitoring of environmental performance and where required the implementation of management and/or contingency measures.

**Section 6** Provides a summary of the review and improvement process and reporting requirements.

**Section 7** Outlines the roles and responsibilities for this Plan.

**Section 8** Lists the documents referred to in **Sections 1** to **6** of this Plan.

[8] Ulan Coal Document Number: ULNCX-111515275-225
[9] Ulan Coal Document Number: ULNCX-111515275-2049

# 2 Regulatory Requirements

## 2.1 Project Approval

This Plan is a component of the Ulan Underground Extraction Plan Longwalls LW30 & LWW6-LWW8 (the Extraction Plan)[10] and has been prepared specifically to address Condition 26 of Schedule 3 which states:

> *26. The Proponent shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Director-General. Each Extraction Plan must:*
>
> *…*
>
> *include:*
>
> *…*
>
> - *a revised Biodiversity Management Plan for the project, which specifically provide for the management of any potential subsidence impacts and/or environmental consequences of the proposed second workings; and*
> - *a program to collect sufficient baseline data for Future Extraction Plans[11].*

The structure of this Plan also follows the draft *Guidelines for the Preparation of Extraction Plans* (the Guidelines) provided by the DPIE. **Table 3** identifies where the requirements of PA 08_0184 and the Guidelines are addressed in this Plan.

***Table 3 Supporting Documents - Reference Summary***

| EP Guidelines for Extraction Plan Management Plans | PA 08_0184 Requirements for Management Plans - Condition 2, Schedule 5 | This Plan or BMP Reference | Section Description |
|---|---|---|---|
| *Overview of landscape features, heritage sites and environmental values to be managed under the component plan; and*<br>*Description of landscape features, heritage sites and environmental values to be managed under the component plan and their significance.* | Condition 2(a) *detailed baseline data* | **Section 1.3** of this Plan<br>Section 4 of the BMP | Provides descriptions of the environmental setting, vegetation and fauna habitat, flora and fauna, threaten species and groundwater dependent ecosystems. |
| | Condition 2(b) *a description of:*<br>• *the relevant statutory requirements (including any relevant approval, licence or lease conditions);* | **Section 2** of this Plan<br>Section 2.1 of the BMP | Provides descriptions of project approval, subsidence performance measures and legislation applicable to this Plan. |
| *Performance measures relevant to the landscape features, heritage sites and environmental values to be managed under the component plan* | Condition 2(b) *a description of:*<br>• *any relevant limits or performance measures/ criteria;* | **Section 2.2** of this Plan | Provides the subsidence performance measures for biodiversity. |
| *Performance indicators to establish compliance with these performance measures* | • *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 4.3** of this Plan | Provides the performance indicators that are proposed to be used to judge the performance measures. |
| | *Condition 2(c) a description of the measures that would be implemented to comply with the relevant statutory requirements,* | **Section 4** of this Plan | Describes the subsidence management measures relevant to biodiversity. |

[10] PA08_0184, Schedule 3, Condition 26(h).
[11] Ulan Coal's program to collect baseline data for Future Extraction Plans is provided in Attachment 3 of the Plan.

| EP Guidelines for Extraction Plan Management Plans | PA 08_0184 Requirements for Management Plans - Condition 2, Schedule 5 | This Plan or BMP Reference | Section Description |
|---|---|---|---|
| | *limits, or performance measures/criteria;* | | |
| *Currently predicted subsidence impacts and environmental consequences relevant to the features, sites and values to be managed.* | | **Section 3** of this Plan | Provides a summary of the approved subsidence impacts and revised impacts. |
| *Measures planned to remediate these impacts and/or consequences* | | **Section 4** of this Plan | Provides a summary of the subsidence management measures. |
| *Existing baseline monitoring network and baseline monitoring results.*<br><br>*Proposed monitoring of subsidence impacts and environmental consequences* | *Condition 2(d) a program to monitor and report on the:*<br>• *impacts and environmental performance of the project;*<br>*effectiveness of any management measures (see c above);* | **Section 4.2** of this Plan | Describes the ecological monitoring and evaluation of potential impacts from the Project on flora and fauna. |
| *Proposed monitoring of the success of remediation measures following implementation* | | **Section 4** of this Plan | Provides a summary of the subsidence management measures and remediation measures for biodiversity. |
| *Adaptive management proposed to avoid repetition of unpredicted subsidence impacts and/or environmental consequences*<br><br>*Contingency plans proposed to remediate unpredicted subsidence impacts and/or environmental consequences*<br><br>*Trigger, Action, Response Plan* | *Condition 2(e) a contingency plan to manage any unpredicted impacts and their consequences;* | **Section 5** of this Plan | Provides a Contingency Plan in the event performance measures are exceeded or higher than predicted subsidence or a subsidence related incident has occurred.<br><br>The Contingency Plan outlines the requirement to develop the appropriate course of actions, including corrective and preventative actions.<br><br>**Section 5.1.1** of this Plan provides a TARP to identify the appropriate response measures and responsibilities. |
| *Responsibilities for implementation of the component plan* | | **Section 7** of this Plan | Responsibilities for implementation of this Plan is listed. |
| | *Condition 2(f) a program to investigate and implement ways to improve the environmental performance of the project over time;* | **Section 6** of this Plan | Describes the review mechanism for improvement. |
| | *Condition 2(g) a protocol for managing and reporting any:*<br>• *incidents;*<br>• *complaints;*<br>• *non-compliances with statutory requirements; and*<br>*exceedances of the impact assessment criteria and/or performance criteria; and* | **Section 6** of this BMP LW30 & W6-W8 | Describes the reporting and community response process. |
| | *Condition 2(h) a protocol for periodic review of the plan.* | **Section 6** of this Plan | Describes the review process of the plan. |

## 2.2 Subsidence Performance Measures

This Plan outlines the management strategies, controls and monitoring programs to be implemented for the management of flora and fauna regarding potential environmental impacts from the proposed secondary extraction within Application Area as described in the Extraction Plan. UCMPL must ensure that there is no exceedance of the subsidence impact performance measures[12] for biodiversity as provided in **Table 4**.

***Table 4 Biodiversity Performance Measures***

| Biodiversity | Subsidence Performance Measures |
|---|---|
| Threatened species, populations, habitat or ecological communities | Negligible impact |

## 2.3 Relevant Legislation

### 2.3.1 Mining Act 1992

The NSW *Mining Act 1992* (Mining Act) places controls on methods of exploration and mining, the disposal of mining waste, land rehabilitation, and environmental management activities. The extraction of coal using the mining methods described in the Extraction Plan occurs within the subsurface Mining Lease (ML) ML1468, granted approval under the Mining Act on the 18 May 2000.

### 2.3.2 Environmental Planning and Assessment Act 1979

Project Approval 08_0184 (PA08_0184) under Part 3A of the *Environmental Extraction Planning and Assessment Act 1979* (EP&A Act) was granted on 15 November 2010. As required by PA08_0184 UCMPL are required to prepare an Extraction Plan, to the satisfaction of the Secretary of DPIE. A component of the Extraction Plan is the preparation of a Biodiversity Management Plan in accordance with Condition 26(h), Schedule 3 of PA08_0184.

### 2.3.3 Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016 (*BCA Act*)* commenced on 25 August 2017 and replaced the *Threatened Species Conservation Act 1995* (TSC Act). Both the BCA and TSC Acts form the basis and the mechanisms in NSW by which species, populations and ecological communities are declared endangered, vulnerable or critically endangered, and under which people and corporations are prosecuted for destruction of habitat sheltering such species, populations or communities.

### 2.3.4 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) commenced 16 July 2000. The EPBC Act provides a national approach of environment and heritage protection and biodiversity conservation.

### 2.3.5 Other Legislation

Legislation also relevant to this Plan includes:

- *Fisheries Management Act 1994* (NSW);
- *The Rural Fires Act 1997* (NSW); and
- *Protection of the Environment Operations Act 1997* (NSW).

[12] PA08_0184, Schedule 3, Condition 24, Table 14.

## 2.4 Consultation

Consultation was undertaken during the Project EA[13]. Consultation specific to the Extraction Plan was undertaken with government agencies, asset owners, UCMPL's Community Consultative Committee (CCC) and registered Aboriginal stakeholders. Further information regarding consultation is provided in Section 2.1 of the Extraction Plan.

[13] Ulan Coal - Continued Operations Environmental Assessment (Umwelt 2009).

# 3 Predicted Subsidence Impacts and Environment Consequences

The approved subsidence impacts and environmental consequences relating to flora and fauna are described in the Project EA and subsequent modifications.

The revised subsidence impact assessment[14] was completed by SCT Operations Pty Ltd (SCT) specifically for the Application Area (**Technical Report 1**). The SCT assessment concluded that no significant changes in subsidence impacts are expected from those described in the Project EA.

**Section 3.1** provides a summary of approved and revised subsidence impacts regarding flora and fauna within the Project Area.

**Section 3.2** provides a summary from the revised subsidence impacts assessment by SCT in August 2016, specific to the Application Area.

**Section 3.3** provides a summary of biodiversity impacts by Eco Logical Australia (ELA) in September 2015, specific to the Application Area (**Technical Report 5**).

**Section 3.4** provides a summary of the revised subsidence impacts as they relate to MOD4 from *the Ulan Continued Operations Project - Modification 4 Longwall Optimisation Project Environmental Assessment 2018 (ELA, 2018)* and *Subsidence Assessment for Amendment to LW30 and LWW6 - LWW8 Extraction Plan (SCT, 2019).*

## 3.1 Approved Subsidence Impacts and Environmental Consequences

The following summary of subsidence related impacts to flora and fauna were described in the Project EA, which stated:

> *An extensive ecological survey and assessment has been undertaken by Umwelt to assess the impact of the Project on threatened flora and fauna species, endangered populations, threatened ecological communities (TEC) and their habitats. Ecological surveys have recorded three threatened flora species and 33 threatened fauna species within the project area. One TEC, White Box Woodland, has also been recorded within the project area.*
>
> *A relatively minor portion of the project area will be subject to surface disturbance for the open cut mine and surface facilities and ancillary activities for underground mining (approximately 408 hectares or 4 per cent of the total project area) over the life of the Project. More than 20 years of monitoring of previous underground mining at Ulan has confirmed that ecological impacts associated with subsidence are negligible. The assessment generally concluded that the Project will not result in a significant impact on threatened species, endangered populations or TECs or their habitats within the project area, however there is potential for impact on cave-roosting bat species.*
>
> *A range of mitigation and offsetting measures will be implemented to reduce potential impacts. Biodiversity offsets and cliff line management areas will be established, in consultation with DECC and DoP.*

The Project EA also identified that:

> *Without mitigation, the Project has the potential to result in a variety of impacts on the ecological features of the project area. The majority of these impacts will be direct impacts from the open cut mine and underground mining surface infrastructure, however there are also subsidence-related impacts on cliff line areas located within the underground mining footprint.*

[14] PA08_0184, Schedule 3, Condition 26(e).

*There are no groundwater dependent ecosystems located in the future underground mining area and therefore no potential impact on these ecosystems.*

*Detailed modelling of predicted subsidence impacts has concluded that there are not likely to be substantial impacts on vegetation or vegetation based fauna habitat from subsidence in the underground mining areas. The degree of landscape change expected from subsidence is not of a degree that it is likely to cause tree fall or failure, except in areas where vegetation is lost as a result of rock fall from cliff lines. This impact has been discussed in Section 9.4.4, and predicts that up to 6 kilometres15 of existing cliff line could experience rock fall as a result of subsidence. This impact is difficult to quantify, however it is expected that the impact is most likely to be exhibited in the form of rock fall, and that this impact is also most likely to occur within the weakest points of the cliff line such as where caves and overhangs occur. Rock fall has the potential to impact on habitat for cave-dependent species (particularly micro-bats), where this occurs. Assuming a rock fall impacts approximately 15 linear metres of vegetation below the base of the cliff, it is estimated that some 9 hectares of vegetation may be impacted. Any vegetation associated with rock fall areas is likely to be damaged, however this impact is likely to be confined to these specific areas only. Subsidence is not expected to cause significant cracking or alteration to hydrology that is likely to be reflected in impacts on vegetation.*

The following summary of revised subsidence impacts to flora and fauna were described in the Environmental Assessment Modification (MOD1) of Ulan Coal - Continued Operations (Umwelt 2011), which stated:

*An extensive ecological survey and assessment has been undertaken by Umwelt to assess the impact of the proposed modification on threatened flora and fauna species, endangered populations, threatened ecological communities (TEC) and their habitats. Ecological surveys revealed no threatened or endangered flora and fauna species within the proposed modification area; however three threatened fauna species were identified within the proposed modification area. The White Box Woodland TEC, while present within the broader UCML Complex was not identified within the proposed North 1 or CBP modification areas.*

*No additional above ground disturbance is associated with either the development of North 1 underground mining area nor the changes to the configuration of UUG and Ulan West. Extensive previous monitoring of underground mining areas at Ulan has confirmed that ecological impacts associated with subsidence are negligible. The assessment generally concluded that the proposed modifications will not result in a significant impact on threatened species or their habitats within the proposed modification areas.*

The following summary of revised subsidence related impacts to flora and fauna as a result of modifying the Ulan West Mine Plan were described in the Environmental Assessment Modification (MOD2) of Ulan Coal - Continued Operations (Umwelt 2012), which stated:

*Approximately 200 metres of cliff line are no longer located within the Ulan West mining footprint, due to the reduced length of Longwall and will therefore no longer be impacted by Ulan West mining. This results in a minor positive outcome and is generally in accordance with the project approval. No change in the level of impact on cliff lines is expected as a result of the revised mine plan.*

*The extent of the ecological offset and conservation areas is unchanged. It is noted that the Bobadeen Vegetation Offset Area is located below the northern end of Longwalls 1–3. Relocating the panels to the south is not expected to result in any impact on the Bobadeen Vegetation Offset Area.*

*In consideration of the revised Ulan West mine plan SCT has reassessed the location of the area bounded by the 26.5 degree angle of draw and the 20 millimetre subsidence contour,*

[15] *This is approximately 20 per cent of the total modelled cliff lines that exist within the future underground mining area and represents a relatively minor portion of the total length of cliff line located within the project area (i.e. 132 kilometres).*

*with minimal changes to the impacts assessed in 2009. SCT and Umwelt have predicted that the mine plan modifications will continue to be compliant with performance measures of Project Approval 08_0184 Condition 24 (Table 5).*

*Table 5 Project Approval 08_0184 Subsidence Performance Measures*

| Requirement | Outcome | Comment Regarding Mine Plan Modification LW 1-4 |
|---|---|---|
| *Biodiversity* | | |
| *Threatened species, populations, habitat or ecological communities* | *Negligible Impacts* | *As discussed in Section 4.2.5 the revised Ulan West mine plan will not result in any change in the level or extent of biodiversity impacts.* |

The following summary of revised subsidence related impacts to flora and fauna as a result of modifying the Ulan West Mine Plan and UUG Mine Plan within the Interaction Zone were described in the Environmental Assessment Modification (MOD3) of Ulan Coal - Continued Operations (Umwelt 2012), which stated:

*The environmental impacts within the Interaction Zone were assessed as part of the UCCO Project EA and subsequently approved within PA 08_0184. The potential environmental impacts associated with the proposed modification within the Interaction Zone are consistent with the approved operations.*

## 3.2 Revised Subsidence Impacts and Environmental Consequences

A summary of the revised subsidence assessment relevant to this Plan and the Application Area by SCT (**Technical Report 1**) is provided below. The revised subsidence assessment by SCT (SCT 2015) concluded:

*Experience of mining under sandstone formations indicates that the potential for impacts to these features is dependent on a range of factors, but in general terms rock falls can be expected on up to 20% of the length of sandstone formations located directly over extracted longwall panels and the intermediate chain pillar between extracted longwall panels. No rock falls are expected outside the outermost goaf edge of longwall extraction. Perceptible cracking is expected along up to 50-70% of the length of sandstone formations located directly over extracted longwall panels and to a distance of up to about 0.4 times overburden depth outside the goaf edge.*

*The southern sandstone formation is an outcrop located adjacent to a tributary of Mona Creek over the southwest corner of Longwall W7. Impacts consistent with the probabilities generally outlined in the UCCO Project EA predictions including minor rock falls are considered likely along this feature as a result of the proposed mining.*

*Mining subsidence is expected to cause fracturing of the strata through the full overburden section directly above each longwall panel and depressurisation of the groundwater above the mining area. The main surface impacts are considered to be that ephemeral streams and pools located directly above longwall panels are not likely to hold water for as long after rain as they did prior to mining.*

## 3.3 Summary of Biodiversity Impact Review

Ecological monitoring data is collected for terrestrial and aquatic fauna and microbat monitoring as required by the Biodiversity Management Plan[16] (BMP), as well as specific floristic assessment (**Technical Report 5**). Results of monitoring to date do not indicate any declining trends or significant changes in vegetation or fauna. A declining trend is defined as a negative movement in species richness

[16] Condition 44, Schedule 3 of PA 08_0184

score or abundance observations over two or more monitoring periods outside of normal seasonal fluctuations. Studies concluded:

***Flora monitoring***

*Floristic-based subsidence (FBS) monitoring is undertaken above underground mining areas at least one year pre-mining and two years post mining over a range of vegetation types throughout the Project Area. The purpose of this monitoring is to monitor the potential impacts of subsidence on floristic diversity, composition and vegetation structure. Data from sites that are located within benchmark vegetation areas (not above underground mining) are compared to results from FBS sites in order to determine if changes seen in impact areas are consistent with changes seen in benchmark vegetation.*

*This review sources data specific to target floristic based subsidence sites within a variety of vegetation communities that were previously mined, are currently mined, or are scheduled to be mined to assess any changes that may have occurred over the last five years of monitoring.*

*The majority of changes in native species richness recorded between years are predominantly due to fluctuations in ground cover species, particularly annual grasses and forbs. Some sites, for example FBS4 and FBS10, had noticeable variation in vegetation structure or composition but were showing no physical evidence of subsidence. Based on this assessment, and the observed stability of overall vegetation structure and canopy species health in FBS sites, no clear impacts of subsidence upon vegetation above longwall panels have been identified.*

A detailed study specific to the assessment of the impacts of subsidence on vegetative communities was prepared in 2015. The study collected and compared data from panels that were subsided 1, 2, 5, 10 and 20 years prior. The study found that:

*For the majority of woodland condition parameters assessed there was no significant difference between the longwalls and the control area or the longwall zones and the control area. Only the PFC of native shrubs (<1 m and >1 m) showed any statistical differences and in these cases the control area was either lower or similar to the other values.*

*Examination of the field results for the sites surveyed for Year 20 showed that there was a higher PFC of native shrubs > 1 metre recorded at these sites in comparison to the other longwalls surveyed. The conditions present at these sites supported the increased PFC seen for shrub species as there was evidence of fire present which would encourage shrub regeneration, and the sites were predominantly located on ridges with shallow sandy soils; a landscape position and substrate observed within the region to be associated with higher densities of shrub species.*

*The results for habitat values included as part of this study showed that there was no statistical difference for the parameters studied, and therefore no difference between the control and impacts sites surveyed.*[17]

***Terrestrial fauna monitoring***

*The data from fauna surveys completed between 2011 and 2015 have shown that there are no significant differences between the fauna assemblages (BMS, 2015). Habitat characteristics and fauna diversity data collected by BMS are considered to be consistent with that measured during previous surveys with no significant difference seen between the different sites.*

*Analysis of terrestrial fauna data showed that there are no significant differences between the habitat and biodiversity values as a result of mining activities. Therefore, no discernible impacts from subsidence upon threatened species, populations, habitats or ecological communities associated with the terrestrial environment have been shown (BMS, 2015).*

***Aquatic fauna monitoring***

[17] Ecological Australia: *Review of historical subsidence areas and impacts on vegetation* Ulan West Extension EPBC Referral Prepared for Ulan Coal Mines Limited (October 2015)

*Aquatic fauna (macroinvertebrate) and riparian habitat monitoring is conducted at 19 sites located in five creeks situated in the Project Area (Spring Gully, Mona, Cockabutta, Bobadeen and Ulan Creeks) and two rivers located nearby (Talbragar and Goulburn Rivers).*

*Subsidence has the potential to adversely affect aquatic and riparian habitat, and associated species through surface cracking, realignment or loss of surface water flows or disruption of groundwater systems.*

*There is considerable variation in biodiversity and habitat indices between the sites monitored (based on surrounding land and water uses, Table 1). However, there are no significant differences between either the 19 sites or the four categories they were grouped in (based on surrounding land and water uses) (Biodiversity Monitoring Services 2015b).*

*Based on analysis of previous monitoring data and the findings of Biodiversity Monitoring Services (2015b), this review concludes that aquatic fauna diversity and stream health remains stable, and that there are currently no significant or observable impacts from subsidence.*

***Microbat monitoring***

*The current microbat monitoring program commenced in 2011, although targeted microbat monitoring has been undertaken at UCML since 1994.*

*Results of microbat monitoring over the past four years indicate that overall microbat diversity and abundance has not declined during this time, and that both age composition and body condition of the two most commonly captured species have remained stable (Fly By Night Bat Surveys 2016). Age and body condition are indicators of population health and composition and as such, these results suggest that microbat population dynamics are similarly stable, and not under stress from mining related impacts.*

*The targeted microbat monitoring was used to assess potential impacts of subsidence on cave-dwelling microbats, particularly threatened species. Consistent capture of a variety of species and good echolocation call rates of the threatened Eastern Bent-wing Bat indicate that subsidence is having a negligible impact on the local microbat populations.*

## 3.4 Revised Impacts (MOD4)

A summary of the revised subsidence assessment relevant to this Plan and the Application Area by SCT (**Technical Report 1a**) is provided below. The revised subsidence assessment by SCT concluded [extract]:

*There is a sandstone cliff formation located at the western end of LWW7. The northern end of this formation, close to the longwall start line, is expected to experience more vertical subsidence due to the proposed extension to LWW7, however impacts to this feature are expected to remain consistent with those forecast in SCT (2016) and SCT (2018a) for MOD4.*

*Subsidence effects at the edge of the DSCA are expected to increase with vertical subsidence up from around 0.1m to approximately 1.0m as a result of the proposed extension to LW30.*

*Subsidence impacts to features in and within the vicinity of the revised Extraction Plan Application Area are expected to be consistent with those presented in SCT (2018a) for MOD4.*

*Impacts are expected to be largely imperceptible given the large overburden depth and manageable under existing subsidence management plans. Minor impacts in the form of cracking on hard surfaces, including the access road, are considered possible but easily manageable.*

A review of the potential biodiversity impacts was provided in the MOD4 Environmental Assessment (ELA, 2018). The MOD4 EA concluded [extract]:

> *The depth of cover over proposed mining beneath the Durridgere SCA is greater than 300 metres. Hence, the potential for perceptible surface impacts resulting from subsidence is low.*
>
> *There are no Threatened Ecological Communities (TECs) listed under either the Biodiversity Conservation Act 2016 (BC Act)/Threatened Species Conservation Act 1995 (TSC Act) or the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) present in the Durridgere SCA.*
>
> *The proposed additional disturbance (2.7 ha) is on the western edge of the Durridgere SCA, away from connections with other SCAs, National Parks and the Munghorn Gap Nature Reserve and therefore will not have a significant impact on the ecological conservation value of the SCA.*
>
> *Approximately 16 hectares of TEC are present over the area of LW7 at UWO, and LW W7 and LW W8 at UUG. Areas of TEC present within the proposed Modification area will not be subject to vegetation clearing for construction of surface infrastructure, and will only be subjected to subsidence.*
>
> *Detailed studies of ecological impacts over previously subsided areas indicate that effects on the ecology from subsidence are negligible, including on TECs.*
>
> *No Groundwater Dependent Ecosystems are present in the modification area nor will they be subject to impacts due to the proposal.*

# 4 Management, Monitoring and Evaluation

## 4.1 Subsidence Management Measures

As discussed in **Section 1.3.2**, UCMPL have established two vegetation offset areas and two conservation management areas (**Figure 3**) that provide an immediate ecological outcome to offset the identified impacts of the Project. In particular, both the Brokenback Conservation Area and the Spring Gully Line Management Area mitigate potential loss of cliff line and bat cave habitat from possible subsidence induced rock falls within the Application Area.

Remediation works in relation to subsidence impacts on flora and fauna are expected to be limited in extent (by hand or smaller earthmoving equipment). Any flora and fauna remediation strategies will be developed in accordance with the Contingency Plan process outlined in **Section 5** and the requirements of the BMP.

**Section 5** outlines the contingency measures to be implemented by UCMPL if subsidence monitoring, as described in **Section 4.2** indicates that the subsidence performance measures for biodiversity are likely or have been exceeded.

## 4.2 Subsidence Monitoring

The ecological monitoring and evaluation of potential impacts from the Project on flora and fauna are detailed in Section 8 of the BMP. The ecological monitoring program for the Project will involve the monitoring of post-mining rehabilitation areas, residual vegetation, revegetation areas, fauna species and their habitats, key threatened species and aquatic features.

The monitoring process and results will be reported in accordance with Section 10 of the BMP and include details of the flora and fauna species and ecological communities present at monitoring sites, identifying the impact of the Project over time, and, providing ameliorative methods and management recommendations (where necessary), to enable continual improvement of the ecological management of the Project Area.

### 4.2.1 Flora & Fauna Monitoring within Application Area

Monitoring for potential subsidence impacts on flora and fauna will utilise a number of subsidence specific and general Project Area ecological monitoring programs as described in the BMP. Specific ecological monitoring to determine if an exceedance of the biodiversity subsidence impact performance measure (**Table 4**) has occurred, applicable to the Application Area will include:

- Floristic based subsidence monitoring above longwall panels within the Application Area to determine any potential subsidence related impacts on threatened flora (Section 8.5 of the BMP):
  - Ulan Coal will establish floristic based subsidence (FBS) monitoring plots above LW30, LWW6, LWW7 and LWW8 to monitor for any potential subsidence related impacts to the vegetation during mining and for two years following longwall completion.
  - The FBS site for LW30 has been established within Scribbly Gum Woodland/Heathland on Sand Plateaux, site FBS10 (**Figure 6**).
  - Three new FBS sites for LWW6, LWW7 & LWW8 will be established at least one year prior to mining of these longwalls.
- Cliff line subsidence microbat monitoring[18] of the cliff line located above LWW7.

[18] Microbat monitoring program for cliff lines located above underground mining areas. As described in Section 4.1.4.7 (Specific Threatened Species Monitoring) in the BMP, the micro-bat cliff line monitoring will provide additional survey-based data to feed into the management of likely presence/absence of cave-dependent micro-bat species in the habitats of each longwall area

In addition, other non-specific ecological monitoring programs as described in the BMP to assess the Project's impact and UCMPL's ecological management strategies include:

- Residual vegetation monitoring;
- General fauna monitoring (including woodland birds and habitat characteristic assessment);
- General and targeted[19] microbat monitoring (targeted cliff line monitoring for cave dwelling threatened micro- bats);
- Aquatic fauna monitoring: including Ulan, Bobadeen and Mona Creeks;
- Targeted regent honeyeater and swift parrot monitoring; and
- Feral pest fauna monitoring.

The complete description of the monitoring locations, frequency and methodologies of the ecological monitoring program is provided in the BMP. The locations of existing and proposed ecological monitoring sites within the Application Area are displayed in **Figure 6**. **Table 5** provides a summary of the ecological monitoring and frequency of monitoring applicable to the Application Area.

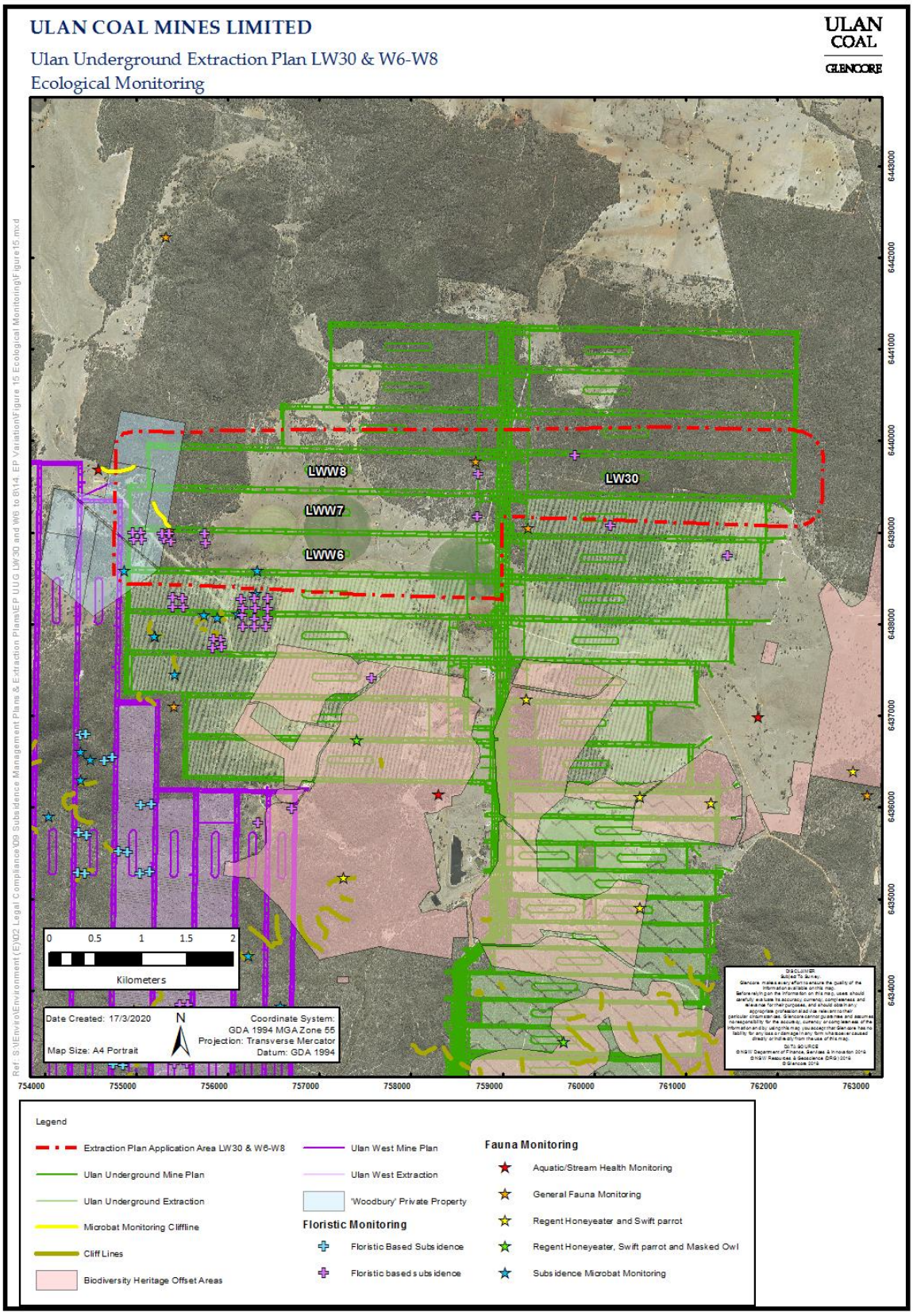
***Table 5 Summary of Ecological Monitoring Program within the Application Area***

| Monitoring Component | Parameters | Location/Network | Monitoring Frequency | Monitoring Type[20] |
|---|---|---|---|---|
| Floristic Based Subsidence Monitoring | • Monitoring to identify any deterioration of the vegetation health that may be subsidence induced. | • Floristic Based Subsidence (FBS) sites as identified by **Figure 6** | • In autumn and spring prior to longwall mining, during mining and at least two years post mining. | EP |
| Residual Vegetation Monitoring | • Monitoring as a control (analogue sites) to identify any deterioration of the vegetation health that may not be subsidence induced. | • Floristic sites in residual vegetation areas as identified by **Figure 6**. | • Monitoring occurs annually, sites are generally monitored every 2 years (full floristic every 4 years and rapid assessment every 4 years). | EMS |
| Microbat monitoring of cliff lines | • Monitoring to identify decreasing trends in threatened micro-bat species activity levels. | • Cliff line above LWW7<br>• Refer to **Figure 6**<br>• **Notes:** Access to the cliff line for monitoring on Private Property will be subject to approval by the landowner. | • Pre-mining between October to February and two years after longwall mining during the same period. | EP |
| Subsidence Area Microbat Habitat-usage Monitoring | • Monitoring to identify presence/absence of cave-dependent micro-bat species (i.e. Large-pied Ear Bat) | • Cliff line above LWW7<br>• Refer to **Figure 6**<br>• **Notes:** Access to the cliff line for monitoring on Private Property will be subject to approval by the landowner. | • Pre-mining at least two years prior to longwall mining between September and December.<br>• Annually thereafter if monitoring establishes potential maternity roost sites. | EMS |
| Monitoring to identify any deterioration of potential threatened species or associated habitat. | • Masked Owl: Monitoring to identify reduction in abundance and/or condition of HBTs; and<br>• Regent Honeyeater and Swift Parrot: Monitoring to identify decline in canopy cover of key feed species. | • Floristic Based Subsidence (FBS) sites as identified by **Figure 6**<br>• Floristic sites in residual vegetation areas as identified by **Figure 6** | • In autumn and spring prior to longwall mining, during mining and at least two years post mining. | EMS |

[19] Microbat monitoring for cave dwelling microbat species in Conservation Offset Areas such as the Brokenback Conservation Area and Spring Gully Offset.

[20] (EMS) – Ulan Coal Mine Complex Monitoring Program undertaken in accordance with Environmental Management Strategy including DP&E Approved Environmental Management Plans, (EP) - Monitoring Program specific to the Application Area and requirements of this Extraction Plan.

***Figure 6 Ecological Monitoring Programs within Application Area***




**Notes:** Access to the cliff line for microbat monitoring on Private Property will be subject to approval by the landowner as required in the PPSMP. Additional FBS sites may be established during this Extraction Plan in consultation with UCMPL's ecologist.

## 4.3 Assessment of Subsidence Performance Measures

Subsidence performance measures listed in Table 14 of the Project Approval[21] relevant to biodiversity are provided in **Table 4**. Performance indicators have been adopted from the BMP[22] to assess if there is a potential the performance measures have been exceeded or are likely to be exceeded during longwall extraction (**Table 6**). Analysis of monitoring data will be undertaken to assess the potential impacts of mining within the Application Area against the performance measures relevant to biodiversity.

**Table 7** provides a summary of the analysis of the monitoring data that will be undertaken to evaluate the potential impacts using the performance indicators against the performance measures.

***Table 6 Biodiversity Performance Measures and Performance Indicators***

| Biodiversity | Subsidence Performance Measures | Performance Indicators |
|---|---|---|
| **Threatened species, populations, habitat or ecological communities** | Negligible impact | This performance indicator will be considered to be triggered if:<br>• Analysis of subsidence based flora data indicates a >10% negative movement in vegetation cover and/or abundance over two or more monitoring periods outside of normal seasonal fluctuation; or<br>• Analysis of subsidence based flora data indicates >10% negative movement in the health condition of vegetation in Blakely's Red Gum Woodland or Derived Native Grassland communities located above LW30 & LWW6-LWW8 inconsistent with results obtained from monitoring of analogue vegetation sites; or<br>• Analysis of fauna monitoring data indicates a indicates >10% population decline in targeted threatened species over two or more monitoring periods outside of seasonal variations; or<br>• Analysis of fauna monitoring data analysis indicates a negative change >10% in targeted threatened species at an impact site not reflected in the analogue fauna sites.<br>• Analysis of micro-bat monitoring data identifies decreasing activity levels (>10% population or species richness decline) of endangered micro-bats species during cliff line monitoring within the Application Area over two or more monitoring periods outside of seasonal variations. |

[21] PA08_0184, Schedule 3, Condition 24.
[22] Ulan Document Number: ULNCX-111515275-3575

***Table 7 Monitoring of Environmental Consequences against Performance Indicators and Measures***

| Performance Measure | Monitoring of Environmental Consequence | | | Data Analysis to Assess against Performance Indicator | Performance Indicator(s) | Assessment of Performance Indicator(s) | Assessment of Performance Measure | Relevant Management Contingency Measure |
|---|---|---|---|---|---|---|---|---|
| | Site | Parameter | Frequency | | | | | |
| **Negligible impact** | Floristic Based Subsidence Plots within the Application Area | Monitoring to identify any deterioration of the vegetation health of EEC/CEEC. | **Table 5** of this Plan | Analysis of vegetative characteristics from each subsidence floristic plot in accordance with the methodology in Section 8.4 of the BMP. | The EEC/CEEC communities located above LW30 & LWW6-LWW8 are not expected to experience changes in condition significantly different to changes in analogue sites (residual vegetation monitoring plots) | An indicator will be considered to have been triggered if:<br>• Analysis of subsidence based flora data indicates a >10% negative movement in vegetation cover and/or abundance over two or more monitoring periods outside of normal seasonal fluctuation; or<br>• Analysis of subsidence based flora data indicates >10% negative movement in the health condition of vegetation in Blakely's Red Gum Woodland or Derived Native Grassland communities located above LW30 & LWW6-LWW8 inconsistent with results obtained from monitoring of analogue vegetation sites.<br>If data analysis indicates the performance indicators have been exceeded, an assessment will be made against the performance measure to determine if the impact is a result of mining within the Application Area. | The performance measure is exceeded if subsidence monitoring floristic plots analysis, indicates the secondary extraction within the Application Area has resulted in greater than negligible impacts to the ECC/CEEC vegetation. | If the assessment of performance indicators determines an exceedance of the performance measures is due to subsidence related impacts as a result of mining within the Application Area, the Contingency Plan would include:<br>• Notify relevant government agencies;<br>• Conduct investigations;<br>• Additional monitoring (i.e. increases in frequency or additional sites);<br>• Reassess subsidence impacts;<br>• Remediate affected areas in accordance with the BMP (e.g. filling in large surface cracks); and<br>• Consider impact to threatened vegetation in relation to offset commitments. |
| | Threatened Species Fauna Monitoring | Monitoring to identify any deterioration of potential threatened species or associated habitat. | **Table 5** of this Plan | Analysis of threatened species occurrence in accordance with the methodology in Section 8.4 of the BMP. | No changes in known threatened fauna species occurrence, apart from seasonal variations. | This indicator will be considered to have been exceeded if:<br>• Analysis of fauna monitoring data indicates a indicates >10% population decline in targeted threatened species over two or more monitoring periods outside of seasonal variations; or<br>• Analysis of fauna monitoring data analysis indicates a negative change >10% in targeted threatened species at an impact site not reflected in the analogue fauna sites.<br>• Analysis of micro-bat monitoring data identifies decreasing activity levels (>10% population or species richness decline) of endangered micro-bats species during cliff line monitoring within the Application Area over two or more monitoring periods outside of seasonal variations.<br>If data analysis indicates the performance indicators have been exceeded, an assessment will be made against the performance measure to determine if the impact is a result of mining within the Application Area. | The performance measure is exceeded if threatened species fauna monitoring indicates the secondary extraction within the Application Area has resulted in greater than negligible impacts to threatened fauna species and associated habitat. | |

# 5 Contingency Plan

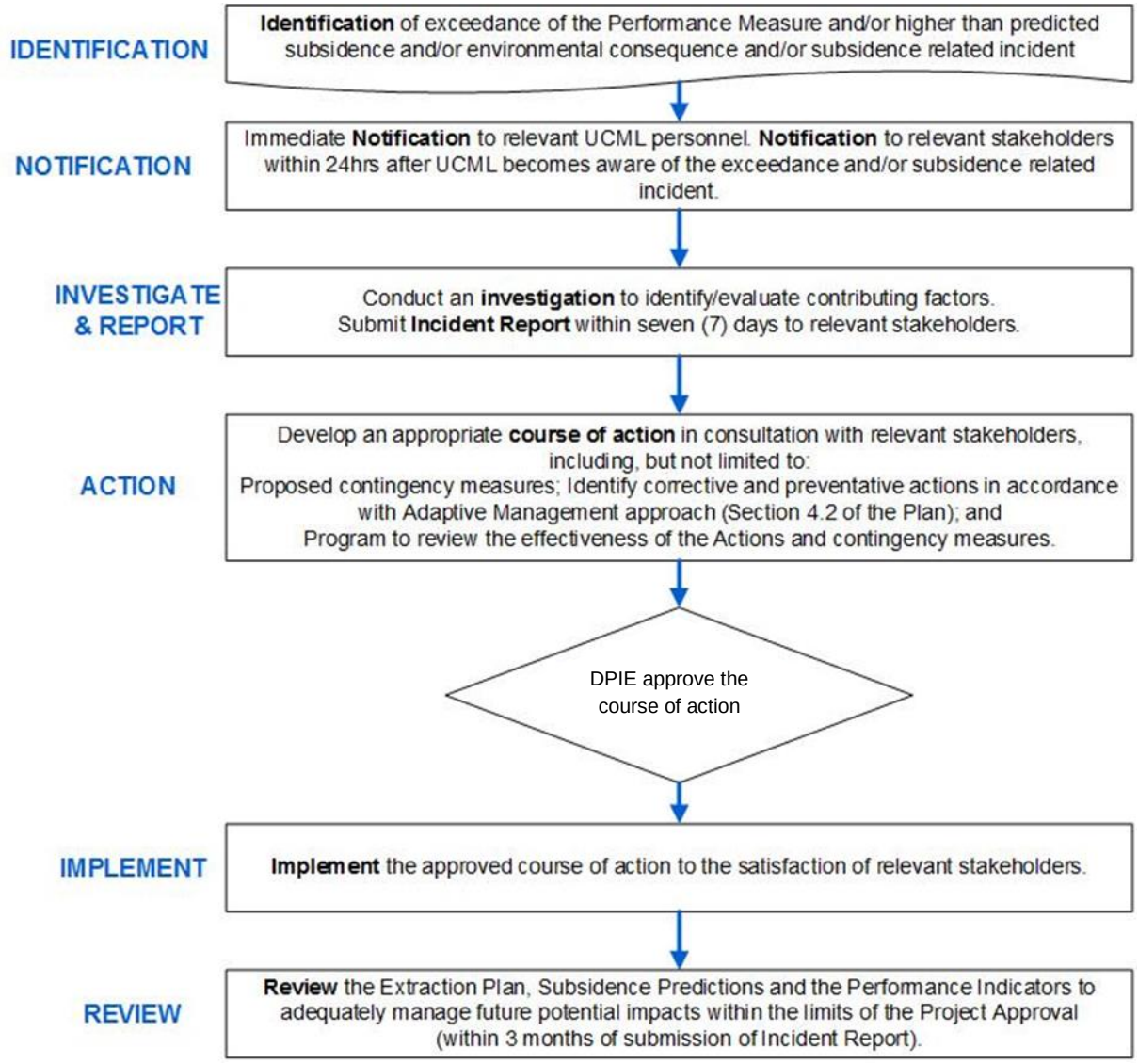
## 5.1 Adaptive Management

In the event the biodiversity performance measures summarised in **Table 7** are considered to have been exceeded or are likely to be exceeded, response and management will be undertaken in accordance with protocols for incident reporting as identified in Section 4.3 of the Extraction Plan (**Section 6.2**) and Section 10.4 of the BMP.

Section 4.3 of the Extraction Plan describes the process for handling and investigating non-conformances, including allocation of responsibility, external and internal reporting requirements, and initiating and completing corrective and preventative actions.

**Figure 7** displays the Contingency Plan to be implemented in the event the biodiversity performance measures are exceeded, higher than predicted subsidence or environmental consequence has occurred or in the event of a subsidence related incident.

***Figure 7 Contingency Plan***



### 5.1.1 Trigger Action Response Plan

Trigger action response plans (TARPs) have been developed by UCMPL to identify appropriate response measures for exceedances of the subsidence performance measures for biodiversity. **Table 8** displays how the various predicted subsidence impacts, monitoring components, performance measures and responsibilities are structured to achieve compliance with the relevant statutory requirements and the framework for management and contingency actions.

***Table 8 Biodiversity Management Plan Trigger Action Response Plan***

| | **Normal State**<br>***Predicted Impacts*** | **Level 1 Response**<br>***Management Measures*** | **Level 2 Response**<br>***Contingency Stage*** |
|---|---|---|---|
| **Trigger** | As predicted, subsidence impacts on flora and fauna are consistent with **Section 3** of this Plan. | • Analysis of subsidence based flora data indicates a >10% negative movement in vegetation cover and/or abundance over two or more monitoring periods outside of normal seasonal fluctuation; or<br>• Analysis of subsidence based flora data indicates >10% negative movement in the health condition of vegetation in Blakely's Red Gum Woodland or Derived Native Grassland communities located above LW30 & LWW6-LWW8 inconsistent with results obtained from monitoring of analogue vegetation sites; or<br>• Analysis of fauna monitoring data indicates a indicates >10% population decline in targeted threatened species over two or more monitoring periods outside of seasonal variations; or<br>• Analysis of fauna monitoring data analysis indicates a negative change >10% in targeted threatened species at an impact site not reflected in the analogue fauna sites.<br>• Analysis of micro-bat monitoring data identifies decreasing activity levels (>10% population or species richness decline) of endangered micro-bats species during cliff line monitoring within the Application Area over two or more monitoring periods outside of seasonal variations. | • Conformed results from biodiversity monitoring indicate that the performance measure for biodiversity has been exceeded or is likely to be exceeded due to secondary extraction within the Application Area. |
| **Action** | • Continue monitoring in accordance with **Section 4.2** of this Plan. | • Implementation of management actions to assess if exceedances are due to mining related activities within the Application Area as described in **Section 4.1** of this Plan | • Implementation of management and contingency measures responses as identified in the Contingency Plan and reporting requirements as described in **Section 5.1** of this Plan**.**<br>• Review this Plan. |
| **Frequency** | • Continue monitoring in accordance with **Section 4.2** of this Plan. | • Continue monitoring in accordance with **Section 4.2** of this Plan | • Review monitoring methodology and frequency of this Plan in accordance with Contingency Plan. |
| **Responsibility** | • Environment and Community Manager | • Environment and Community Manager<br>• UUG Technical Services Manager | • Environment and Community Manager<br>• UUG Technical Services Manager<br>• UUG Operations Manager |

# 6 Review and Improvement

## 6.1 Review

Ongoing monitoring and review on the performance and implementation of this Plan will be undertaken in accordance with Section 4.5 of the Extraction Plan and Section 10 of the BMP. Any changes made to this Plan will be made in consultation with DPIE. A copy of the revised management plan will be supplied to the Secretary of the DPIE for approval.

## 6.2 Reporting Requirements

External reporting requirements, including incident and annual reporting, for this Plan will be in accordance with Section 4.3 of the Extraction Plan and Section 10.4 of the BMP.

In the event of an incident, UCMPL will notify the government agencies as identified in Section 4.3 of the Extraction Plan within 24 hours after becoming aware of the incident (**Figure 7**). Within seven days of the date of the incident, a detailed report of the incident will be provided and include, but not limited to, the following details:

- The date, time and nature of the exceedance/incident;
- The process to identify and investigate the likely cause of the exceedance/incident;
- Description of the response action undertaken to date; and
- Description of the proposed measures to address the exceedance/incident.

## 6.3 Community Complaints

Community complaints are managed in accordance with Section 4.4 of the Extraction Plan, including receipt of complaints, investigation, implementation of appropriate remedial action, and feedback to the complainant, communication to site management or personnel and notification to government agencies where necessary.

# 7 Roles and Responsibilities

The key responsibilities of UCMPL personnel in relation to this Plan are summarised in **Table 9**. Please note that responsibilities may be delegated as required.

***Table 9 Biodiversity Management Plan Roles and Responsibilities***

| Responsibility | Accountabilities |
|---|---|
| **Operations Manager**<br><br>**(Ulan Underground)** | • Authorise the Extraction Plan and approve appropriate resources for the implementation of this Plan; and<br>• Authorise internal and external reporting requirements of this Plan. |
| **Technical Services Manager**<br><br>**(Ulan Underground)** | • Ensure the Subsidence Monitoring Program are implemented;<br>• Ensure monitoring and required under the Subsidence Effects Monitoring Program and this Extraction Plan are carried out within specified timeframes, are adequately checked and processed and are prepared to the required standard; and<br>• Ensure appropriate controls are in place to manage subsidence impacts upon surface operational infrastructure;<br>• |
| **Environment and Community Manager** | • Review this Plan in accordance with **Section 4.5** and **Section 4.6** and other legal requirements and operation standards;<br>• Ensure the effective implementation of strategies designed to reduce impacts from the operation;<br>• Ensure any potential or actual issue is reported in accordance with the Extraction Plan and other legal requirements and corporate standards;<br>• Review and prepare internal and external reports as identified in the reporting framework;<br>• Approve subsequent revisions of this Plan;<br>• Instigate response in the event the performance indicators, TARP and/or Contingency Plan are triggered; and<br>• Allocate resources for monitoring and review of subsidence monitoring survey results. |
| **Environment and Community Coordinator** | • Implement monitoring programs as required by this Plan and conduct analysis of results against performance indicators as described in this Plan;<br>• Prepare this Plan and subsequent revisions for approval by the Environment and Community Manager;<br>• Assist in the preparation of reports as identified in reporting framework; and<br>• Assess any triggers as described in performance indicators and provide advice to implementation of TARPS and the Contingency Extraction Plan. |
| **Environment and Community Officer** | • Assist the Environment and Community Coordinator in the implementation of monitoring programs and analysis of results against performance indicators as described in this Plan;<br>• Assist in the preparation of reports as identified in reporting framework; and<br>• Assist the Environment and Community Coordinator in the assessment of triggers as described in performance indicators and provide advice to implementation of TARPS and the Contingency Plan. |
| **Mine Surveyor (Ulan Underground)** | • Undertake subsidence effects monitoring as required by this Extraction Plan and to the required survey standard within the specified timeframes and ensure data are adequately checked, processed and recorded. |
| **All employees and contractors** | • Comply with all requirements of this Plan;<br>• Undertake all works in accordance with this Extraction Plan and all other Ulan Coal Mine Complex systems;<br>• Report all potential environmental incidents to their supervisor immediately; and<br>• Seek Ground Disturbance Permits (GDP) approval from the Environment and Community Manager prior to any surface disturbance activities. |

# 8 Document Information

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system. Related documents and reference information in this section provides the linkage and source to develop and maintain site compliance information.

## 8.1 Definitions

Definitions as provided in Section 5.1 the Extraction Plan.

## 8.2 Accountabilities

Accountabilities are described in Section 7 of this Plan.

## 8.3 References

References as provided in Section 5.2 of the Extraction Plan.

## 8.4 Change Information

Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 10** below.

***Table 10 Change Information***

| Version | Date | Review Team (consultation) | Change Summary |
|---|---|---|---|
| 0.1 | October 2016 | Tara Stokes | Document Development |
| 1.0 | October 2017 | Jessica Southgate | Document formatting updated in accordance with Dept. of Planning feedback. |
| 2.0 | April 2020 | Stephen Bragg, Lucy Stuart | This EP was amended regarding extension of longwall panels to align with the approved MOD 4 |
| 3.0 | December 2020 | Robyn Stoney, Lucy Stuart, Stephen Bragg | This EP was resubmitted on the 21/12/2020 to address the requirements from the DPIE Water feeback |