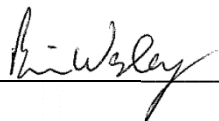




UG4 LONGWALLS 401 TO 408 HERITAGE MANAGEMENT PLAN

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1.0 INTRODUCTION

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

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Complex on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Yancoal Moolarben [YM] Pty Ltd and a consortium of Korean power companies). MCO, MCM and YM are wholly owned subsidiaries of Yancoal Australia Limited.

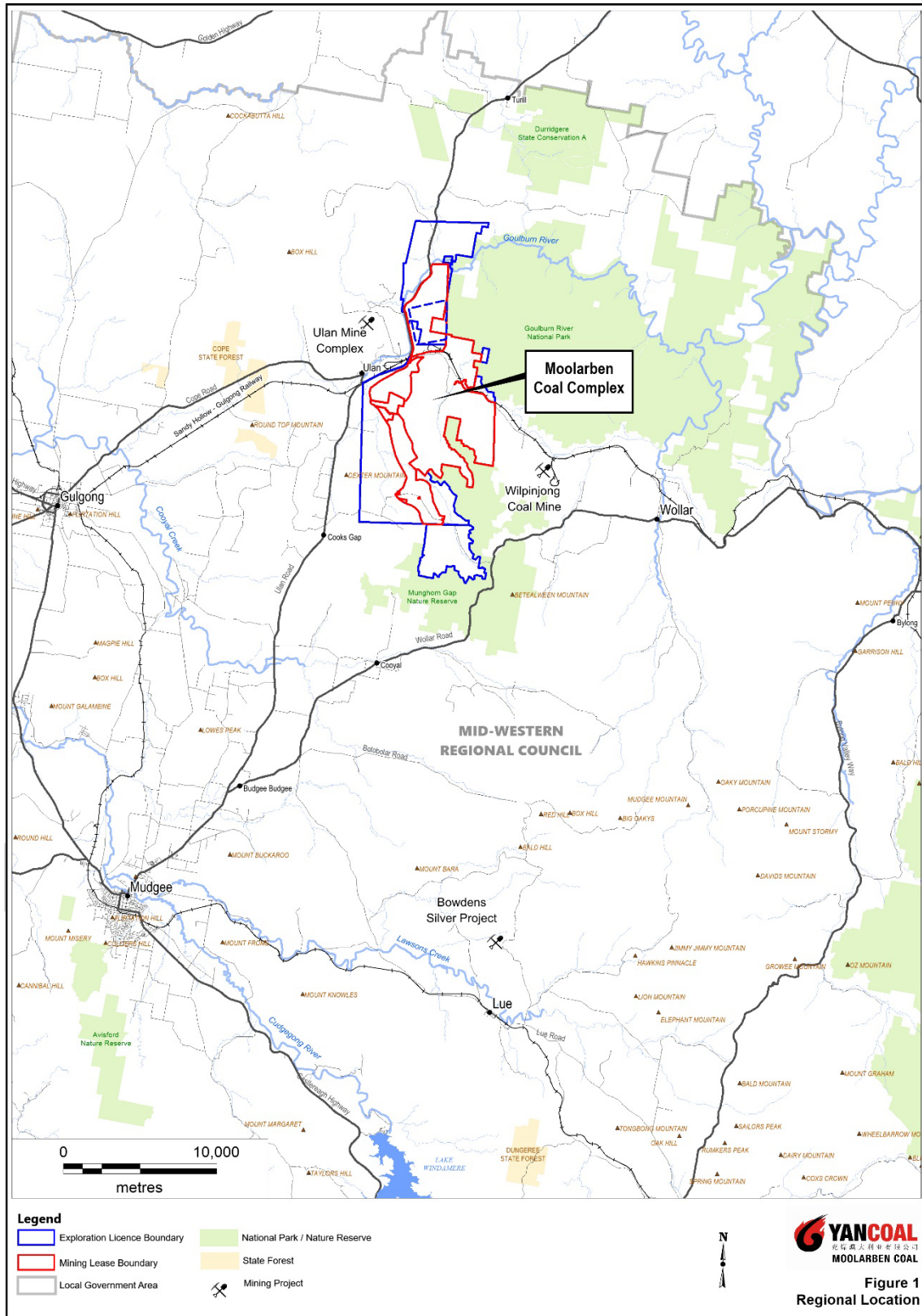
The Moolarben Coal Complex comprises four approved open cut mining areas (OC1 to OC4), three approved underground mining areas (UG1, UG2 and UG4) and other mining related infrastructure (including coal processing and transport facilities) (**Figure 2**). Since the commencement of coal mining operations in 2010, mining activities have occurred within OC1, OC2, OC4 and UG1 (**Figure 2**).

The UG4 Underground Mine (UG4) is a component of the approved Moolarben Coal Project Stage 1 Approval (05_0117) (**Figure 2**). First workings for UG4 North Mains commenced in October 2020 (**Figure 3**). Secondary extraction in UG4 of the first Longwall LW401 is scheduled to commence in 2022 (**Table 2**).

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 and would continue to be carried out in accordance with Project Approval (05_0117) (Moolarben Coal Project Stage 1) as modified and Project Approval (08_0135) (Moolarben Coal Project Stage 2) as modified, granted under the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act).

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Figure 1: Regional Location



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Figure 2: Moolarben Coal Complex Layout

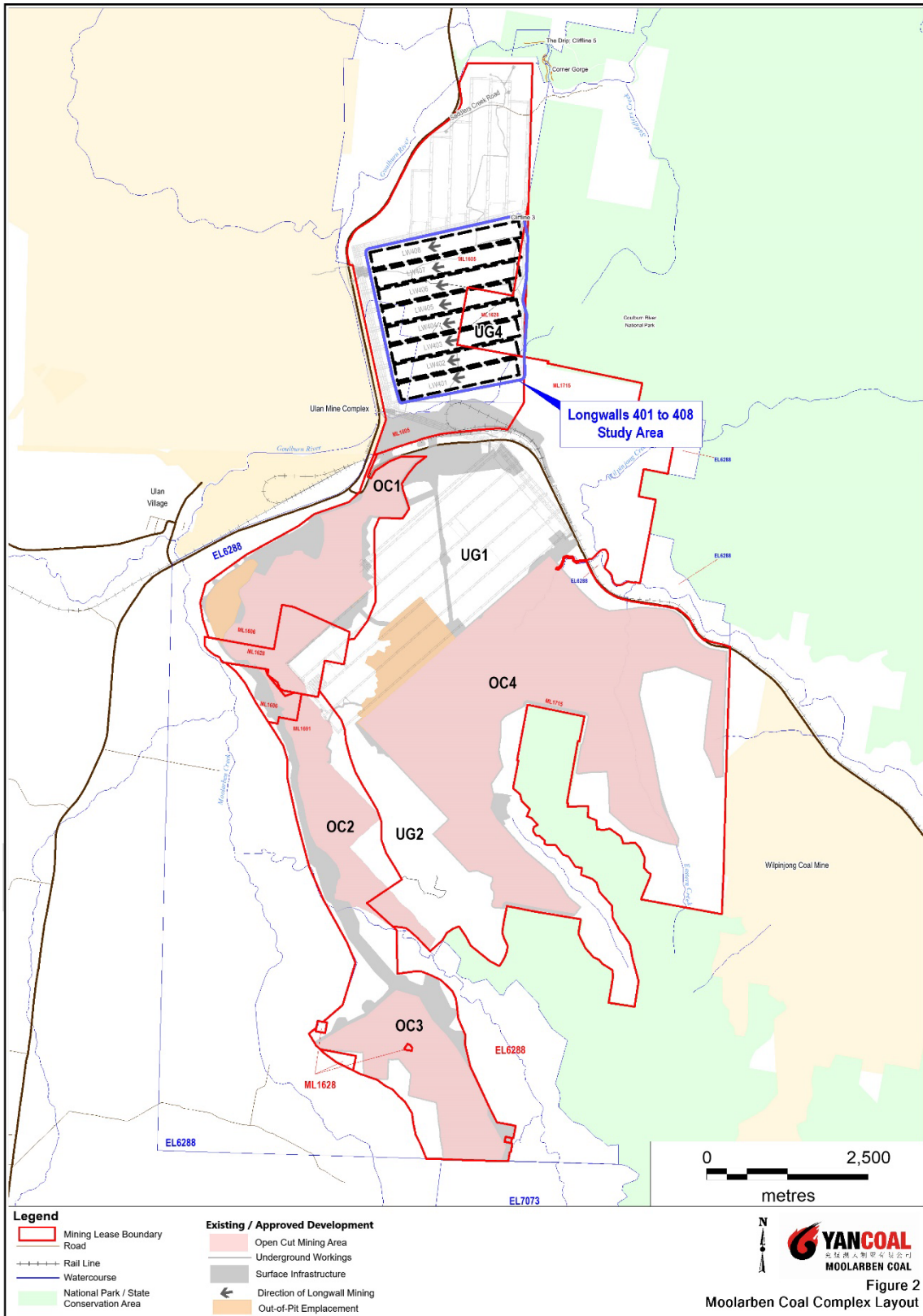
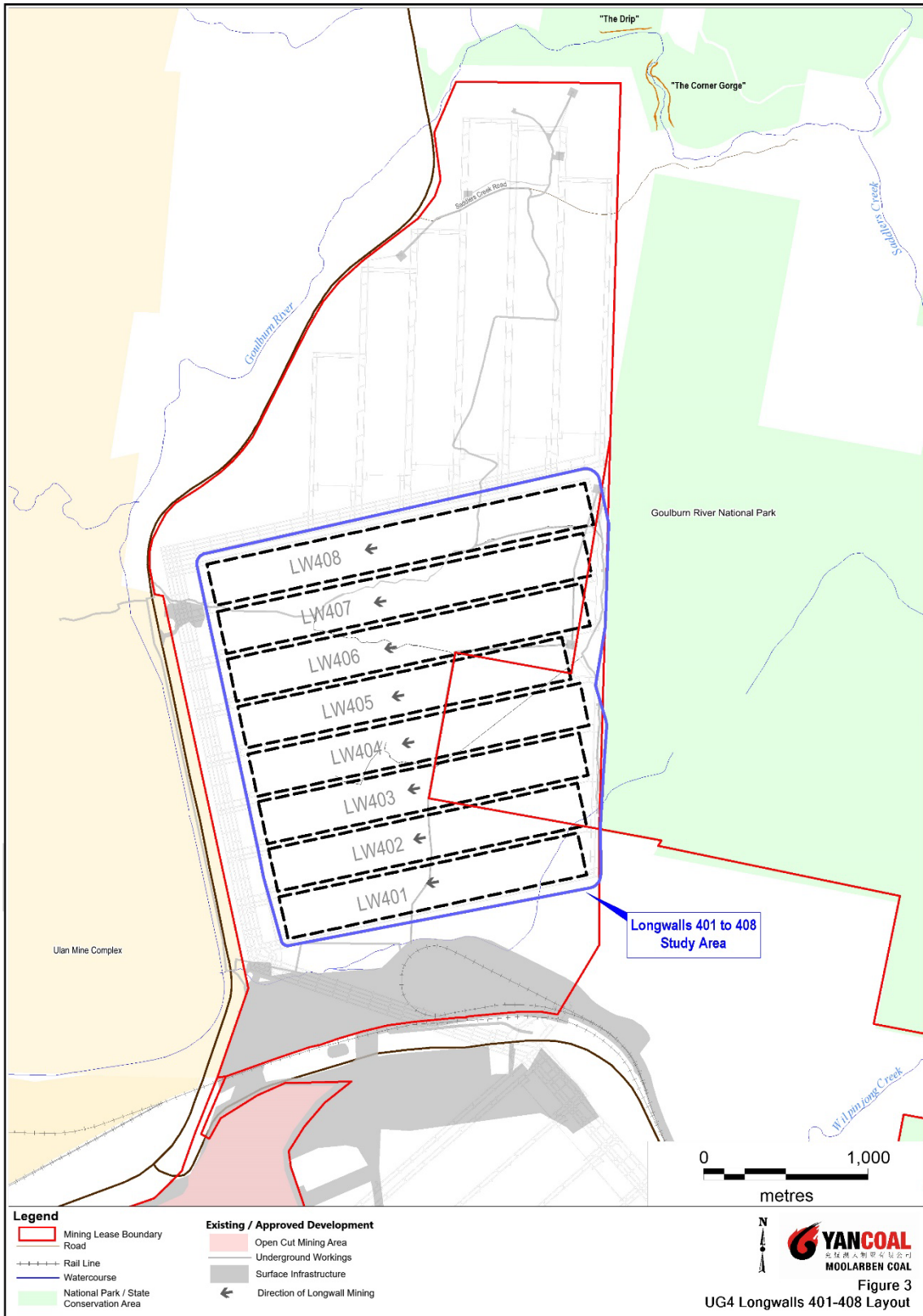


Figure 2
Moolarben Coal Complex Layout

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Figure 3: Underground 4 Longwalls 401 to 408 Layout



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1.1 SCOPE AND PURPOSE

This UG4 Longwalls 401 to 408 Heritage Management Plan (LW401-408 HMP) has been prepared by MCO with Niche Environment and Heritage (Niche), and Mine Subsidence Engineering Consultants [MSEC] to satisfy the requirements of Project Approval (05_0117) as modified and the NSW Department of Planning, Industry and Environment (DPIE) and NSW Division of Resources and Energy (DRE) (2015) Draft *Guidelines for the Preparation of Extraction Plans*. The appointment of the team of suitably qualified and experienced persons (which includes representatives of Niche and MSEC) were endorsed by the Secretary of the DPIE on the 26 April 2021 (Attachment 2 of the Extraction Plan).

Scope: This LW401-408 HMP considers Aboriginal and historical heritage within the Longwalls 401-408 Study Area¹ (**Figure 4**).

Purpose: This LW401-408 HMP describes the management of potential environmental consequences on Aboriginal and historical heritage resulting from the extraction of Longwalls 401-408.

Longwalls 401-408 form part of the UG4 Underground Mine at the Moolarben Coal Complex.

A complex-wide Heritage Management Plan (complex-wide HMP) has been developed to manage Aboriginal and historical heritage across the Moolarben Coal Complex (including the Longwalls 401-408 Study Area [**Figure 4**] covered by this LW401-408 HMP). The approved complex-wide HMP is publicly available on MCO's website (www.moolarbencoal.com.au).

To avoid duplication of existing Environmental Management Plans, this LW401-408 HMP references components of the complex-wide HMP.

1.2 STRUCTURE OF THE HERITAGE MANAGEMENT PLAN

The remainder of the LW401-408 HMP is structured as follows:

- Section 2** Describes the review and update of the LW401-408 HMP.
- Section 3** Outlines the statutory requirements applicable to the LW401-408 HMP.
- Section 4** Summarises the predicted subsidence impacts and environmental consequences resulting from the secondary extraction of Longwalls 401-408
- Section 5** Details the performance measures and indicators that will be used to assess environmental performance in relation to Aboriginal and historic heritage sites.
- Section 6** Describes the monitoring program and potential management measures that could be implemented to remediate any identified impacts to Aboriginal and historic heritage sites.
- Section 7** Provides a Contingency Plan to manage any unpredicted impacts and their consequences.

¹ Longwalls 401-408 and the area of land within the furthest extent of the 26.5 degree (°) angle of draw and 20 millimetre (mm) predicted subsidence contour.

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- Section 8** Describes the Annual Review requirements, audits, improvement of environmental performance and preparation for future Extraction Plans.
- Section 9** Outlines the management and reporting of incidents.
- Section 10** Outlines the management and reporting of complaints.
- Section 11** Outlines the management and reporting of any non-compliance with statutory requirements.
- Section 12** Lists the documents referred to in **Sections 1 to 11** of this LW401-408 HMP.

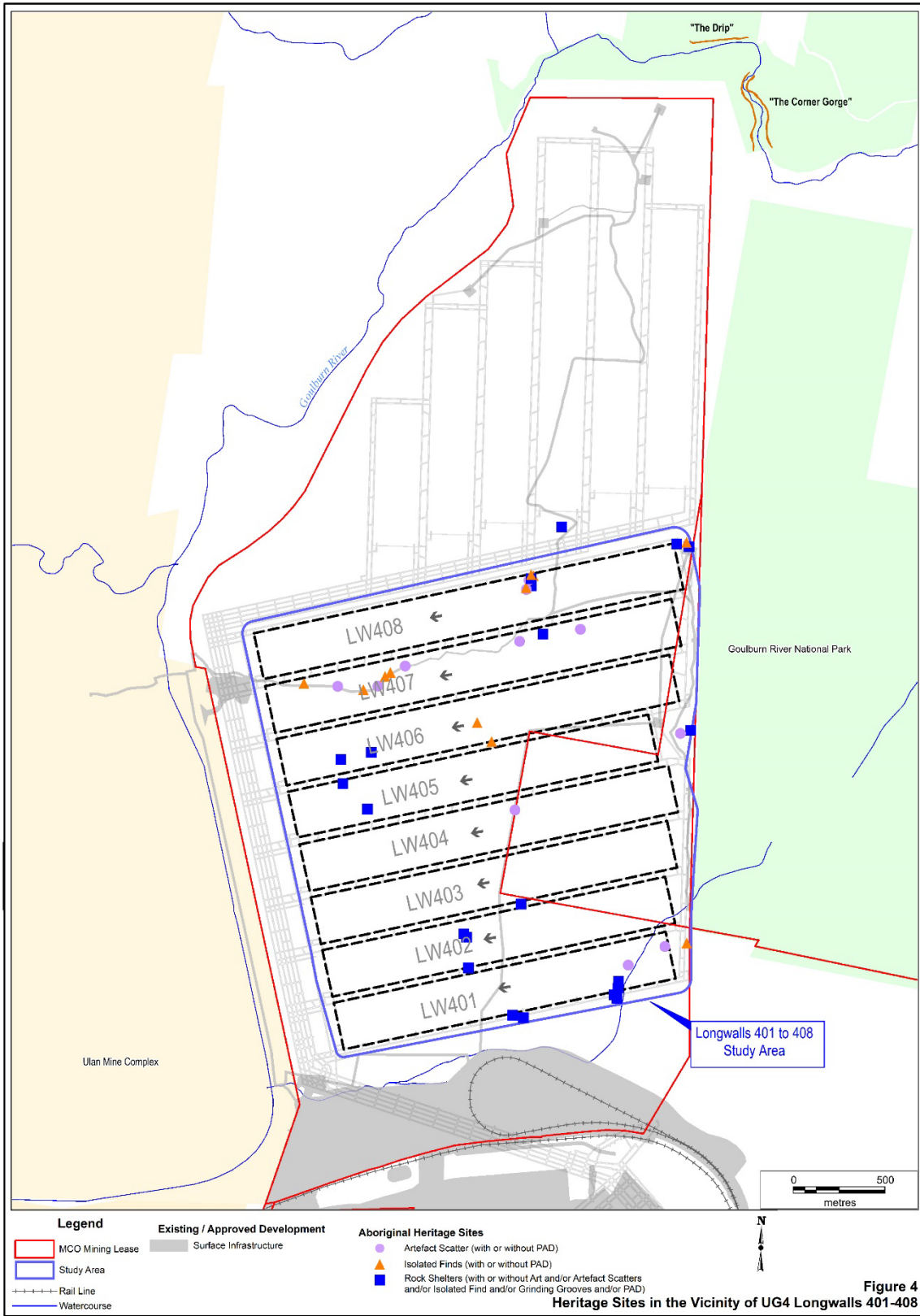
1.3 CONSULTATION FOR THE HERITAGE MANAGEMENT PLAN

In accordance with Condition 77 (k), Schedule 3 of Project Approval (05_0117), this LW401-408 HMP has been provided to the DPIE Biodiversity Conservation Division (formerly NSW Office of Environment and Heritage (OEH)) and the Registered Aboriginal Parties (RAPs) for their review and comment. Comments received will be considered before the LW401-408 HMP is finalised and lodged with the Secretary of the DPIE for approval.

RAPs for the Moolarben Coal Complex have been identified through a comprehensive program of Aboriginal community consultation undertaken at the Moolarben Coal Complex.

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Figure 4 Heritage Sites in the Vicinity of UG4 Longwalls 401 to 408



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2.0 HERITAGE MANAGEMENT PLAN REVIEW AND UPDATE

In accordance with Condition 5, Schedule 5 of Project Approval (05_0117) (as modified), and consistent with the complex-wide HMP, this LW401-408 HMP will be reviewed as follows:

5. *Within 3 months of the submission of:*
 - (a) *the submission of annual review under condition 4 above;*
 - (b) *the submission of an incident report under condition 7 below;*
 - (c) *the submission of an audit under condition 9 below; or*
 - (d) *any modification to the conditions of this approval or MP 05_0117 (unless the conditions require otherwise),*

the Proponent shall review and, if necessary, revise the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval.

2.1 ACCESS TO INFORMATION

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), MCO will make the approved LW401-408 HMP publicly available on the MCO website.

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3.0 STATUTORY REQUIREMENTS

MCO's statutory obligations are contained in:

- the conditions of the NSW Project Approval (05_0117) (as modified) and NSW Project Approval (08_0135) (as modified); and
- other relevant legislation.

3.1 EP&A ACT PROJECT APPROVAL

Condition 77(k), Schedule 3 of Project Approval (05_0117) requires the preparation of a Heritage Management Plan (i.e. this LW401-408 HMP) as a component of the Extraction Plan. In addition, Conditions 77(n), 77(p) and 78, and Schedule 5 Condition 3, of Project Approval (05_0117) outline general management plan requirements that are applicable to the preparation of the LW401-408 HMP. **Table 1** presents these requirements and indicates where they are addressed within this LW401-408 HMP.

Condition 77(k), Schedule 3 of Project Approval (05_0117) requires that the LW401-408 HMP “reflects all requirements under conditions 38-39 of Schedule 3”. These requirements are addressed by the complex-wide HMP. Notwithstanding, **Attachment 1** (of this LW401-408 HMP) indicates where each component of the conditions are addressed within the complex-wide HMP.

Table 1 Heritage Management Plan Requirements

Project Approval (05_0117) Condition	LW401-408 HMP Section
<p>Condition 77, Schedule 3</p> <p>77. The Proponent shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Secretary. Each extraction plan must:</p> <p>...</p> <p>(k) include a Heritage Management Plan, which has been prepared in consultation with BCD and relevant stakeholders for both Aboriginal and historic heritage, to manage the potential environmental consequences of the proposed second workings on both Aboriginal and non-Aboriginal heritage items, and reflects all requirements under conditions 38-39 of Schedule 3;</p> <p>...</p> <p>(n) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 14 and 15, or where such exceedances appears likely;</p> <p>...</p> <p>(p) include a program to collect sufficient baseline data for future Extraction Plans.</p>	<p>This document and complex-wide HMP</p> <p>Section 7</p> <p>Section 8.3</p>
<p>Condition 78, Schedule 3</p> <p>78. The Proponent shall ensure that the management plans required under conditions 77(g)-(l) above include:</p> <p>(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval; and</p> <p>(b) a detailed description of the measures that would be implemented to remediate predicted impacts.</p>	<p>Sections 4</p> <p>Section 6 and complex-wide HMP</p>

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Project Approval (05_0117) Condition	LW401-408 HMP Section
<p>Condition 3, Schedule 5</p> <p>3. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:</p> <p>(a) detailed baseline data</p> <p>(b) a description of:</p> <ul style="list-style-type: none"> • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • 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; <p>(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p> <p>(d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> • impacts and environmental performance of the project; • effectiveness of any management measures (see c above) <p>(e) a contingency plan to manage any unpredicted impacts and their consequences;</p> <p>(f) a program to investigate and implement ways to improve the environmental performance of the project over time;</p> <p>(g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and <p>(h) a protocol for periodic review of the plan.</p>	<p style="text-align: center;">Sections 4.3.2</p> <p style="text-align: center;">Section 3</p> <p style="text-align: center;">Section 5</p> <p style="text-align: center;">Section 5</p> <p style="text-align: center;">Sections 6, 7 and complex-wide HMP</p> <p style="text-align: center;">Sections 6, 8 and complex-wide HMP</p> <p style="text-align: center;">Section 7 and complex-wide HMP</p> <p style="text-align: center;">Section 6 and 8</p> <p style="text-align: center;">Section 9</p> <p style="text-align: center;">Section 10</p> <p style="text-align: center;">Section 11</p> <p style="text-align: center;">Section 7 and complex-wide HMP</p> <p style="text-align: center;">Section 2</p>

3.2 OTHER LEGISLATION

The Acts, Regulations and guidelines that may be applicable to the management of Aboriginal and historical heritage at the Moolarben Coal Complex include, but are not limited to, the:

- Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act, 1984*;
- Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*;
- Commonwealth *Native Title Act, 1993*;
- NSW *Heritage Act, 1977*;
- NSW *National Parks and Wildlife Act, 1974*;
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW Department of Environment, Climate Change and Water [DECCW], 2010a);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b);
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c); and
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011).

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4.0 PREDICTED SUBSIDENCE IMPACTS AND ENVIRONMENTAL CONSEQUENCES

4.1 LONGWALLS 401-408 EXTRACTION SCHEDULE

Longwalls 401-408 and the area of land within the furthest extent of the 26.5° angle of draw and 20 mm predicted subsidence contour (i.e. the Longwalls 401-408 Study Area) are shown on **Figure 3**. Longwall extraction will occur from the east to the west. The longwall layout includes approximately 260 m panel widths (void) with 35 m width pillars (solid). The provisional extraction schedule for Longwalls 401-408 is provided in **Table 2**.

Table 2 Provisional Extraction Schedule

Longwall	Estimated Start Date	Estimated Duration (months)	Estimated Completion Date
LW401	June 2022	4	October 2022
LW402	November 2022	4	March 2023
LW403	April 2023	4	August 2023
LW404	August 2023	5	January 2024
LW405	February 2024	4	June 2024
LW406	July 2024	5	December 2024
LW407	January 2025	4	May 2025
LW408	June 2025	4	November 2025

4.1 REVISED SUBSIDENCE AND IMPACT PREDICTIONS

As required by Condition 77(e), Schedule 3 of Project Approval (05_0117), when preparing an Extraction Plan, MCO must revise predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since approval.

The development of this LW401-408 HMP for UG4 has incorporated the revised subsidence predictions and impacts applicable to Heritage in the *Subsidence Predictions and Impact Assessment for Longwalls 401 to 408* (MSEC, 2021) and in the *Moolarben Coal UG4 Longwalls 404-408 Extraction Plan Aboriginal Cultural Heritage Technical Report* (Niche, 2021) summarised in **Section 4.3** to **Section 4.4**.

4.2 ENVIRONMENTAL RISK ASSESSMENT

An Environmental Risk Assessments (ERA) was conducted for four of the key component plans of the UG4 Longwalls 401- 408 Extraction Plan² viz. Water Management Plan, Biodiversity Management Plan, Heritage Management Plan and Land Management Plan, to provide appropriate consideration to risk assessment and risk management in accordance with the Draft DPIE and DRE (2015) *Guidelines for the Preparation of Extraction Plans*.

² Separate risk assessments have also been conducted for the built features in the vicinity of the UG4 Longwalls 401-408 Study Area and for public safety.

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The ERA workshop for LW panels 401-408 was held on 15 June 2021, facilitated by independent specialist, Risk Mentoring. The suitably qualified and experienced experts endorsed by the Secretary of the DPIE for the preparation of the UG4 Longwalls 401- 408 Extraction Plan and relevant MCO personnel participated in the ERA.

The ERA indicated that risks relevant to Aboriginal and historical heritage sites in the Longwalls 404-408 Study Area were in the “Medium” category, and it was expected that the risks could be managed with implementation of the appropriate mitigation, management and/or control measures.

4.3 ABORIGINAL HERITAGE SITES AND VALUES

4.3.1 Aboriginal Cultural Heritage Values

The RAPs for the Moolarben Coal Complex have been consulted on the nature and extent of Aboriginal cultural heritage at the Moolarben Coal Complex on a number of occasions, including during the community consultation processes undertaken for previous cultural heritage assessments and investigations (described in Appendix C of the complex-wide HMP).

Previous assessments have identified and documented the following general cultural heritage values for the Moolarben Coal Complex area, including the following:

- Archaeological sites having contemporary cultural value because they provide a tangible link to the traditional past (Kuskie, 2013).
- The presence of flora and fauna species with known traditional uses (Kuskie, 2013).
- The area of Moolarben Ridge to the south of Carrs Gap having contemporary cultural value to the Wiradjuri community (Hamm, 2008 and Kuskie, 2013).
- The area along the Goulburn River known as “The Drip” is considered to have high cultural value as the sites in this area represent easily identified material remains and the area is ceremonially important (Hamm, 2006).

Consultation undertaken to date with the Aboriginal community indicates that all Aboriginal heritage sites at the Moolarben Coal Complex, known or otherwise, have high cultural significance. Consultation during the development of the Extraction Plan with the RAPs is summarised in Section 2.3.5 of the Extraction Plan.

4.3.2 Baseline Data

A number of Aboriginal cultural surveys and assessments have previously been undertaken across the Moolarben Coal Complex and surrounding areas. A list of previous assessments is presented in Appendix C of the complex-wide HMP. Approximately 426 Aboriginal heritage sites have already been managed (e.g. salvaged) and/or require no further management, leaving approximately 410 known Aboriginal heritage sites remaining across the entire Moolarben Coal Complex (described in Appendix D of the complex-wide HMP). An additional 112 sites were identified on lands immediately adjacent to the Moolarben Coal Complex (described in Appendix H of the complex-wide HMP).

There was a total of 45 Aboriginal Heritage sites within the Study Area. Of these sites, 8 heritage sites comprising of isolated finds or open artefact scatters with/without PAD have been salvaged under existing approvals and are no longer *in situ*.

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Of the 37 sites *in situ* entirely or partially in the Study Area:

- One (1) Aboriginal Heritage site in the Study Area has been assessed as having high archaeological significance, a Shelter with Art, Artefacts and Grinding Grooves, known as S1MC280; Ulan Creek 2 (AHIMS ID#36-3-0042);
- Ten (10) Aboriginal Heritage sites have been assessed to have moderate archaeological significance; and,
- 26 have been assessed to have low archaeological significance.

The location and a description of the remaining Aboriginal Heritage sites within the Subject Area is shown in **Table 3** and **Figure 4**.

Table 3 Aboriginal Heritage sites in LW401-408 (Previously identified and newly identified), excluding those that have been managed under the HMP

AHIMS	Site Name	Site Type	Scientific significance rating
36-3-1071	S1MC256	Shelter with Artefacts	Low
36-3-1072	S1MC257	Artefacts	Low
36-3-1073	S1MC258	Artefacts	Low
36-3-1074	S1MC259	Artefacts (Isolated Find)	Low
36-3-1075	S1MC260	Artefacts (Isolated Find)	Low
36-3-1076	S1MC261	Shelter with Artefacts	Low
36-3-1077	S1MC262	Artefacts (Isolated Find)	Low
36-3-1086	S1MC271	Shelter with Artefacts	Moderate
36-3-1088	S1MC273	Artefacts (Isolated Find)	Low
36-3-0042	S1MC280; Ulan Creek 2	Shelter with Art, Artefacts and Grinding Grooves	High
36-3-1104	S1MC290	Shelter with Artefacts	Low
36-3-1105	S1MC291	Artefacts (Isolated Find)	Low
36-3-1108	S1MC294	Shelter with Artefacts	Low
36-3-1415	S1MC321 (NB9)	Artefacts (Isolated Find)	Low
36-3-1416	S1MC322 (NB10)	Artefacts and PAD	Moderate
36-3-3304	S1MC356b	Artefacts (Isolated Find)	Low
36-3-3305	S1MC358b	Shelter with PAD	Low
36-3-3799	S1MC464	Artefacts	Moderate
36-3-3800	S1MC465	Artefacts and PAD	Moderate
36-3-3804	S1MC466*	Shelter with Artefacts and PAD	Moderate
36-3-3801	S1MC468	Shelter with Artefacts and PAD	Low
36-3-3802	S1MC471	Shelter with PAD	Low
36-3-3803	S1MC472	Shelter with Artefacts and PAD	Low
36-3-3798	S1MC473	Shelter with PAD	Low
36-3-3785	S1MC474	Shelter with Artefact and PAD	Moderate
36-3-3786	S1MC475	Shelter with Grinding Grooves, Artefacts and PAD	Moderate
36-3-3796	S1MC478	Artefacts	Moderate
36-3-3787	S1MC479	Artefacts and PAD	Low
Pending	S1MC483	Shelter with PAD	Low

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AHIMS	Site Name	Site Type	Scientific significance rating
36-3-3788	S1MC484	Shelter with Artefacts	Low
36-3-3795	S1MC485	Shelter with PAD	Low
36-3-3789	S1MC486	Shelter with PAD	Low
36-3-3794	S1MC487	Shelter	Low
36-3-3790	S1MC488	Shelter with Artefacts and PAD	Low
36-3-3791	S1MC490	Shelter with PAD	Low
36-3-3792	S1MC491	Shelter with PAD	Moderate
36-3-3793	S1MC494	Shelter with Artefacts and PAD	Moderate

Source: Niche (2021).

*S1MC466 The Shelter is located outside of the Study Area for Longwalls 401-408. The extent of the site is within the Study Area, however it is unlikely that the open artefact scatters or isolated finds with associated PAD would be impacted by mine subsidence (MSEC 2021)

4.3.3 Predicted Subsidence Impacts and Environmental Consequences

MSEC (2021) reviewed the maximum predicted subsidence parameters for each of the Aboriginal heritage sites located within the Study Area as provided in **Table 4**. **Table 4** provides a summary of the maximum predicted values of total conventional subsidence, tilt and curvature for the Aboriginal heritage sites, resulting from the extraction of Longwalls 401 to 408 for the Extraction Plan Layout.

Table 4 Maximum Predicted Subsidence, Tilt and Curvature for Aboriginal Heritage Sites within the Study Area due to the Extraction of Longwalls 401-408

Site Type	Maximum Predicted Subsidence ^{1, 2} (mm)	Maximum Predicted Tilt ³ (mm/m)	Maximum Predicted Hogging Curvature ⁴ (km ⁻¹)	Maximum Predicted Sagging Curvature ⁴ (km ⁻¹)
Artefacts	1850	35	2.8	0.95
Artefacts (Isolated Find)	1900	30	2.9	0.90
Artefacts and PAD	1750	35	2.7	0.90
Shelter	80	5	0.1	<0.01
Shelter with Artefacts	1850	35	2.9	1.1
Shelter with Art, Artefacts, and Grinding Grooves (S1MC280)	150	4	0.25	<0.01
Shelter with Artefacts and PAD	1500	35	2.4	0.85
Shelter with Grinding Groove, Artefact, and PAD	1150	30	1.8	0.6
Shelter with PAD	1900	40	2.9	1.0

Source: MSEC (2021).

mm/m = millimetres per metre, km⁻¹ = 1/kilometres.

¹ Subsidence refers to vertical displacements of the ground.

² Maximum Predicted Total Conventional Subsidence for Longwalls 401-408 based on the Maximum Subsidence due to the Extraction Plan Layout after Longwall 408.

³ Tilt is the change in the slope of the ground as a result of differential subsidence, and is calculated as the change in subsidence between two points divided by the distance between those two points.

⁴ Curvature is the second derivative of subsidence, the rate of change of tilt, and is calculated as the change in tilt between two adjacent sections of the tilt profile divided by the average length of those sections.

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The predicted strains for the Aboriginal heritage sites is provided in **Table 5**. The values have been provided for conventional movements (based on 10 times the curvature) and for non-conventional anomalous movements.

Table 5 Predicted Strains for the Aboriginal Heritage Sites based on Conventional and Non Conventional Anomalous Movements

Type	Conventional based on 10 times Curvature (mm/m)	Non-Conventional based on the 95% Confidence Level (mm/m)	Non-Conventional based on the 99% Confidence Level (mm/m)
Tension	25	10	22
Compression	9	13	31

Source: MSEC (2021). % = percent.

MSEC (2021) compared the maximum predicted subsidence impacts on Aboriginal heritage sites due to the extraction of Longwalls 401-408 based on the Extraction Plan Layout with the maximum predictions due to the extraction of the Approved Layout. This comparison is provided in **Table 6**.

Table 6 Comparison of Maximum Predicted Conventional Subsidence Parameters for Aboriginal Heritage Sites based on the Approved Layout and the Extraction Plan Layout

Layout	Maximum Predicted Total Conventional Subsidence (mm)	Maximum Predicted Total Conventional Tilt (mm/m)	Maximum Predicted Total Conventional Hogging Curvature (km^{-1})	Maximum Predicted Total Conventional Sagging Curvature (km^{-1})
Approved Layout	1900	40	2.9	1.0
Extraction Plan Layout	1900	40	2.9	1.0

Source: MSEC (2021).

This comparison shows that the maximum predicted total conventional subsidence, tilt and curvature for the Aboriginal heritage sites, based on the Extraction Plan Layout, are same the predicted maxima for the Approved Layout.

MSEC (2021) concluded that Aboriginal heritage impacts associated with the Extraction Plan Layout would be similar to the predicted impacts of the Approved Layout. In summary:

- Aboriginal heritage sites 264, 282, 283, 286 and 287 are located to the north of the Study Area and are unlikely to experience impacts due to the extraction of Longwalls 401 to 408.
- Site 280 includes a rock shelter with hand stencils, artefacts and grinding grooves and is located centrally above the chain pillar between Longwalls 402 and 403.
- The predicted total vertical subsidence at Site 280 is 150 mm and total tilt is 4.0 mm/m (i.e. 0.4 %, or 1 in 250). The site is unlikely to be impacted by this magnitude of tilt. The site will experience hogging curvature due to the extraction of Longwalls 402 and 403. The maximum predicted total hogging curvature during or after the extraction of the longwalls is 0.25 km^{-1} , which equates to a radius of curvature of 5 km. The site is located in a net tensile zone. The

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predicted tensile strain based on 10 times hogging curvature is 2 mm/m. Tensile strains of greater than approximately 0.5 mm/m are considered to be sufficient to result in tensile cracking of sandstone. The rock shelter is an isolated site within a small area of steep slopes at a topographical high point. The risk of subsidence impacts to Site 280 is low to moderate consistent with the approved impacts, and includes tensile cracks and instabilities. Large scale failure of the rock shelter is not expected to occur and the likelihood of tensile cracks coinciding with the location of the grinding grooves is considered to be low.

- Open sites containing artefact scatters and isolated finds can potentially be affected by cracking of the surface soils as a result of mine subsidence movements. It is unlikely that the scattered artefacts or isolated finds themselves would be impacted by surface cracking.
- Whilst it is unlikely that the scattered artefacts or isolated finds themselves would be impacted by mine subsidence, it is possible that, if remediation works to the surface areas around the Aboriginal heritage sites was required after mining, these works could potentially impact on the Aboriginal heritage sites.
- Rock shelters and overhangs in the Study Area and above the extracted longwalls are predicted to be subject to similar impacts as described for minor cliffs (i.e. potential for fracturing of sandstone and subsequent rockfalls).

4.4 HISTORICAL HERITAGE SITES

The management of historical heritage sites is undertaken in accordance with the Moolarben Coal Complex Heritage Management Plan. There are no historical heritage sites listed within Project Approval (05_0117) associated with UG4 Longwalls 401- 408 requiring management actions.

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5.0 PERFORMANCE MEASURES AND PERFORMANCE INDICATORS

This LW401-408 HMP has been developed to manage the potential environmental consequences of the secondary extraction of Longwalls 401-408 on Aboriginal and historic heritage in accordance with Condition 77(k), Schedule 3 of Project Approval (05_0117).

In accordance with Condition 73, Schedule 3 of Project Approval (05_0117), MCO must ensure that there is no exceedance of the subsidence impact performance measures listed in Table 14. Subsidence impact performance measures relevant to Aboriginal and historical heritage sites in the Longwalls 401-408 Study Area are listed in **Table 7**.

Table 7 Heritage Subsidence Impact Performance Measures

Feature	Subsidence Impact Performance Measure
Aboriginal heritage sites 264, 282, 283, 286 and 287	Reduce the likelihood of subsidence damage to low
Aboriginal heritage site 280	Reduce the likelihood of subsidence damage to moderate
Historic heritage sites	No greater subsidence impacts or environmental consequences than predicted in the EA

Source: Table 14 of Condition 731, Schedule 3 of Project Approval (05_0117).

Aboriginal heritage sites S1MC264, 282, 283, 286 and 287 are located to the north of the Study Area and the likelihood of impacts to these features is considered to be very low. The subsidence impact performance measure relevant to Aboriginal heritage sites S1MC264, 282, 283, 286 and 287 of *reduce the likelihood of subsidence damage to low* is therefore expected to be maintained.

Aboriginal Site S1MC280 includes a rock shelter, art, artefacts and grinding grooves and is located centrally above the chain pillar between Longwalls 402 and 403. The risk of subsidence impacts to Site 280 has been reduced from high to low to moderate consistent with the approved impacts, and includes tensile cracks and instabilities. Large scale failure of the rock shelter is not expected to occur and the likelihood of tensile cracks coinciding with the location of the grinding grooves and art is considered to be low. Therefore the subsidence impact performance measure of *reduce the likelihood of subsidence damage to moderate* is expected to be maintained.

Section 6 describes the monitoring that will be conducted to assess the UG4 Underground Mine against the relevant subsidence impact performance measures for Aboriginal heritage.

Section 7 describes the contingency measures to be implemented, in the event that monitoring results indicate an increased likelihood of moderate damage to S1MC280.

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6.0 MONITORING AND MANAGEMENT

6.1 BASELINE RECORDING

A pre-mining baseline record will be obtained prior to the commencement of secondary extraction beneath each site in accordance with **Table 8**. All other Aboriginal heritage rock shelter sites (and other known Aboriginal heritage sites) within the Longwalls 401-408 Study Area are considered to have been sufficiently recorded.

Where required, the baseline recording would include, at a minimum:

- a photographic record of the site;
- a detailed scaled plan of the site including physical characteristics and features; and,
- detailed information regarding the dimensions, composition and features of the site.

6.2 MONITORING AND MANAGEMENT OF ABORIGINAL HERITAGE SITES

A framework for the management of Aboriginal Heritage sites within the approved Moolarben Coal Complex has been developed as part of the Moolarben Heritage Management Plan (MCO 2020) based on the sites assessed significance, site type and the nature of proposed impacts. This management framework provides a robust system for managing subsidence impacts within LW401-408. Niche (2021) have prepared a summary of the management requirements and recommendations for Aboriginal heritage sites within the Study Area (**Table 8**), that aligns with the HMP.

Table 8 Summary of management requirements for Aboriginal heritage sites UG4 LW401-408

AHIMS	Site Name	Site Type	Scientific Significance	Management Requirements
36-3-1071	S1MC256	Shelter with Artefacts	Low	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)
36-3-1072	S1MC257	Artefacts	Low	Ground disturbance permit process
36-3-1073	S1MC258	Artefacts	Low	Ground disturbance permit process
36-3-1074	S1MC259	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-1075	S1MC260	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-1076	S1MC261	Shelter with Artefacts	Low	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)
36-3-1077	S1MC262	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-1086	S1MC271	Shelter with Artefacts	Moderate	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)

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AHIMS	Site Name	Site Type	Scientific Significance	Management Requirements
36-3-1088	S1MC273	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-0042	S1MC280; Ulan Creek 2	Shelter with Art, Artefacts and Grinding Grooves	High	<p>A baseline recording has been completed for the site.</p> <p>Undertake detailed recording of art (Section 5.5.2 of the HMP). It is recommended this included detailed photography and photogrammetry. Consideration should be given to the geochemical analysis of art pigments where supported by the RAPs.</p> <p>Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP) and, if required, archaeological excavation (Section 5.6 of the HMP) prior to extraction.</p> <p>Undertake a detailed archival recording of grinding grooves through means such as photography, photogrammetry, and 3D scanning prior to extraction. If supported by RAPs usewear and residue analysis of grinding surfaces should be undertaken during detailed archival recording phase.</p> <p>Implement further management and engineering controls such cutting stress relief slots in the sandstone outcrop away from the site in consultation with RAPs.</p>
36-3-1104	S1MC290	Shelter with Artefacts	Low	<p>Baseline recording prior to extraction.</p> <p>Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)</p>
36-3-1105	S1MC291	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-1108	S1MC294	Shelter with Artefacts	Low	<p>Baseline recording prior to extraction.</p> <p>Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)</p>
36-3-1415	S1MC321 (NB9)	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-1416	S1MC322 (NB10)	Artefacts and PAD	Moderate	Ground disturbance permit process
36-3-3304	S1MC356b	Artefacts (Isolated Find)	Low	Ground disturbance permit process
36-3-3305	S1MC358b	Shelter with PAD	Low	<p>Baseline recording has been completed for this site.</p> <p>Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)</p>
36-3-3799	S1MC464	Artefacts	Moderate	Ground disturbance permit process
36-3-3800	S1MC465	Artefacts and PAD	Moderate	Ground disturbance permit process
36-3-3804	S1MC466*	Shelter with Artefacts and PAD	Moderate	Baseline recording prior to extraction.

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AHIMS	Site Name	Site Type	Scientific Significance	Management Requirements
				Where impacts are deemed likely to occur, undertake surface collection (Section 5.5)
36-3-3801	S1MC468	Shelter with Artefacts and PAD	Low	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP)
36-3-3802	S1MC471	Shelter with PAD	Low	Unmitigated impact
36-3-3803	S1MC472	Shelter with Artefacts and PAD	Low	Where impacts are deemed likely to occur, undertake surface collection prior to extraction prior to extraction (Section 5.5 of the HMP)
36-3-3798	S1MC473	Shelter with PAD	Low	Unmitigated impact
36-3-3785	S1MC474	Shelter with Artefacts and PAD	Moderate	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP) and, if required, archaeological excavation (Section 5.6) prior to extraction
36-3-3786	S1MC475	Shelter with Grinding Grooves, Artefact and PAD	Moderate	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP) and, if required, archaeological excavation (Section 5.6) prior to extraction. Where impacts are likely to the grinding groove, archival recording through means such as photography, photogrammetry or 3D scanning should be undertaken prior to extraction.
36-3-3796	S1MC478	Artefacts	Moderate	Ground disturbance permit process
36-3-3787	S1MC479	Artefacts and PAD	Low	Ground disturbance permit process
Pending	S1MC483	Shelter with PAD	Low	Unmitigated impact
36-3-3788	S1MC484	Shelter with Artefacts	Low	Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)
36-3-3795	S1MC485	Shelter with PAD	Low	Unmitigated impact
36-3-3789	S1MC486	Shelter with PAD	Low	Unmitigated impact
36-3-3794	S1MC487	Shelter	Low	Unmitigated impact
36-3-3790	S1MC488	Shelter with Artefacts and PAD	Low	Where impacts are deemed likely to occur, undertake surface collection prior to extraction (Section 5.5 of the HMP)
36-3-3791	S1MC490	Shelter with PAD	Low	Unmitigated impact
36-3-3792	S1MC491	Shelter with PAD	Moderate	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP) and, if required, archaeological excavation (Section 5.6) prior to extraction
36-3-3793	S1MC494	Shelter with Artefacts and PAD	Moderate	Baseline recording prior to extraction. Where impacts are deemed likely to occur, undertake surface collection (Section 5.5 of the HMP) and, if required, archaeological excavation (Section 5.6 of the HMP) prior to extraction

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* S1MC466 The shelter is located outside of the Study Area for Longwalls 401-408. The extent of the site is within the Study Area, however it is unlikely that the open artefact scatters and PAD themselves would be impacted by mine subsidence (MSEC 2021)

6.2.1 Ground Disturbance and Permit Process

In the event that, any surface disturbance works are required (e.g. in relation to subsidence remediation activities), MCO must apply the ground disturbance permit process outlined in the currently approved HMP.

6.2.2 Monitoring of Aboriginal Heritage sites

Section 5.9.1 of the HMP states that:

Monitoring of potential subsidence impacts will be undertaken for a number of rock shelter and open grinding groove sites (unless previously salvaged), in order to identify and document whether any subsidence impacts have arisen from mining. Monitoring of the above sites will involve the following:

- *MCO will engage an appropriately qualified expert to monitor the Aboriginal archaeological sites described as requiring monitoring. This may include the establishment of a percentage estimate of the likelihood of subsidence occurring in sensitive areas.*
- *Where insufficient pre-existing information is available for any of the specific Aboriginal archaeological sites to permit comparison with the condition post-mining, more detailed recording will occur prior to undermining.*
- *Monitoring will involve inspecting and recording the condition of these specific Aboriginal archaeological sites within three to six months after undermining has occurred. Each inspection will involve recording of data on environmental conditions, pre-existing human and natural impacts, heritage evidence present and any identified changes to these environmental and heritage conditions compared with previous inspections. The potential cause (subsidence or other impacts) of changes to the condition of individual sites will be assessed.*
- *Monitoring will be focussed on the features of the site that make it significant (e.g. grooves, art, artefacts and/or PAD).*
- *A report documenting the results of monitoring will be prepared that details the methodology of the inspections, conditions of the environment and Aboriginal heritage evidence at the relevant sites, comparisons with previously reported conditions at each site, identification of any natural and/or human impacts during the intervening period, identification of any implications for the ongoing management and protection of Aboriginal heritage evidence at the Moolarben Coal Complex, and documentation of the actual impacts of operations on the Aboriginal archaeological sites.*
- *Copies of this report will be distributed to the RAPs, OEH and the DPIE and a summary included in the Annual Review.*

Monitoring for subsidence related impacts will occur within three to six months of undermining (unless salvaged). If, during the above monitoring, significant subsidence impacts are identified, then the salvage and excavation procedures outlined in **Section 6.2.3** will be considered. Monitoring and/or salvage and/or excavation would only occur where safe to do so, as determined in consultation with relevant MCO safety personnel.

For the purpose of determining what constitutes a significant subsidence impact on Aboriginal heritage sites, a site is considered to be “affected by significant subsidence impacts” if it exhibits one or more of the following consequences that cannot be attributed to natural weathering or deterioration:

- overhang collapse;

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- cracking of sandstone that coincides with the feature(s) of the site that make it significant; and
- rock fall that damages the feature(s) of the site that make it significant.

6.2.3 Surface Collection and Excavation

Salvage and test excavation of Aboriginal heritage sites (refer to **Table 8**) will be undertaken prior to extraction in consultation with a suitably qualified archaeologist. Monitoring and/or salvage and/or excavation would only occur where safe to do so, as determined in consultation with relevant MCO safety personnel. Protocols for the salvage and excavation of Aboriginal heritage sites are detailed in sections 5.6.1 and 5.6.2 of the complex-wide HMP as follows:

Aboriginal archaeological sites that are considered to hold research potential and are scheduled to be impacted will undergo a two-phase program of archaeological excavation. This program will include an initial exploratory phase followed, when warranted, by a more targeted investigation of the site's research potential as follows:

1. *initial subsurface testing using one or more linear transects of hand excavated, regularly-spaced shovel test pits (Section 5.6.1); and*
2. *controlled salvage excavation of areas with high research potential as identified through Phase 1 (the initial subsurface testing) (Section 5.6.2).*

If the initial program of shovel test pits determines that the site does not hold high scientific significance in accordance with the Burra Charter (Australia ICOMOS 1999) and the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011), then the second phase of investigation (i.e. open area excavation) will not be undertaken. For instance, if initial subsurface testing revealed evidence of poor spatial integrity at the site (e.g. ground disturbance, sheet erosion) or few subsurface artefacts, there will remain little value in a more detailed scientific investigation of the site through controlled salvage excavation.

Initial Subsurface Testing

The objective of the initial phase of the archaeological excavation program is to determine the nature, extent and composition of each site. Data collected during this phase will be used to inform the need for a further controlled salvage excavation phase (where required), which is designed to target in situ concentrations of sub-surface cultural deposits.

Following the initial subsurface testing (shovel test pits), any sites that reveal poor spatial integrity, significant ground disturbance, shallow soil profiles and/or few subsurface cultural material, will not be subject to further subsurface investigation (i.e. the second phase of more detailed investigation and controlled salvage excavation will not occur).

Initial subsurface testing will be undertaken as follows:

- *One or more transects of shovel test pits spaced no more than 20 m apart will be excavated along the length and/or width of the site (as determined from surface expression of artefacts). Areas of grossly modified terrain (e.g. dams) will be excluded from the sampling process.*
- *Approximately 0.5 m x 0.5 m (0.25 square metres [m²]) test pits will be dug by hand (shovel) at each designated shovel test pit point (approximately 20 m apart along the length of the transect).*
- *For the initial subsurface testing, all excavated material will be sieved through 5 millimetre (mm) aperture screens.*
- *The number of transects and shovel test pits may be reduced depending on the nature and scale of the site being assessed, subject to advice from a suitably qualified and experienced archaeologist and in consultation with the attending RAPs.*
- *The spacing of transects and shovel test pits may be reduced depending on the nature and scale of the site being assessed, subject to advice from a suitably qualified and experienced archaeologist and in consultation with the attending RAPs. For example, when undertaking test pits within a rockshelter, testing will be undertaken in closer proximity.*

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Controlled Salvage Excavation

Where controlled salvage excavation is determined to be warranted in consultation with a suitably qualified and experienced archaeologist and the attending RAPs, the following process will be generally implemented at a level appropriate to the extent and nature of the site:

- *Controlled salvage excavation will be undertaken by a suitably qualified archaeologist(s), with assistance provided by the RAPs.*
- *All excavation will be carried out manually using trowels, shovels and mattocks (where appropriate).*
- *Open area excavation will proceed in 1 m² units.*
- *All excavation units (i.e. shovel test pits and open area 1 x 1 m² squares) will be assigned an alpha-numeric identifier.*
- *The first excavation unit will be excavated and documented in 5 cm spits at each area – either PAD or site – being investigated. Based on the evidence of the first excavation unit, 10 cm spits or sediment profile/stratigraphic excavation (whichever is smaller) may then be implemented.*
- *Excavation will cease at culturally sterile units or bedrock in all instances – the identification of sterile stratigraphic units will draw upon a geomorphological understanding of the wider Moolarben Coal Complex.*
- *Photographic and/or scale-drawn records of exposed soil profiles in open area excavations will be made.*
- *If specific archaeological features (e.g. hearths) are identified, the entire feature will be excavated and recorded prior to the continuation of excavation. Features will be photographed and scale plans drawn.*

6.3 SUBSIDENCE PARAMETERS

Subsidence parameters will be measured in accordance with the UG4 Longwalls 401-408 Subsidence Monitoring Program. In summary, surveys will be conducted to measure subsidence movements in three dimensions using a total station survey instrument. Subsidence movements will be measured along subsidence lines that have been positioned across the general landscape.

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7.0 CONTINGENCY PLAN

In the event a performance measure detailed in **Section 5** is considered to have been exceeded, MCO will implement the following Contingency Plan (detailed in section 9.0 of the complex-wide HMP):

- The Environmental and Community Manager will report the exceedance to the General Manager within 24 hours of assessment completion.
- In the event that the incident has caused, or threatens to cause, material harm to the environment, MCO will report the exceedance of the performance to the DPIE and Heritage NSW Department Premier and Cabinet (Heritage NSW) immediately. All other incidents will be reported to the DPIE and Heritage NSW as soon as practicable after MCO becomes aware of the incident.
- MCO will identify an appropriate course of action with respect to the identified impact(s), in consultation with specialists, RAPs (in relation to Aboriginal archaeological sites) and relevant agencies, as necessary. For example, identification of proposed contingency measure(s) and a program to review the effectiveness of the contingency measures. Contingency measures will be developed in consideration of the specific circumstances of the exceedance and the assessment of environmental consequences.
- MCO will, on request, submit the proposed course of action to the DPIE for approval.
- MCO will implement the approved course of action to the satisfaction of the DPIE.
- MCO will provide a detailed report on the exceedance of the performance measures to the DPIE and Heritage NSW within 7 days of the date of becoming aware of the exceedance.
- MCO will report the exceedance of the performance measure and the success of the approved course of action as a component of the Annual Review (detailed in section 10 of the complex-wide HMP).

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8.0 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

8.1 ANNUAL REVIEW

In accordance with Condition 4, Schedule 5 of Project Approval (05_0117) (as modified), MCO will conduct an Annual Review of operations conducted at the Moolarben Coal Complex (including the performance of this LW401-408 HMP) prior to 31 March for the preceding calendar year.

The Annual Review will:

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

In accordance with Condition 11, Schedule 5 of Project Approval (05_0117), the Annual Review will be made publicly available on the MCO website. As described in **Section 2**, this LW401-408 HMP will be reviewed within three months of the submission of an Annual Review, and, if necessary, revised to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

8.2 AUDITS

In accordance with Condition 9, Schedule 5 of Project Approval (05_0117), an independent environmental audit was conducted by the end of December 2015 and every three years thereafter. A copy of the independent environmental audit will be provided to the Secretary of the DPIE and made available on the MCO website.

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

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As described in **Section 2**, this LW401-408 HMP will be reviewed within three months of the submission of an independent environmental audit, and, if necessary, revised to ensure the plan is updated on a regular basis and to incorporate any recommended measures to improve environmental performance.

8.3 FUTURE EXTRACTION PLANS

In accordance with Condition 77(p), Schedule 4 of Project Approval (08_0117), MCO will collect baseline data for future Extraction Plans. In addition to the baseline data collection, consideration of the environmental performance and management measures, in accordance with the review(s) conducted as part of this LW401-408 HMP, will inform the appropriate type and frequency of monitoring of the assets relevant to the next Extraction Plan.

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9.0 INCIDENTS

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

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

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

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

MCO will notify the Secretary of DPIE and any other relevant agencies of any incident associated with the UG4 Underground Mine which causes or threatens to cause material harm to the environment immediately after MCO confirms that an incident has occurred. For any other incident associated with the UG4, MCO will notify the Secretary and any other relevant agencies as soon as practicable after becoming aware of the incident. Within seven days of the date of the incident, MCO will provide the Secretary of DPIE and any relevant agencies with a detailed report on the incident. The report will:

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

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10.0 COMPLAINTS

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

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

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

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

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

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11.0 NON-COMPLIANCE WITH STATUTORY REQUIREMENTS

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

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

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

As described in **Section 10**, MCO will notify the Secretary of the DPIE and any other relevant agencies of any incident associated with MCO immediately after MCO becomes aware of the incident. Within seven days of the date of the incident, MCO will provide the Secretary of the DPIE and any relevant agencies with a detailed report on the incident.

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

The Annual Review will be made publicly available on the MCO website.

As described in **Section 8.2**, an independent environmental audit was conducted by the end of December 2015 and undertaken every three years thereafter. A copy of the audit report will be submitted to the Secretary of the DPIE and made publicly available on the MCO website.

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12.0 REFERENCES

- Department of Environment, Climate Change and Water (2010a). Aboriginal cultural heritage consultation requirements for proponents 2010.
- Department of Environment, Climate Change and Water (2010b). Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.
- Department of Environment, Climate Change and Water (2010c). Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.
- Department of Planning and Environment and NSW Trade & Investment – Division of Resources and Energy (2015) *Guidelines for the Preparation of Extraction Plans Required under Conditions of Development Consents, Project Approvals and Mining Lease Conditions for Underground Coal Mining*. Version 5. Draft.
- Hamm, G (2006) *Moolarben Coal Project - Aboriginal Cultural Heritage Assessment Report*. Report to Moolarben Coal Mines Pty Ltd.
- Hamm, G (2008) *Aboriginal Heritage Plan for MCP Stage 1 Development Areas: Open Cut 1 and Main Infrastructure Area*. Report Prepared for Moolarben Coal Mine.
- Kuskie, P (2013) *Moolarben Coal Project – Stage 1 Optimisation Modification, Near Ulan, Central Tablelands of New South Wales: Aboriginal Cultural Heritage Assessment*. Report to Moolarben Coal.
- Mine Subsidence Engineering Consultants (2021) *Subsidence Predictions and Impact Assessment for Longwalls 401 to 408* (MSEC, 2021)
- Niche Environment and Heritage (2021) *Moolarben Coal UG4 Longwalls 404-408 Extraction Plan Aboriginal Cultural Heritage Technical Report*.
- NSW Office of Environment and Heritage (2011). Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW

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ATTACHMENT 1

CONDITIONS 38-39, SCHEDULE 3 OF PROJECT APPROVAL (05_0117)

Condition 77(k), Schedule 3 of Project Approval (05_0117) requires that the UG4 Longwalls 401 to 408 Heritage Management Plan “reflects all requirements under conditions 38-39 of Schedule 3”. These requirements are covered by the complex-wide Heritage Management Plan (complex-wide HMP). Table A-1 indicates where each component of the conditions is addressed within the complex-wide HMP.

Table A-1: Project Approval (05-0117) Requirements

New South Wales Project Approval Condition	Complex-wide HMP Section
<p>Protection of Aboriginal Heritage Items</p> <p>38. Unless otherwise authorised under the NP&W Act, the Proponent shall ensure that the project does not cause any direct or indirect impact on the identified Aboriginal heritage items located outside the approved disturbance area of the project.</p> <p>Note: Identified Aboriginal heritage items are listed in Appendix 9. The details in Appendix 9 are subject to revision following ongoing survey and assessment in accordance with the Heritage Management Plan required under this Project Approval</p>	Section 5
<p>Heritage Management Plan</p> <p>39. The Proponent shall prepare and implement a Heritage Management Plan for the project to the satisfaction of the Secretary within six (6) months from the date of approval for MOD 9. This plan must:</p> <p>(a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;</p> <p>(b) be prepared in consultation with BCD and the Aboriginal stakeholders (in relation to the management of Aboriginal heritage values);</p> <p>(c) include results of further archaeological survey of the 10 hectares of land (as identified on Figure 10 of Appendix F of the EA) that has not been surveyed, and any land adjacent to the open cut mines that has not been surveyed and may be subject to blasting impacts;</p> <p>d) include the following for the management of Aboriginal Heritage:</p> <ul style="list-style-type: none"> • detailed archaeological test excavation and potential salvage program for site S1MC331; • a detailed archaeological test excavation and potential salvage program for sites S1MC343 and S1MC344, if it is determined by a qualified archaeologist that these sites may be subject to impacts associated with blasting; • a description of the measures that would be implemented for: <ul style="list-style-type: none"> - protecting, monitoring and/or managing the heritage sites/items identified in the EA and any sites identified during the surveys required in (c) above; - conserving the sites outside the surface disturbance area, including measures that would be implemented to secure, analyse and record the sites at risk of subsidence and/or blasting; - managing the discovery of any human remains or previously unidentified Aboriginal objects on site; - maintaining and managing reasonable access for Aboriginal stakeholders to heritage items on site; - ongoing consultation with the Aboriginal stakeholders in the conservation and management of Aboriginal cultural heritage both on site and within any Aboriginal heritage conservation areas; and - ensuring any workers on site receive suitable heritage inductions prior to carrying out any development on site, and that suitable records are kept of these inductions; • a strategy for the storage of any heritage items salvaged on site, both during the project and in the long term; 	<p style="text-align: center;">Section 1.2</p> <p style="text-align: center;">Section 1.4</p> <p style="text-align: center;">Tables 2 and 6, Appendices C and D</p> <p style="text-align: center;">Condition Satisfied¹</p> <p style="text-align: center;">Condition Satisfied¹</p> <p style="text-align: center;">Section 5</p> <p style="text-align: center;">Section 5.2, Table 6 and Appendix D Sections 5.10 and 5.11</p> <p style="text-align: center;">Section 5.16</p> <p style="text-align: center;">Sections 1.4 and 5.1</p> <p style="text-align: center;">Section 7</p> <p style="text-align: center;">Section 5.13</p>

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(e) include a detailed plan for the implementation of the mitigation and management measures outlined for the specified heritage items in Appendix 9, including archival recording, historical research and archaeological assessment prior to any disturbance.

Section 6

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