

ULAN  
UNDERGROUND

---

GLENORE

# Appendix E: Heritage Management Plan Longwalls 30 & LWW6-LWW8

## Ulan Underground

**Document Number:** ULNCX-111515275-3366

**Status:** Approved

**Version:** 3.0

**Effective:** 29/01/2021

**Review:** 3 years

**Owner:** Environment and Community Manager

## Table of Contents

<b>1</b>	<b>Introduction.....</b>	<b>4</b>
1.1	Extraction Plan Application Area.....	4
1.2	Purpose and Scope.....	4
1.3	Aboriginal Heritage.....	8
1.3.1	Aboriginal Heritage Sites within the Project Area.....	8
1.3.2	Aboriginal Heritage Sites within the Application Area .....	8
1.3.2.1	Private Property Heritage Survey .....	9
1.4	European Heritage .....	9
1.4.1	European Heritage within the Project Area .....	9
1.4.2	European Heritage within the Application Area .....	9
1.5	Heritage Management.....	10
1.5.1	Rock Shelter Sampling Strategy .....	10
1.5.2	Conservation Management Plans.....	10
1.6	Structure of the HMP LW30 & LWW6-LWW8.....	11
<b>2</b>	<b>Regulatory Requirements.....</b>	<b>12</b>
2.1	Project Approval.....	12
2.2	Subsidence Performance Measures .....	14
2.3	Relevant Legislation.....	14
2.4	Consultation .....	14
2.4.1	Aboriginal Consultation .....	15
<b>3</b>	<b>Predicted Subsidence Impacts and Environmental Consequences .....</b>	<b>16</b>
3.1	Aboriginal Heritage.....	16
3.1.1	Approved Subsidence Impacts and Environmental Consequences .....	16
3.1.2	Revised Assessment for Subsidence Impacts and Environmental Consequences .....	17
3.1.3	Aboriginal Heritage Sites remote from Subsidence Zone .....	18
3.2	European Heritage .....	19
3.2.1	Potential Subsidence Impacts and Environmental Consequences for the Project Area .....	19
3.2.2	Revised Subsidence Impacts and Environmental Consequences within Application Area ..	19
3.2.3	Natural Heritage Sites Remote from Subsidence Zone .....	19
<b>4</b>	<b>Management, Monitoring and Evaluation .....</b>	<b>21</b>
4.1	Subsidence Management Measures .....	21
4.1.1	Aboriginal Heritage Management .....	21
4.1.2	European Heritage Management.....	22
4.2	Subsidence Monitoring Heritage .....	22
4.3	Management of Previously Unrecorded Aboriginal Evidence .....	23
4.4	Assessment of Subsidence Performance Indicators and Measures .....	25
<b>5</b>	<b>Contingency Plan .....</b>	<b>27</b>
5.1	Adaptive Management .....	27
5.1.1	Trigger Action Response Plan .....	28
<b>6</b>	<b>Review and Improvement .....</b>	<b>29</b>
6.1	Review.....	29
6.2	Reporting Requirements .....	29

6.3	Community Complaints .....	29
<b>7</b>	<b>Roles and Responsibilities.....</b>	<b>30</b>
<b>8</b>	<b>Document Information .....</b>	<b>31</b>
8.1	Definitions .....	31
8.2	Accountabilities .....	31
8.3	Reference Information.....	31
8.4	Change Information.....	31

## Table of Figures

Figure 1	Extraction Plan LW30 & LWW6-LWW8 Application Area .....	5
Figure 2	Aboriginal and European Heritage Sites within Application Area .....	6
Figure 3	Conservation Areas .....	7
Figure 4	Aboriginal and European Heritage Monitoring .....	24
Figure 5	Contingency Plan .....	27

## List of Tables

Table 1	Summary of Aboriginal Heritage Evidence Recorded within the Project Area .....	8
Table 3	Supporting Documents - Reference Summary .....	12
Table 4	Heritage Performance Measures.....	14
Table 5	Aboriginal Heritage Monitoring Program .....	22
Table 6	Heritage Subsidence Performance Measures and Performance Indicators .....	25
Table 7	Monitoring of Environmental Consequences against Performance Indicators and Measures.....	26
Table 8	Heritage Management Plan Trigger Action Response Plan.....	28
Table 9	Key Responsibilities.....	30
Table 10	Change Information .....	31

# 1 Introduction

## 1.1 Extraction Plan Application 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 Heritage Management Plan for Longwalls 30 & LWW6-LWW8 (HMP LW30 & LWW6-LWW8) outlines the management strategies, controls and monitoring programs to be implemented for the management of Aboriginal and European heritage sites, in relation to potential environmental impacts resulting from secondary extraction within the Application Area.

This HMP LW30 & LWW6-LWW8 (this Plan) has been amended to incorporate the approved MOD4<sup>1</sup> mine plan which extend<sup>2</sup> 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.

This scope of this Plan applies to all Aboriginal and European heritage sites within the Application Area (**Figure 2**).

The appointed team of suitably qualified and experienced experts which included representatives from Strata Control Operations (SCT) and South East Archaeology (SEA) 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).

---

<sup>1</sup> Ulan Continued Operations Project - Modification 4 Longwall Optimisation Project Environmental Assessment (ELA, 2018)

<sup>2</sup> 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

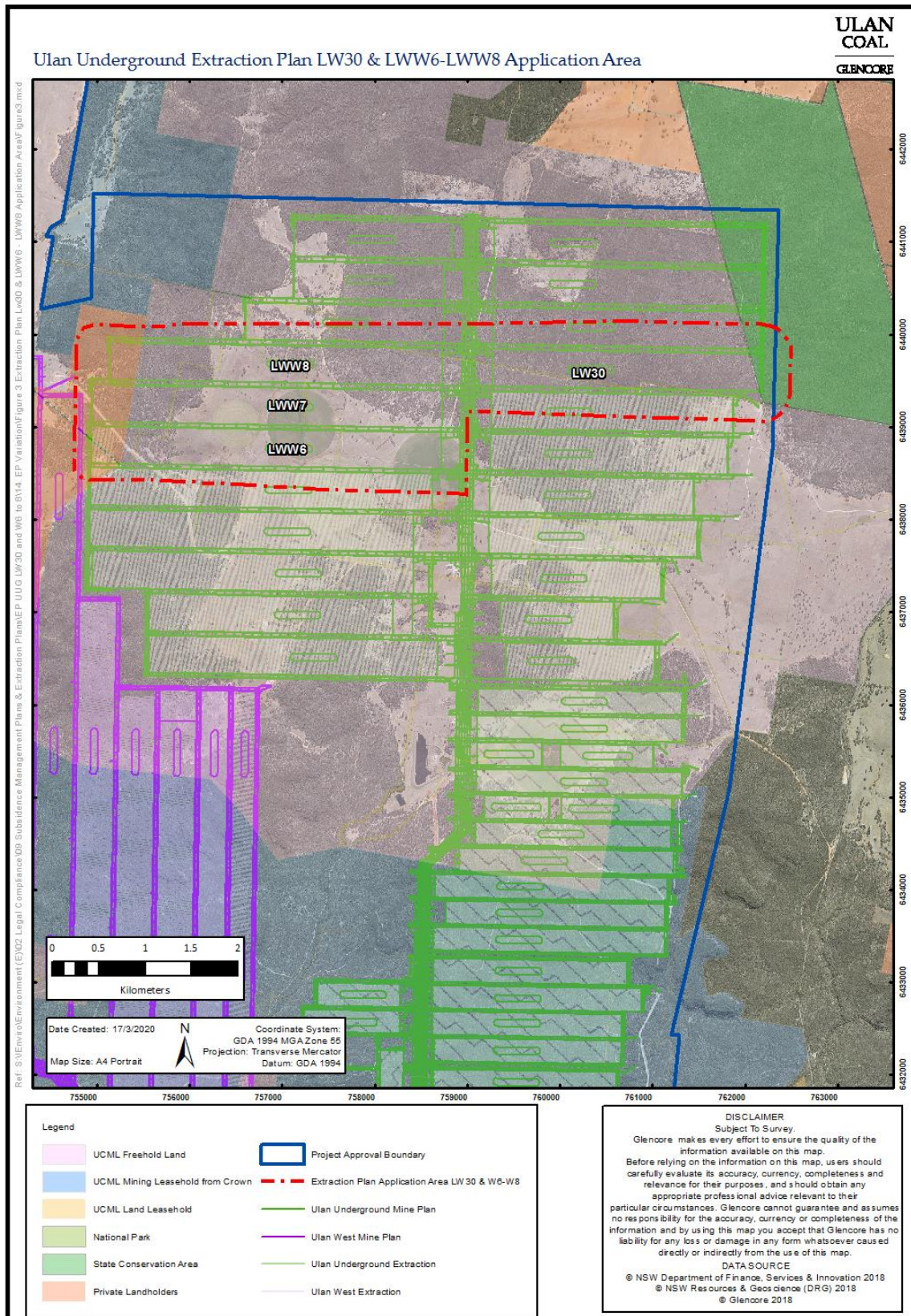


Figure 2 Aboriginal and European Heritage Sites within Application Area

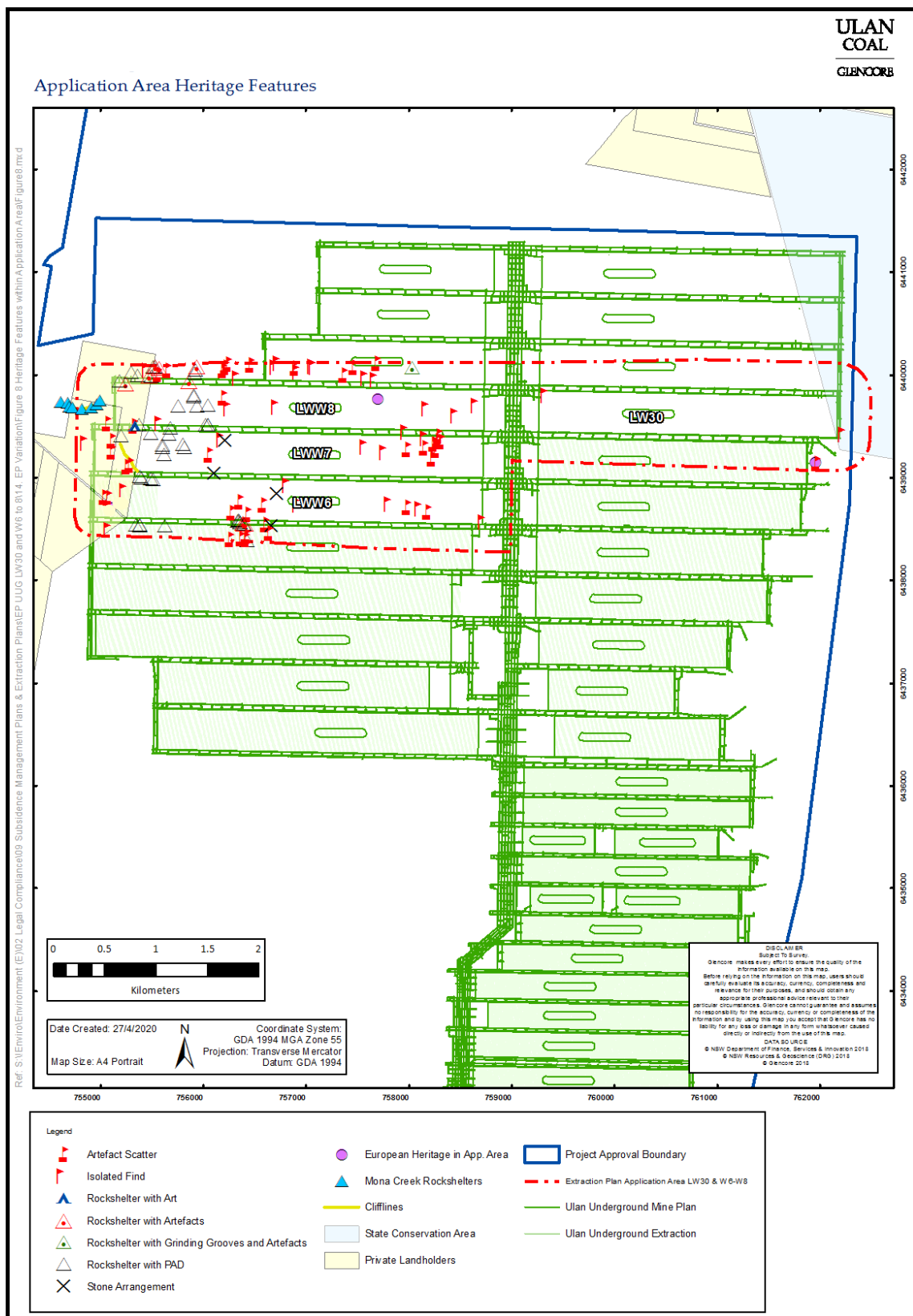
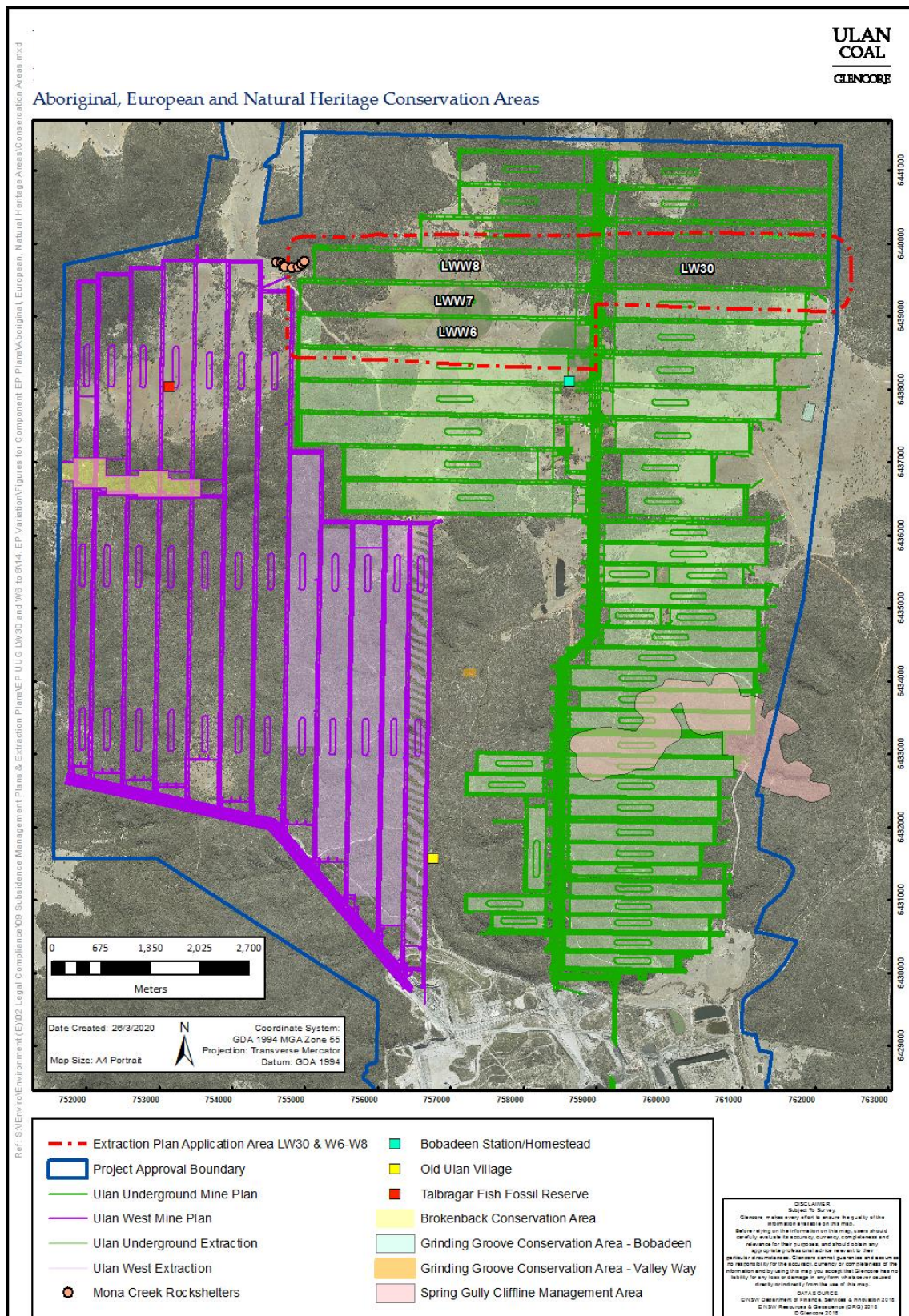




Figure 3 Conservation Areas



## 1.3 Aboriginal Heritage

UCMPL has prepared and implemented a Heritage Management Plan<sup>3</sup> (HMP) (ULNCX-111515275-95). The HMP applies to the Project Area. The HMP is available on the UCMPL Website at <http://ulancoal.com.au/EN/Environment/Pages/EnvironmentManagementPlan.aspx>

### 1.3.1 Aboriginal Heritage Sites within the Project Area

The significance of the Aboriginal heritage evidence within the Project Area was assessed against criteria widely used in Aboriginal heritage management (refer to Kuskie 2009, 2010). All heritage evidence tends to have some contemporary significance to Aboriginal people, because it represents an important tangible link to their past and to the landscape. The Aboriginal stakeholders expressed an interest in this heritage evidence and its contemporary cultural significance.

In overall terms, 74.8% of the sites within the Project Area were assessed as being of low significance within a local context, with 10.7% of sites assessed as being of low to moderate significance, 6.3% of moderate significance, 4.9% of moderate to high significance and 3.3% of high significance. Five sites were assessed as potentially being of significance within a regional context, four of them stone arrangements and one a large artefact scatter site at Old Ulan Village. However, if occupation deposits were to be identified in rock shelters or open contexts that relate to occupation older than 5,000 years of age, these may also rate as being of regional significance.

**Table 1 Summary of Aboriginal Heritage Evidence Recorded within the Project Area**

Site Type	Total
Artefact Scatter	508
Grinding Grooves	13
Grinding Grooves and Artefact Scatter	4
Isolated Find	310
Ochre Quarry	3
Rock shelter with Art	9
Rock shelter with Art and Artefacts	4
Rock shelter with Art and Grinding Grooves and Artefacts	1
Rock shelter with Artefacts	173
Rock shelter with Grinding Grooves	3
Rock shelter with Grinding Grooves and Artefacts	8
Rock shelter with PAD	354
Scarred Tree	8
Scarred Tree and Artefact Scatter	2
Stone Arrangement	6
Waterhole/Well	1
<b>Total</b>	<b>1407</b>

### 1.3.2 Aboriginal Heritage Sites within the Application Area

There are approximately 127 recorded Aboriginal archaeological sites identified within the Application Area, a further 31 sites are located approximately within 50 metres of the Application Area (**Figure 2**). These are a subset of those discussed in the Project EA and include scatter sites, isolated finds, rock shelters and scar trees.

The Mona Creek Rock Shelters sites Ulan Site ID#180 - 184 are located in the north-west of the Application Area (**Figure 2**), sites Ulan Site ID#185 – 187 are located adjacent to the Application Area.

<sup>3</sup> Condition 47, Schedule 3 of PA08\_0184,



### 1.3.2.1 Private Property Heritage Survey

Approximately 25 ha area of the Application Area, in which subsidence impacts could occur, has not been subject to heritage survey<sup>4</sup> due to a restriction of access by the landholder for the survey.

Survey will occur in accordance with Section 3.7.5 of the HMP should the landholder provide access in the future.

The area consists of mostly open forest on undulating rises and low hills. The area has historically been utilised for agricultural grazing. There is a third order surface water flow line within the eastern part of the area. Survey completed for adjacent stretches of this flow line have not identified any grinding groove sites. There are no cliff lines within the area. Two artefact scatter sites have been recorded within the area on the valley floor during investigations by Haglund in 1999, however these are unlikely to be impacted by subsidence based on previous experience across the Ulan Coal Mine Complex.

A detailed occupation model and associated predictive model address the potential for heritage evidence within the Application Area, including the area that has not been surveyed (provided in **Technical Report 6**). Should any previously unrecorded Aboriginal heritage evidence be identified during the course of operations or further heritage investigations, detailed procedures will be undertaken as outlined in Section 3.6 of the HMP.

## 1.4 European Heritage

### 1.4.1 European Heritage within the Project Area

The European and natural heritage assessment revealed that a total of 26 potential sites/items are located within the Project Area. The location and significance of the sites/items are illustrated in Figure 1.5 and summarised in Table 1.3 of the HMP. In general terms, the majority of the identified and potential heritage components of the site are not of local or state significance providing no or low research potential. The only significant European and natural heritage sites/items located within the Project Area are Old Ulan Village, Bobadeen Station (site/item C107), Apple Tree Flat farm complex (PK243) and the Talbragar Fish Fossil Reserve. Other potential European heritage sites/items discovered included:

- Timber getting sites;
- Rock overhangs/shelters;
- Former stockyards;
- A homestead complex;
- a metal windmill;
- Unidentified, out of context, coins; and
- Out of context bottles.

### 1.4.2 European Heritage within the Application Area

Two European Heritage sites have been identified (**Figure 2**) within the Application Area:

- Apple Tree Flat farm complex (PK243); and
- Historical timber getting site (CC6).

For more information regarding the features and historical significance of these European Heritage sites is provided in the HMP.

<sup>4</sup> In accordance with the requirement of Section 3.7.5 of Ulan Coal's HMP ULNCX-111515275-95.

## 1.5 Heritage Management

The HMP applies to the Project Area, as shown on **Figure 1** (blue boundary). The HMP specifically relates to the issue of Aboriginal, European and natural heritage and provides clear guidance in relation to the following:

- Establishes policies and actions for compliance with the EPBC Act, Heritage Act, NP&W Act and EP&A Act, PA 08\_0184 and EPBC Approval<sup>5</sup>;
- Defines procedures in relation to the management and mitigation of Project impacts on Aboriginal, European and natural heritage;
- Defines responsibilities of personnel;
- Establishes key performance indicators;
- Facilitates a process of communication and decision-making; and
- Assists Ulan Coal to meet legal and ethical obligations in relation to Aboriginal heritage, the Aboriginal community, European and natural heritage.

### 1.5.1 Rock Shelter Sampling Strategy

One of the key impacts of the approved Project on Aboriginal heritage relates to potential subsidence induced impacts, from underground mining, on rock shelters and Potential Archaeological Deposits (PADs).

The key strategy to management impacts to the rock shelters and PADs was the development of an Aboriginal Rock Shelter Test Excavation Sampling Strategy (RSSS). This was prepared by SEA in consultation with Ulan Coal's registered Aboriginal stakeholders. The RSSS commenced in early 2015. The majority of the rock shelters selected for test excavation are located above the Ulan West Mine. There are no RSSS site within the Application Area. Test excavations of the RSSS sites for UUG Longwalls LWW3 and LWW4 have been completed. There is one RSSS site located on the northern edge of the Application Area located over LWW9. For further details regarding the location of these sites and survey methodology please refer to HMP.

### 1.5.2 Conservation Management Plans

The HMP<sup>6</sup> contains several conservation management plans for the Brokenback Conservation Area, Spring Gully Conservation Area, Bobadeen Grinding Groove Conservation Area, Valley Way Grinding Groove Conservation area, Old Ulan Conservation Area and Bobadeen Homestead Conservation Area.

<sup>5</sup> Section 1.5 of the Extraction Plan provides more details of the statutory requirements.

<sup>6</sup> Condition 47(c), Schedule 4 of PA 08\_0184

## 1.6 Structure of the HMP LW30 & LWW6-LWW8

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

- Heritage Management Plan (HMP<sup>7</sup>); and
- Aboriginal Rock Shelter Test Excavation Sampling Strategy (Rock Shelter Sampling Strategy)

**Table 2** identifies where the requirements of Condition 2, Schedule 5 of PA 08\_0184 are addressed in this Plan.

The main text sections and attachments of this Plan are:

<b>Section 1</b>	Provides an introduction to the Plan, including the purpose and scope of the HMP, relationship to the EMS and the document structure.
<b>Section 2</b>	Describes the regulatory requirements and provides a summary of relevant legislation and stakeholder consultation.
<b>Section 3</b>	Summarises the predicted subsidence impacts and environmental consequences resulting from the extraction of LW30 & LWW6-LWW8.
<b>Section 4</b>	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
<b>Section 5</b>	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.
<b>Section 6</b>	Provides a summary of the review and improvement process and reporting requirements.
<b>Section 7</b>	Outlines the roles and responsibilities for this Plan.
<b>Section 8</b>	Lists the documents referred to in <b>Sections 1 to 6</b> of this Plan and provides an historical review reference.
<b>Attachment 1</b>	Aboriginal Rock Shelter Test Excavation Sampling Strategy (Rock Shelter Sampling Strategy).

<sup>7</sup> Ulan Coal Document Control Number ULN SD PLN 0013



## 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)<sup>8</sup>. This Plan 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 Heritage 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 on land in general; and*
- *a program to collect sufficient baseline data for Future Extraction Plans<sup>9</sup>.*

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 2 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 HMP Reference	Section Description
Overview of landscape features, heritage sites and environmental values to be managed under the component plan; and 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	<b>Section 1.3 &amp; 1.4</b> of this Plan  <b>Section 1</b> of the HMP	Provides a brief summary of Aboriginal and European heritage within the Application Area.  Provides a summary of the comprehensive Aboriginal heritage assessment for the Continued Operations Project was undertaken by South East Archaeology and reported on by Kuskie (2009).  The Aboriginal heritage investigation focused on the areas of potential subsidence impacts from the Ulan West and Ulan No. 3 Underground Mines, and areas of potential surface impacts from proposed infrastructure and the open cut extension
	Condition 2(b) a description of: <ul style="list-style-type: none"> <li>the relevant statutory requirements (including any relevant approval, licence or lease conditions);</li> </ul>	Section 2 of the HMP	Provides a description of the relevant legislation and other statutory requirements for preparing the HMP.
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: <ul style="list-style-type: none"> <li>any relevant limits or performance measures/ criteria;</li> </ul>	<b>Section 2.2</b> of this Plan	Provides the subsidence performance measures for Heritage sites from the PA08_0184.
Performance indicators to establish compliance with these performance measures	<ul style="list-style-type: none"> <li>the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of,</li> </ul>	<b>Section 4</b> of this Plan	Describes the performance indicators to track the subsidence performance measures for Heritage.

<sup>8</sup> PA08\_0184, Schedule 3, Condition 26(h).

<sup>9</sup> Ulan Coal's program to collect baseline data for Future Extraction Plans is provided in Attachment 3 of the Extraction Plan.

EP Guidelines for Extraction Plan Management Plans	PA 08_0184 Requirements for Management Plans Condition 2, Schedule 5	This Plan or HMP Reference	Section Description
	<i>the project or any management measures</i>		
	<i>Condition 2(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria</i>	<b>Section 4</b> of this Plan  Sections 3 and 4 of the HMP	Describes the details of subsidence management measures to be undertaken by UCMPL within the Project Area.
<i>Currently predicted subsidence impacts and environmental consequences relevant to the features, sites and values to be managed.</i>		<b>Section 3</b> of this Plan	Provides a summary of the approved subsidence impacts and revised impacts.
<i>Measures planned to remediate these impacts and/or consequences</i>		<b>Section 4</b> of this Plan	Provides a summary of the subsidence management measures.
<i>Existing baseline monitoring network and baseline monitoring results.</i>  <i>Proposed monitoring of subsidence impacts and environmental consequences.</i>	<i>Condition 2(d) a program to monitor and report on the:</i> <ul style="list-style-type: none"><li><i>impacts and environmental performance of the project;</i></li><li><i>effectiveness of any management measures (see c above)</i></li></ul>	<b>Section 4</b> of this Plan  Section 5 of the HMP	Describes the monitoring requirements to be undertaken for Aboriginal Heritage and European Heritage sites.
<i>Proposed monitoring of the success of remediation measures following implementation</i>		<b>Section 4</b> of this Plan	Provide a summary of the subsidence management measures.
<i>Adaptive management proposed to avoid repetition of unpredicted subsidence impacts and/or environmental consequences</i>  <i>Contingency plans proposed to remediate unpredicted subsidence impacts and/or environmental consequences</i>  <i>Trigger, Action, Response Plan</i>	<i>Condition 2(e) a contingency plan to manage any unpredicted impacts and their consequences</i>	<b>Section 5.1</b> of this Plan  Section 5.4 of the HMP	Provides a Contingency Plan in the event performance measures are exceeded, higher than predicted subsidence or subsidence related incident has occurred.  The Contingency Plan outlines UCMPL requirement to develop the appropriate course of actions, including corrective and preventative actions.  Provides a TARP for to identify the appropriate response measures and responsibilities.
<i>Responsibilities for implementation of the component plan</i>		<b>Section 7</b> of this Plan	Responsibilities for implementation of this Plan.
	<i>Condition 2(f) a program to investigate and implement ways to improve the environmental performance of the project over time</i>	<b>Section 6.1</b> of this Plan  <b>Section 6</b> of the HMP	Describes the review mechanism for improvement.
	<i>Condition 2(g) a protocol for managing and reporting any:</i> <ul style="list-style-type: none"><li><i>incidents;</i></li><li><i>complaints;</i></li><li><i>non-compliances with statutory requirements; and</i></li><li><i>exceedances of the impact assessment criteria and/or performance criteria</i></li></ul>	<b>Section 6.2 and 6.3</b> of this Plan  <b>Section 5</b> of the HMP	Describes the reporting and community response process.
	<i>Condition 2(h) a protocol for periodic review of the plan.</i>	<b>Section 6.1</b> of this Plan  <b>Section 6</b> of the HMP	Describes the review process of this Plan.

## 2.2 Subsidence Performance Measures

This Plan outlines the management strategies, controls and monitoring programs to be implemented for the management of Aboriginal and European heritage regarding potential environmental impacts from the proposed secondary extraction workings within the Application Area<sup>10</sup> as described in the Extraction Plan. UCMPL must ensure that there is no exceedance of the subsidence impact performance measures<sup>11</sup> for heritage as provided in **Table 4**.

**Table 3 Heritage Performance Measures**

Heritage	Subsidence Performance Measures
Aboriginal sites <sup>1</sup>	Nil impact in the Brokenback Conservation Area, Grinding Groove Conservation Areas; and on Mona Creek Rock Shelter Sites
Talbragar Fish Fossil Reserve <sup>2</sup>	Negligible impact
Other Heritage Sites	No greater impact than predicted in the EA

**Notes:** <sup>1</sup> The Brokenback Conservation Area is located approximately 2km south-west of the Application Area. The Bobadeen Grinding Groove Conservation Area is located approximately 1.2km south of the Application Area. There is considered to be no potential for subsidence related ground movements at these sites as a result of longwall mining within the Application Area (Technical Report 1).

<sup>2</sup> The Talbragar Fish Fossil Reserve is located approximately 1.6km south-west of the Application Area. There is considered to be no potential for subsidence related ground movements at this site as a result of longwall mining within the Application Area (Technical Report 1).

## 2.3 Relevant Legislation

The *National Parks and Wildlife Act 1974* (NP&W Act) provides the primary basis for the legal protection and management of Aboriginal heritage sites within NSW. Implementation of the Aboriginal heritage provisions of this Act is the responsibility of The Environment, Energy and Science (EES) Group is part of the Department of Planning, Industry and Environment.

The rationale behind the Act is to prevent unnecessary or unwarranted destruction of Aboriginal objects and to protect and conserve objects where such action is considered warranted. Under the terms of the NP&W Act, it is an offence for a person to:

- Harm or desecrate an object that the person knows is an Aboriginal object; and
- Harm an Aboriginal object ('strict liability offence').

For the complete summary of relevant legislation including further details on the NP&W Act, *Native Title Act 1993*, *Environment Protection and Biodiversity Conservation Act 1999* and *Heritage Act 1977* as they relate to the HMP, please refer to Section 2.3 of the HMP.

### 2.3.1 Environmental Planning and Assessment Act 1979

Project Approval 08\_0184 (PA08\_0184) under Part 3A of the *Environmental 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 Heritage Management Plan in accordance with Condition 26(h), Schedule 3 of PA08\_0184.

## 2.4 Consultation

Consultation was undertaken during the Project EA<sup>12</sup>. Consultation specific to the Extraction Plan was undertaken with government agencies, asset owners, UCMPL Community Consultative

<sup>10</sup> PA08\_0184, Schedule 3, Condition 26(h).

<sup>11</sup> PA08\_0184, Schedule 3, Condition 24, Table 14.

<sup>12</sup> Ulan Coal - Continued Operations Environmental Assessment (Umwelt 2009).



Committee (CCC) and registered Aboriginal stakeholders. Further information regarding consultation is provided in Section 2.1 of the Extraction Plan.

## **2.4.1 Aboriginal Consultation**

Regular consultation has occurred with UCMPL Aboriginal stakeholders during ongoing operations and continued implementation of the requirements of the Native Title Agreement.

The registered Aboriginal stakeholders include:

- Warrabinga Native Title Claimants Aboriginal Corporation (Warrabinga);
- North East Wiradjuri Company Ltd (NEW);
- Mudgee Local Aboriginal Land Council (Mudgee LALC);
- Murong Gialinga Aboriginal and Torres Strait Islanders Corporation (MGATSIC);
- Warranha Ngumbaay; and
- Wellington Valley Aboriginal Corporation.

For the complete summary of the consultation undertaken for the HMP please refer to Section 1.3.2 of the HMP.

In preparation for the Extraction Plan, consultation with UCMPL registered Aboriginal stakeholders was undertaken as described in Section 2.1.3 of the Extraction Plan.

## 3 Predicted Subsidence Impacts and Environmental Consequences

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

The revised subsidence impact assessment<sup>13</sup> 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** and **Section 3.2** provides a summary of approved subsidence impacts regarding heritage from the Project EA and subsequent modifications within the Project Area, relevant to HMP LW30 & W6-W8.

**Section 3.1.2** and **Section 3.2.2** provides a summary from the revised subsidence impact assessment regarding Aboriginal and European heritage within the Application Area, relevant to HMP LW30 & W6-W8.

**Section 3.1.3** and **Section 3.2.3** provides a summary from the Aboriginal and natural heritage remote from the subsidence zone, relevant to HMP LW30 & W6-W8.

**Section 3.3** 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 Aboriginal Heritage

#### 3.1.1 Approved Subsidence Impacts and Environmental Consequences

A comprehensive Aboriginal heritage assessment for the Continued Operations Project was undertaken by South East Archaeology (SEA) and reported on by Kuskie (2009). This heritage assessment was further supplemented by an additional study over the North 1 Panels for the s75w modification (Kuskie 2010).

The Aboriginal heritage investigation focused on the areas of potential subsidence impacts from the Ulan West and UUG, and areas of potential surface impacts from proposed infrastructure and the open cut extension.

SCT completed the probability of subsidence induced impacts on Aboriginal archaeological sites identified by SEA and estimated on the basis of their location relative to longwall panels and stratigraphic location within the Triassic strata (SCT 2009).

Sites that are located over solid coal and remote from the longwall goaf edge will not be impacted by mining subsidence were given a zero probability for the purposes of this assessment. Subsidence movements are not expected to have any practical effect on artefact scatters and isolated finds in open terrain. These types of sites are not considered further in the SCT report (SCT 2009).

For archaeological sites located in or close to rock shelters along outcrop of the Triassic sandstone, the approach taken to assess subsidence impacts is to provide a generic assessment of the types of subsidence impacts that can be expected and a probability of impact (SCT 2009).

The sites have been assessed for rock falls and perceptible change. The term “perceptible change” refers to any changes in the rock formations that are associated with mining activity and subsidence movements. Such impacts include tensile cracking ranging from fine cracks to major fractures, shear

<sup>13</sup> PA08\_0184, Schedule 3, Condition 26(e).

movements on bedding planes and through intact strata, perceptible disturbance of any formations, and rock falls ranging from minor dislocation of material through to major falls (SCT 2009).

The following summary of revised subsidence related impacts as a result of modifying the Ulan Continued Operation 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, apart from impact to one archaeological site (ID#822 (refer to Appendix 6 of Appendix 6)) located within the Interaction Zone.*

### 3.1.2 Revised Assessment for Subsidence Impacts and Environmental Consequences

A summary of the revised subsidence assessment relevant to this LMP LW30 & W6-W8 and the Application Area by SCT (**Technical Report 1**) is provided below. The revised subsidence assessment by SCT concluded:

*Significant formations associated with Aboriginal heritage sites Mona Creek 23-Mona Creek 30 are located west of Longwall W8. The eastern portion of this cliff formation is within the EP area but well beyond the area where any impacts are expected. In accordance with the UCCO Project approval conditions protection of this cliff line and integrated archaeological sites is to be provided by a mining set-back conservation barrier. The half depth boundary for the layout of Longwall W8 is approximately 180m from the eastern end of this cliff formation. In this geometry no perceptible impacts to this feature are expected from the proposed mining.*

*An assessment of the probabilities of subsidence impacts on all the archaeological sites identified by SEA for the UCCO Project EA is included in SCT Report ULA3367. For most of these sites, the predicted impacts from have not changed from those presented in the UCCO Project EA, however there are some changes to the impact probabilities reported in the UCCO Project EA because of changes to the mine plan since then. In general there has been a reduction in the probability of impacts to a number of rock shelter sites to that predicted in the UCCO Project EA. The probabilities indicated include consideration of the predicted impact to sites that were previously located above inter-panel barriers or chain pillars and are now planned to be mined under as well as a number of sites to the northwest of Longwall W8 that were to be mined under but are now located above solid coal.*

*Several other sites are within the 50m boundary around the EP area and beyond the edge of Longwall W8 but within an area likely to be impacted in the future by mining Longwall W9. These sites were assessed in the UCCO Project EA for the completed mining plan but, for the purposes of this EP assessment, their potential to be impacted is reduced to a less than 10% chance of perceptible impact and less than 1% chance of rock falls (if applicable) during the period of mining in the current EP area given their position outside of the Longwall W8 panel footprint.*

*Subsidence movements are not expected to have any practical effect on artefact scatters and isolated finds in open terrain. There is a slight possibility of subsidence cracks causing disturbance to stone arrangement sites located close to the edge of or directly over mining areas. However the magnitude and frequency of previous surface cracking at UUG is so small that the potential for change at these sites is considered to be insignificant for all practical purposes. No change of impacts is expected to the 85 sites that comprise artefact scatters, isolated finds and stone arrangements within the 50m boundary around*



*the EP area. The impacts to these types of sites are expected to remain negligible consistent with expectations presented in the UCCO Project EA.*

*The potential for impacts to rock shelter sites is dependent on a range of factors, but in general terms, rock falls are expected at up to 20% of sites located adjacent or under sandstone rock formations that are directly mined under. Perceptible impacts are expected on up to about 50-70% of the length of rock formations mined under. Individual formations may be more or less susceptible to mining induced impacts according to their length, height, overhang, continuity, and general nature. However the main factors affecting stability and perceptible changes are location within the stratigraphic section and location within the longwall mining areas.*

*For archaeological sites located in or close to rock shelters along outcrop of the Triassic sandstone, the approach taken to assess subsidence impacts is to provide a generic assessment of the types of subsidence impacts that can be expected in each type of rock formation and a probability of impact. The sites have been assessed for rock falls and perceptible change. The term "perceptible change" refers to any changes in the rock formations that are associated with mining activity and subsidence movements. Such impacts include tensile cracking ranging from fine cracks to major fractures, shear movements on bedding planes and through intact strata, perceptible disturbance of any formations, and rock falls ranging from minor dislocation of material through to major falls.*

*The probability of perceptible change is a generic estimate based on the stratigraphic horizon in which the rock shelters are formed, rather than the specific geometries of individual sites. Large, continuous, overhanging formations are likely to be more susceptible to rock falls than pagoda features and isolated rocks, so there may be significant differences in potential impacts at individual sites that cannot be captured without a specific site assessment.*

### 3.1.3 Aboriginal Heritage Sites remote from Subsidence Zone

Secondary Extraction within the Application Area is not expected to have any subsidence impact on several of the features listed in Table 14 of Condition 26, Schedule 3 of PA08\_0184, including:

- Brokenback Conservation Area;
- Bobadeen Grinding Groove Conservation Area; and
- Mona Creek Rock Shelter Sites (Ulan ID # 180-187).

Some low level far-field horizontal movements are possible as a result of mining in the Application Area, but there is no potential for either rock falls or other perceptible impacts as a result of these small movements (**Technical Report 1**).

Management and monitoring of the Brokenback Conservation area is undertaken by the adjacent Ulan West Operations under the existing Extraction Plan for Longwalls 1 to 6<sup>14</sup>.

Several of the Mona Creek Rock Shelters are located within the Application Area, the Mona Creek Rock Shelter Sites will not be impacted as a result of secondary extraction within the Application Area as per predictions in **Section 3.1.2**.

<sup>14</sup> Approved by DPIE on the 25 January 2019

## 3.2 European Heritage

### 3.2.1 Potential Subsidence Impacts and Environmental Consequences for the Project Area

European heritage features identified within the Project Area were individually assessed, but, in general, the impacts of mining are unlikely to be perceptible or unlikely to significantly change the existing character of any of these structures (EA Umwelt 2009).

*Timber Getting Sites...CC6...these sites are open sites and while they are expected to experience the full range of subsidence movements, they are not expected to be sensitive to subsidence movements and no perceptible impact is expected.*

*PK243...comprises various buildings including corrugated iron clad outbuildings and a house. The site is located approximately 300m east of the eastern end of longwall 29. No perceptible subsidence movements are expected at this location.*

### 3.2.2 Revised Subsidence Impacts and Environmental Consequences within Application Area

A summary of the revised subsidence assessment relevant to this LMP LW30 & W6-W8 and the Application Area by SCT (**Technical Report 1**) is provided below. The revised subsidence assessment by SCT (SCT 2015) concluded:

*Two European heritage sites from the original list of 25 considered in the UCCO Project EA are located within the EP area for Longwall 30 and Longwalls W6, W7 and W8. Impacts to these sites from the proposed mining are expected to be consistent with predictions contained within the UCCO Project EA.*

*An open heritage site identified as CC6 and comprising a timber getters camp is located above the proposed Longwall W8 panel adjacent to a tributary of Mona Creek. This timber getting camp site would experience the full range of subsidence movements but is not likely to be sensitive to these movements and no perceptible impact to the site is expected.*

*The abandoned residential structures referred to as PK243 and called 'Apple Tree Flat' on 1:25,000 topographic series maps of the region are located to the east of Longwall 29 in the far south east periphery of the EP area. This structure and the associated outbuildings are owned by UMCL. They are located approximately 50 m beyond the eastern end of Longwall 29, over solid coal where the overburden depth is around 310 m. There were no perceptible impacts observed in the area from the previous mining of Longwall 29. These structures are outside the half depth boundary for Longwall 30 panel where subsidence is expected to be less than 50 mm with equivalent low tilt and strain values. No additional impacts are expected at this site from the proposed mining.*

### 3.2.3 Natural Heritage Sites Remote from Subsidence Zone

The Talbragar Fish Fossil Reserve<sup>15</sup> is located approximately 1.6 km south-west of the Application Area. Some low level far-field horizontal movements are possible as a result of mining in the Application Area, but there is no potential for perceptible impacts as a result of these small movements.

<sup>15</sup> listed in Table 14 of Condition 26, Schedule 3 of PA08\_0184

### 3.3 Revised Subsidence 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]:

*The proposed mining in the extension areas of LW30, LWW7 and LWW8 are not expected to significantly impact artefact scatter or isolated find sites. Subsidence impacts to these types of sites are expected to remain negligible consistent with expectations presented in SCT (2016 and SCT (2018a) for MOD4.*

*The MOD4 assessment indicated the potential for impacts to two rock shelter sites (Ulan ID#179 and 724) above and adjacent to the proposed extension to LWW8. The changes in probabilities of impacts to sites Ulan ID#179 and Ulan ID#724 do not exceed the maxima forecast for similar sites.*

*The significant rock shelter sites of Mona Creek (Ulan ID#180-184) and a new rock shelter site with artefacts (Ulan ID#1630) within or adjacent to the revised Extraction Plan Application Area are fully protected by from subsidence impacts by a mining setback conservation barrier equal to greater than 0.5 times overburden depth.*

*No additional European heritage items from those assessed in SCT (2016) have been identified within the vicinity of the extension areas.*

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

*It is expected that aboriginal cultural heritage items identified during the preparation of the heritage impact assessment would be subject to low levels of impact due to subsidence. The proposal was assessed as not having a significant impact on heritage items due to the nature and lower heritage significance of identified features. Management of heritage items will be undertaken in accordance with the currently approved Heritage Management Plan.*

## 4 Management, Monitoring and Evaluation

### 4.1 Subsidence Management Measures

Section 3.6 of the HMP outlines specific actions to be undertaken for Aboriginal Heritage sites within the Project Area. The implementation of these actions for Aboriginal sites within the Application Area are summarised in **Sections 4.1.1**.

Subsidence management actions for European heritage sites within the Project Area are outlined in Section 4 of the HMP. The implementation of these actions for European heritage sites within the Application Area are summarised in **Section 4.1.2**.

#### 4.1.1 Aboriginal Heritage Management

The Aboriginal Rock Shelter Test Excavation Sampling Strategy (RSSS) prepared by SEA in consultation with UCMPL's registered Aboriginal stakeholders) will be implemented by UCMPL with excavations to occur prior to undermining of the sites. There are no rock shelter sites located above longwalls 30 & LWW6-LWW8.

The following Aboriginal site management actions are to be completed prior to the commencement of secondary extraction beneath the sites in accordance with Section 3.7.1 of the HMP;

- UCMPL engaged an appropriately qualified and experienced archaeologist and has completed a detailed archaeological survey and recording of the stone arrangement sites ID# 589, 603, 697 and 700, in consultation with the registered Aboriginal stakeholders;
- The recording involved the use of a theodolite or differential GPS to accurately record the locations of the stones and produce detailed site plans;
- Where required, the Aboriginal Site Database was updated as soon as practical;
- Where required, updated site records were lodged with OEH; and
- Measures will be implemented to protect these stone arrangement sites from continuing land use and any development impacts. This may involve provision of information to relevant staff and contractors, or protective fencing and/or signage.

Management measures for known Aboriginal sites within the Application Area will be implemented as set out in Appendix 2 of the HMP, including:

- Procedures relating to the involvement of the registered Aboriginal stakeholders in the management of the sites as specified in Section 3.1 of the HMP;
- Procedures relating to the excavation by hand of rock shelters as specified in Section 3.5.4 of the HMP;
- Procedures relating to previously unrecorded Aboriginal heritage evidence should it be identified within the Project Area as specified in Section 3.6 of the HMP;
- Procedures relating to the curation of Aboriginal heritage evidence that is salvaged from rock shelters as specified in Section 3.8 of the HMP;
- Procedures relating to the lodgement of site records with OEH for all newly identified locations of heritage evidence and all modifications to any known Aboriginal sites already registered with OEH, and updating the UCMPL Aboriginal Site Database (typically, for all newly identified locations of heritage evidence and for newly identified evidence that extends or modifies the boundaries of a previously recorded Aboriginal site) as specified in Section 5.1 of the HMP;
- Procedures relating to Aboriginal sites subject to monitoring as specified in Section 5.2 of the HMP and Section 4.2.1 of this plan;
- Procedures relating to the reporting of Aboriginal heritage mitigation measures and further investigations as specified in Section 5.5 of the HMP;



- Appendix 2 of the HMP will be updated on a continuous basis with respect to the addition of newly identified heritage evidence in locations where evidence has not previously been recorded, and the addition of previously recorded heritage evidence where it may become subject to impacts due to Project study area/impact area revisions;
- Work that may impact upon identified Aboriginal heritage evidence may only occur after the approval of the Environment & Community Manager and after relevant actions set out in the HMP have been implemented; and
- Where specified in Appendix 2 of the HMP or where identified Aboriginal objects cannot be relocated and salvaged, or where unidentified Aboriginal objects exist within impact areas, unmitigated impact is permissible under the HMP, subject to the implementation of all other relevant provisions.

## 4.1.2 European Heritage Management

The ongoing management of European Heritage sites within the Application Area will be in accordance with the HMP. No relevant management actions are identified for sites CC7 or PK243 in the HMP.

## 4.2 Subsidence Monitoring Heritage

Monitoring for subsidence impacts will be undertaken at a number of selected rock shelter sites as identified in the HMP, in order to identify and document whether any subsidence impacts have arisen from mining, with this information used to guide future assessments, in relation to subsidence predictions in the Project Area.

Monitoring will involve inspecting and recording the condition of specific rock shelter sites within six months after undermining has occurred. Each inspection will involve recording any changes to the condition of the rock shelter post mining, for comparative purposes against pre-mining inspections. The potential cause (subsidence or other impacts) of changes to the condition of individual sites will be assessed.

No further subsidence impacts are predicted for site PK243 and therefore no subsidence specific monitoring is required. Site CC6 will be monitored post undermining of the site to document any subsidence impacts.

The details of subsidence monitoring for Aboriginal and European heritage are provided in **Table 5**.

**Table 4 Aboriginal Heritage Monitoring Program**

Monitoring Component	Parameters	Location/Network	Monitoring Frequency	Monitoring Type <sup>16</sup>
Aboriginal Heritage Monitoring on UCML Land	Visual inspections of selected rock shelters within the Application Area	<ul style="list-style-type: none"> <li>• LWW6 – Rock shelter Ulan ID # 599</li> <li>• LWW7-8 – Mona Creek Rock Shelter Sites Ulan ID # 185-187 (Site No. 28-30)</li> <li>• Application Area – Ulan ID#735<sup>17</sup></li> <li>• LWW8 – Ulan ID#741</li> <li>• LWW9 – Ulan ID#171</li> <li>• Refer to <b>Figure 4</b></li> </ul>	<ul style="list-style-type: none"> <li>• Pre mining of heritage sites prior to commencement of the relevant longwall panel.</li> <li>• Post mining, within six months of cessation of mining the relevant longwall panel.</li> </ul>	EMS EP
Aboriginal Heritage Monitoring on Private Property <sup>18</sup>	Visual inspections of selected rock shelters within the Application Area	<ul style="list-style-type: none"> <li>• LWW7-8 – Mona Creek Rock Shelter Sites Ulan ID # 180-184 (Site No. 23-27)</li> <li>• Refer to <b>Figure 4</b></li> </ul>	<ul style="list-style-type: none"> <li>• Pre mining of heritage sites prior to commencement of the relevant longwall panel.</li> <li>• Post mining, within six months of cessation of mining the relevant longwall panel.</li> </ul>	EMS EP

<sup>16</sup> (EMS) – Ulan Coal Mine Complex Monitoring Program undertaken in accordance with Environmental Management System including DP&E Approved Environmental Management Plans, (EP) - Monitoring Program specific to the Application Area and requirements of this Extraction Plan.

<sup>17</sup> Rock Shelters sites Ulan ID #171 & 735 are monitored as control sites to measure the accuracy of subsidence predictions for the secondary extraction of LWW8. ID#735 is not expected to experience subsidence impacts (5%) and ID#171 is predicted to have a 50% subsidence risk of perceptible impact during the extraction of LWW8.

<sup>18</sup> Access to Aboriginal heritage monitoring sites subject to agreement by the Private Landholder.

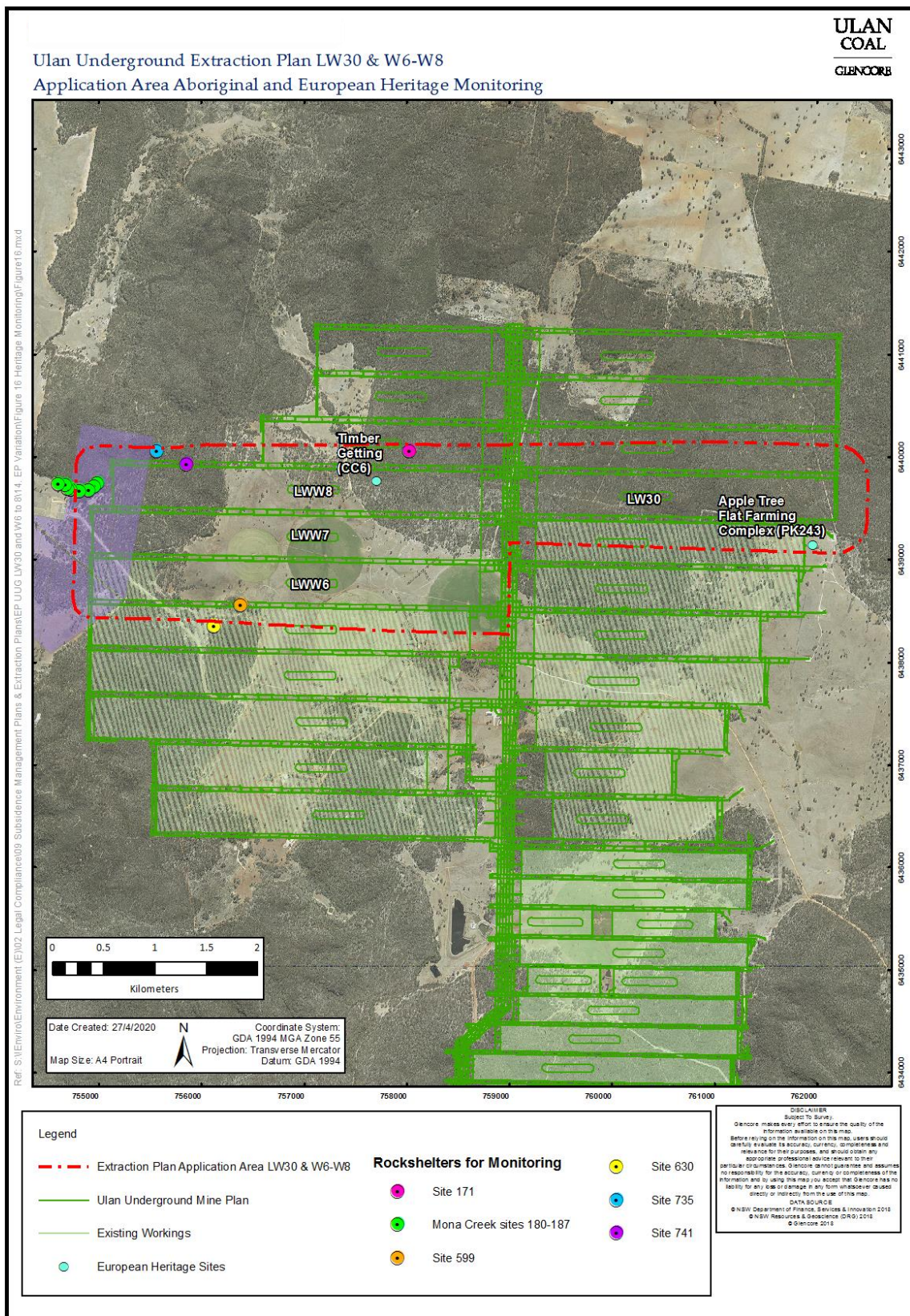
Monitoring Component	Parameters	Location/Network	Monitoring Frequency	Monitoring Type <sup>16</sup>
European Heritage	Visual inspection and photo record	<ul style="list-style-type: none"> <li>LWW8 – European Heritage Site CC6</li> <li>Refer to <b>Figure 4</b></li> </ul>	<ul style="list-style-type: none"> <li>Pre-mining inspection</li> <li>Post mining inspection to document any subsidence impacts to the site (at least 3 months after undermining, within 12 months of undermining).</li> </ul>	EP

## 4.3 Management of Previously Unrecorded Aboriginal Evidence

Section 3.6 of the HMP outlines the relevant actions regarding unrecorded Aboriginal heritage evidence if identified within the Project area during the course of operations or further heritage investigations, this evidence will be subject to temporary protection, recorded and appropriate management strategies implemented, in consultation with the registered Aboriginal stakeholders.

Should any human skeletal remains be identified, UCMPL will ensure that actions are implemented to comply with statutory obligations and will consider the special needs of the Aboriginal community should those remains be identified as Aboriginal.

Figure 4 Aboriginal and European Heritage Monitoring





## 4.4 Assessment of Subsidence Performance Indicators and Measures

Subsidence impact performance measures listed in Table 14 of the Project Approval<sup>19</sup> relevant to heritage are provided in **Table 4**. UCMPL have developed a range of performance indicators to inform the operations if the performance measures are likely to be exceeded during secondary extraction within the Application Area (**Table 6**). **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 5 Heritage Subsidence Performance Measures and Performance Indicators**

Heritage	Subsidence Performance Measures	Performance Indicators
<b>Aboriginal sites</b>	Nil impact in the Brokenback Conservation Area, Grinding Groove Conservation Areas <sup>1</sup> ; and on Mona Creek Rock Shelter Sites	<p>This performance indicator will be considered to be triggered if:</p> <ul style="list-style-type: none"> <li>Subsidence monitoring identifies an exceedance (or a trend to exceedance) of the predicted subsidence values for far field horizontal movements; and/or</li> <li>Subsidence monitoring identifies a perceptible change (e.g. cracking) within the Mona Creek Rock Shelter Sites.</li> </ul>
<b>Talbragar Fish Fossil Reserve</b>	Negligible impact	<ul style="list-style-type: none"> <li>Not Required <sup>2</sup></li> </ul>
<b>Other Heritage Sites</b>	No greater impact than predicted in the EA	<p>The performance indicators will be considered to be triggered if:</p> <ul style="list-style-type: none"> <li>Subsidence monitoring data identifies an exceedance (or a trend to exceedance) of the predicted probability of subsidence induced impacts on Aboriginal rock shelter sites within the Application Area; and/or</li> <li>Visual monitoring identifies Aboriginal rock shelter sites displaying greater than predicted probabilities of impact or evidence of subsidence-induced cracking or rock fall) at sites not predicted to be impacted.</li> </ul>

**Notes:**

<sup>1</sup> The Brokenback Conservation Area is located approximately 2km south-west of the Application Area. The Bobadeen Grinding Groove Conservation Area is located approximately 1.2km south of the Application Area. There is considered to be no potential for subsidence related ground movements at this site as a result of longwall mining within the Application Area (Technical Report 1).

<sup>2</sup> The Talbragar Fish Fossil Reserve is located approximately 1.6km south-west of the Application Area. There is considered to be no potential for subsidence related ground movements at this site as a result of longwall mining within the Application Area (Technical Report 1).

<sup>19</sup> PA08\_0184, Schedule 3, Condition 24.



**Table 6 Monitoring of Environmental Consequences against Performance Indicators and Measures**

Performance Measure	Monitoring of Environmental Consequence			Data Analysis to Assess against Performance Indicator(s)	Performance Indicator(s)	Assessment of Performance Indicator(s)	Assessment of Performance Measure	Relevant Management and Contingency Measure
	Site	Parameter	Frequency					
<b>Nil impact in the Brokenback Conservation Area, Grinding Groove Conservation Areas; and on Mona Creek Rock Shelter Sites</b>	Mona Creek Rock Shelters Sites	Low level far-field horizontal movements	<b>Table 6</b> in this Plan	Analysis of far field subsidence monitoring data  Analysis pre and post mining inspections and photographic recordings.	No exceedance (or a trend to exceedance) of the predicted probability of subsidence induced impacts on Aboriginal sites as identified in the EA.  In relation to Aboriginal rock shelter sites and grinding grooves, the key performance indicator is visible perceptible impacts (for example, fresh subsidence-induced cracking or rock fall).	This performance indicator will be considered to be triggered if: <ul style="list-style-type: none"><li>Subsidence monitoring identifies an exceedance (or a trend to exceedance) of the predicted subsidence values for far field horizontal movements; and/or</li><li>Subsidence monitoring identifies a perceptible change (e.g. cracking) within the Mona Creek Rock Shelter Sites.</li></ul>	The performance measure will be considered have been exceeded if subsidence monitoring of cliff lines, indicates the secondary extraction within the Application Area has resulted in greater than nil environmental consequence within the Brokenback Conservation Area, Grinding Groove Conservation Areas; or at the Mona Creek Rock Shelter Sites.	If the assessment of performance indicators determine 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: <ul style="list-style-type: none"><li>Notify relevant government agencies;</li><li>Conduct investigations;</li></ul>
<b>No greater impact than predicted in the EA</b>	Selected rock shelter sites within Application Area.	Subsidence predictions	<b>Table 6</b> in this Plan	Subsidence data analysed at completion of panel extraction  Visual inspections of selected rock shelters within the Application Area.	No exceedance (or a trend to exceedance) of the predicted probability of subsidence induced impacts on Aboriginal sites as identified in the EA.	This performance indicator will be considered to be triggered if: <ul style="list-style-type: none"><li>Subsidence monitoring data identifies an exceedance (or a trend to exceedance) of the predicted probability of subsidence induced impacts on Aboriginal rock shelter sites within the Application Area; and/or</li><li>Visual monitoring identifies Aboriginal rock shelter sites displaying greater than predicted probabilities of impact or evidence of subsidence-induced cracking or rock fall) at sites not predicted to be impacted.</li></ul>	The performance measure will be considered have been exceeded if subsidence monitoring of aboriginal rock shelter sites indicates the secondary extraction within the Application Area has resulted in greater subsidence impact than predicted in the EA.	<ul style="list-style-type: none"><li>Additional monitoring (increases in frequency or additional sites); and</li><li>Reassess subsidence impacts.</li></ul>

## 5 Contingency Plan

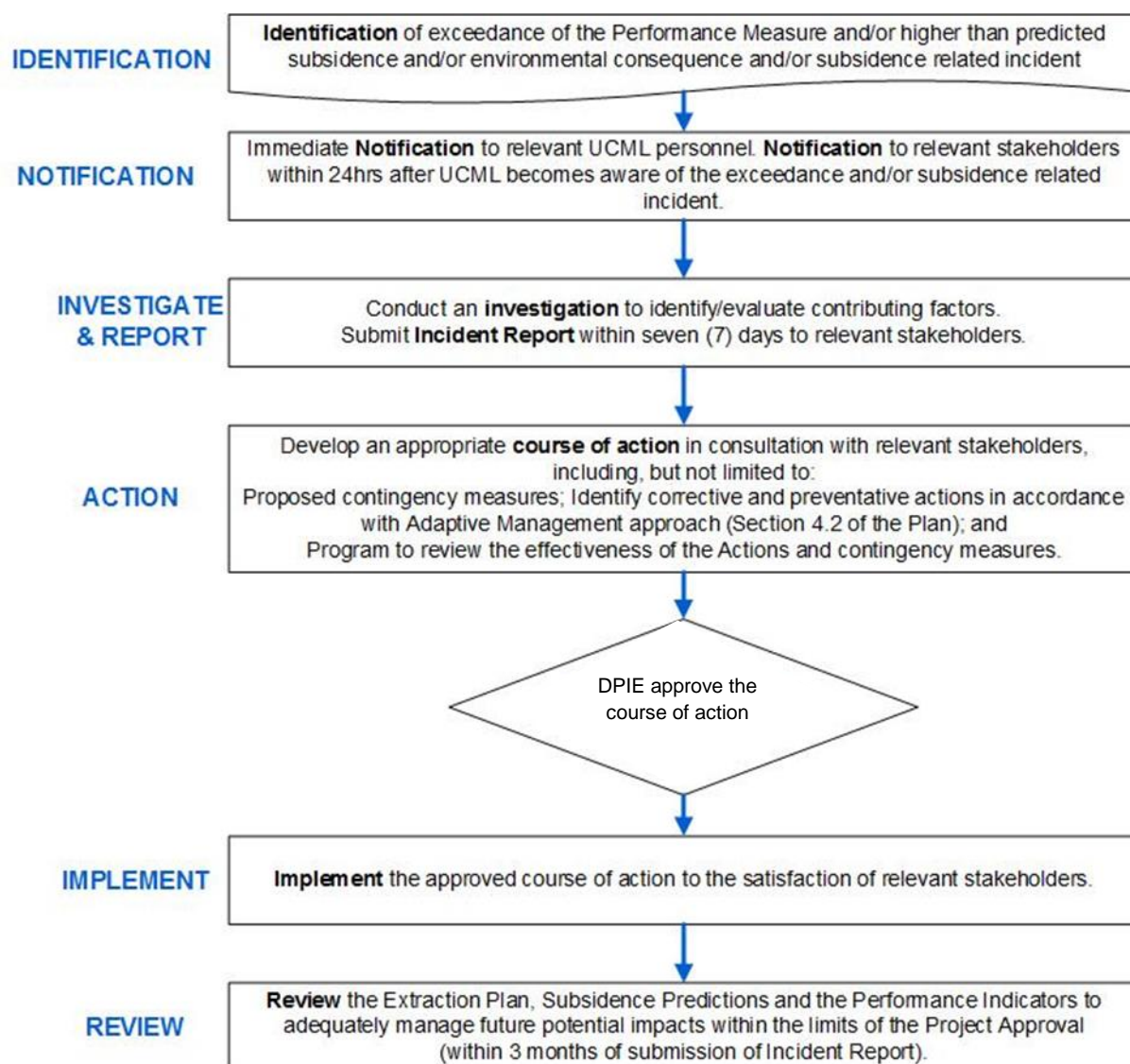
### 5.1 Adaptive Management

In the event the subsidence performance measures for heritage as 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 5.7 of the HMP.

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

**Figure 5 Contingency Plan**



## 5.1.1 Trigger Action Response Plan

**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 7 Heritage Management Plan Trigger Action Response Plan**

	Normal State Predicted Impacts	Level 1 Response Management Measures	Level 2 Response Contingency Phase
<b>Trigger</b>	As predicted, subsidence impacts on Heritage sites are consistent with <b>Section 3</b> of this Plan	Monitoring results indicate a possible: <ul style="list-style-type: none"> <li>• Exceedance (or a trend to exceedance) of the predicted subsidence values for far field horizontal movement; and/or</li> <li>• Visible perceptible impact to Mona Creek Rock Shelter Heritage Sites; and/or</li> <li>• Exceedance (or a trend to exceedance) of the predicted probability of subsidence induced impacts on Aboriginal rock shelter sites within the Application Area; and/or</li> <li>• If visual monitoring identifies Aboriginal rock shelter sites displaying greater than predicted probabilities of impact within the Application Area.</li> </ul>	<ul style="list-style-type: none"> <li>• Results from heritage and subsidence monitoring have been confirmed that an exceedance or its likely to be exceeded regarding the Performance Measure for heritage.</li> </ul>
<b>Action</b>	<ul style="list-style-type: none"> <li>• Continue monitoring in accordance with <b>Section 4.2</b> of this Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of management actions to assess if exceedances are due to mining related activities within the Application Area as described in <b>Section 4</b> of this Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation of management and contingency measures responses as identified in the Contingency Plan and reporting requirements as described in <b>Section 5.1</b>.</li> <li>• Review this Plan</li> </ul>
<b>Frequency</b>	<ul style="list-style-type: none"> <li>• Continue monitoring in accordance with <b>Section 4.2</b> of this Plan.</li> </ul>	Continue monitoring in accordance with <b>Section 4.2</b> of this Plan	<ul style="list-style-type: none"> <li>• Review monitoring methodology and frequency for this Plan accordance with Contingency Plan.</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>• Environment and Community Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Environment and Community Manager</li> <li>• UUG Technical Services Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Environment and Community Manager</li> <li>• UUG Technical Services Manager</li> <li>• UUG Operations Manager</li> </ul>

## 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. 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.

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 of becoming aware of the incident (**Figure 5**). 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 and Section 5.6 of the HMP, 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 in relation to this HMP LW30 & W6-W8 (the Plan) are summarised in **Table 8**. Please note that responsibilities may be delegated as required

**Table 8 Key Responsibilities**

Responsibility	Accountabilities
<b>Operations Manager (Ulan Underground)</b>	<ul style="list-style-type: none"> <li>• Authorise the Extraction Plan and approve appropriate resources for the implementation of this Plan; and</li> <li>• Authorise internal and external reporting requirements of this Plan.</li> </ul>
<b>Environment and Community Manager</b>	<ul style="list-style-type: none"> <li>• Review this Plan in accordance with <b>Section 4.5</b> and <b>Section 4.6</b> and other legal requirements and operation standards;</li> <li>• Ensure the effective implementation of strategies designed to reduce impacts from the operation;</li> <li>• Ensure any potential or actual issue is reported in accordance with the Extraction Plan and other legal requirements and corporate standards;</li> <li>• Review and prepare internal and external reports as identified in the reporting framework;</li> <li>• Approve subsequent revisions of this Plan;</li> <li>• Instigate response in the event the performance indicators, TARP and/or Contingency Plan are triggered; and</li> <li>• Allocate resources for monitoring and review of subsidence monitoring survey results.</li> </ul>
<b>Environment and Community Coordinator</b>	<ul style="list-style-type: none"> <li>• Implement monitoring programs as required by this Plan and conduct analysis of results against performance indicators as described in this Plan;</li> <li>• Prepare this Plan and subsequent revisions for approval by the Environment and Community Manager;</li> <li>• Assist in the preparation of reports as identified in reporting framework; and</li> <li>• Assess any triggers as described in performance indicators and provide advice to implementation of TARPS and the Contingency Extraction Plan.</li> </ul>
<b>Environment and Community Officer</b>	<ul style="list-style-type: none"> <li>• Assist the Environment and Community Coordinator in the implementation of monitoring programs and analysis of results against performance indicators as described in this Plan;</li> <li>• Assist in the preparation of reports as identified in reporting framework; and</li> <li>• 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.</li> </ul>
<b>All employees and contractors</b>	<ul style="list-style-type: none"> <li>• Comply with all requirements of this Plan;</li> <li>• Undertake all works in accordance with this Extraction Plan and all other Ulan Coal Mine Complex systems;</li> <li>• Report all potential environmental incidents to their supervisor immediately; and</li> <li>• Seek Ground Disturbance Permits (GDP) approval from the Environment and Community Manager prior to any surface disturbance activities.</li> </ul>

## 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 of the Extraction Plan.

### 8.2 Accountabilities

Accountabilities are described in Section 7 of this Plan.

### 8.3 Reference Information

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 9** below.

**Table 9 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 feedback