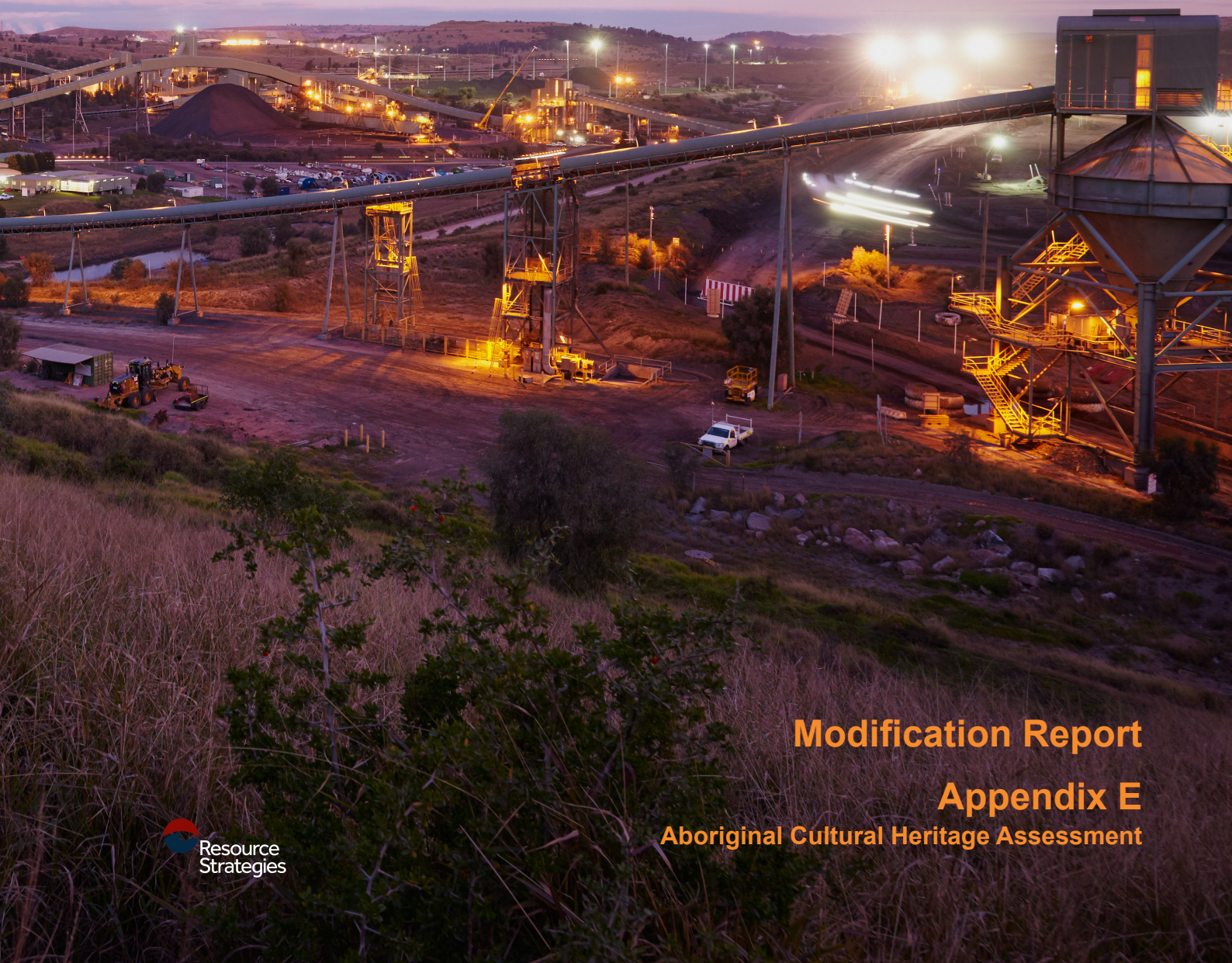




# MT ARTHUR COAL MINE MODIFICATION 2



**Modification Report**

**Appendix E**

**Aboriginal Cultural Heritage Assessment**



**Aboriginal Cultural Heritage Assessment Report**  
**Mt Arthur Coal Mine Modification 2**  
Muswellbrook Shire LGA

Prepared for Hunter Valley Energy Coal (HVEC)

Prepared by Niche Environment & Heritage Pty Ltd | 12 September 2023





## Document control

Project number	Client	Project manager	LGA
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## Acknowledgement of Country

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Niche would like to pay our respects to the Elders past, present and emerging of the Wanaruah/Wonnarua people on whose land this Aboriginal Cultural Heritage Assessment was undertaken and acknowledge their continuing connection to the land and care for Country.



### Project outline

Niche Environment and Heritage Pty Ltd (Niche) was commissioned by Hunter Valley Energy Coal Pty Ltd (HVEC) to prepare an Aboriginal Cultural Heritage Assessment (ACHA) report for the proposed Modification to the currently approved Mt Arthur Coal Mine (MAC). The MAC is an open cut thermal coal mine situated approximately 5 kilometres (km) south-west of Muswellbrook in the Muswellbrook Local Government Area in the Upper Hunter Valley of New South Wales (NSW). The MAC is owned and operated by HVEC, a wholly owned subsidiary of BHP.

Mining operations at the MAC are currently approved until 30 June 2026, in accordance with Project Approval MP 09\_0062 as modified (Project Approval). In June 2022, HVEC announced a decision to cease mining at the MAC in 2030, as part of a plan to provide a pathway to closure of the operation. Accordingly, HVEC is seeking a modification of the Project Approval to approve a four-year extension of mining operations at the MAC until 30 June 2030 and other associated changes (the Modification).

This report presents the ACHA for the Modification. The ACHA covers an area of approximately 35 hectares (ha) located in the north-western extent of the MAC, within existing Mining Lease (ML) 1487, ML 1358 and ML 1548 (Subject Area). The Subject Area was initially identified as an area where new disturbance would need to occur as part of the Modification, and is the only area within which new disturbance is proposed. A new surface disturbance area (Modification New Disturbance Area) has been defined within the Subject Area which covers a total of 25 ha. The remaining 10 ha of land within the Subject Area is no longer proposed for disturbance by the Modification, following a review by HVEC of preliminary environmental survey outcomes (i.e. including preliminary findings associated with this ACHA).

This ACHA has been prepared to identify Aboriginal heritage cultural values and assess the potential impacts of the Modification on any Aboriginal cultural heritage sites.

### Consultation

Aboriginal community consultation was undertaken with 72 Aboriginal groups who identified themselves as Registered Aboriginal Parties (RAPs) through the consultation process following the *Aboriginal cultural heritage consultation requirements for proponents 2010* (the Department of Environment, Climate Change and Water (DECCW) 2010a) and/or have been previously identified by HVEC as an Aboriginal Stakeholder Group with an interest in the MAC.

Aboriginal community consultation for the Modification began 13 October 2022 and is captured and evidenced throughout this report and Appendix 1 and Appendix 2.

### Objectives

This ACHA has been prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (Office of Environment and Heritage (OEH) 2011). This ACHA report forms part of the Modification Report and is designed to manage and mitigate harm to Aboriginal objects and cultural heritage values within the Modification New Disturbance Area.



As part of this ACHA, an Aboriginal cultural heritage survey program was completed within the Subject Area by Niche and representatives of the RAPs in compliance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b, the 'Code of Practice'). The results of the archaeological assessment are presented in Section 5 and 6 and have been considered in this ACHA when assessing the likely harm of the Modification on the Aboriginal objects present within the Modification New Disturbance Area.

The Modification is being sought under section 4.55 (2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

## Summary of results

A desktop search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 6 December 2022 covering the Subject Area and surrounding landscape within a 2 km radius.

A physical survey program was also completed within the Subject Area. In total, 11 new Aboriginal cultural heritage sites were identified within or in close proximity to the Subject Area during the physical survey completed by Niche and representatives of the RAPs. These are outlined in Table ES-1 below.

**Table ES-1 Aboriginal cultural heritage sites situated within or in proximity to the Subject Area**

AHIMS ID	Site name	Location	Site type	Within the Modification New Disturbance Area?
AHIMS #33-2-0047	MAC-AS-1	Within the Subject Area	Artefact Scatter	Yes
AHIMS #33-2-0050	MAC-AS-2	Within the Subject Area	Artefact Scatter	No
AHIMS #33-2-0049	MAC-AS-3	Within the Subject Area	Artefact Scatter	Yes
AHIMS #33-2-0048	MAC-AS-4	Within the Subject Area	Artefact Scatter with Potential Archaeological Deposit (PAD)	No
AHIMS #33-2-0051	MAC-AS-5	Within the Subject Area	Artefact Scatter	No
AHIMS #33-2-0052	MAC-AS-6	Within the Subject Area	Artefact Scatter, PAD and Resource Site	No
AHIMS #33-2-0042	MAC-IF-1	Within the Subject Area	Isolated Find	Yes
AHIMS #33-2-0043	MAC-IF-2	Within the Subject Area	Isolated Find	No
AHIMS #33-2-0044	MAC-IF-3	Within the Subject Area	Isolated Find	No
AHIMS #33-2-0045	MAC-IF-4	Situated 5 m north of the Subject Area	Isolated Find	No
AHIMS #33-2-0046	MAC-IF-5	Situated 5 m west of the Subject Area	Isolated Find	No



## Summary of potential impacts

After implementing avoidance to the greatest extent possible, this assessment has determined that the Modification would directly impact and cause total harm to the following Aboriginal cultural heritage sites within the Modification New Disturbance Area: MAC-AS-1 (AHIMS ID#33-2-0047), MAC-AS-3 (AHIMS ID#33-2-0049) and MAC-IF-1 (AHIMS ID#33-2-0042). Notwithstanding the in-situ impacts on these sites, surface salvage collection would be undertaken prior to disturbance occurring. Additionally, potential indirect impacts to RPS MAC GG 1038 (AHIMS ID# 37-2-5833) would be avoided by fencing given its proximity to the Subject Area boundary.

Management of these Aboriginal cultural heritage sites should be conducted under the Aboriginal Heritage Management Plan (AHMP) (BHP 2022a).

All previously and newly recorded sites have no aesthetic values nor any specific educational opportunities.



## Conclusion and declaration

The following draft recommendations have been made by Niche, to be further discussed in consultation with RAPs:

Recommendations	
	Known Aboriginal sites
1.	Ongoing consultation should continue for the life of further mining operations at MAC. All RAPs should continue to be consulted in accordance with the AHMP.
2.	Update the current AHMP to include management considerations for the sites within the Modification New Disturbance Area.
3.	Where impacts cannot be avoided due to the Modification the following are required: <ul style="list-style-type: none"> <li>MAC-AS-1 (AHIMS ID #33-2-0047) – Community surface collection</li> <li>MAC-AS-3 (AHIMS ID #33-2-0049) – Community surface collection</li> <li>MAC-IF-1 (AHIMS ID #33-2-0042) – Community surface collection</li> </ul>
4.	A portion of the Aboriginal cultural heritage site MAC-AS-6 (AHIMS ID#33-2-0052) is located within the Existing Approved Disturbance Area. The procedures for reporting previously unrecorded Aboriginal cultural heritage sites, outlined in Section 9.6 of the AHMP, must be followed to ensure compliance with section 89A of the NPW Act.
5.	Temporary fencing should be installed around the site boundary for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) to ensure no harm occurs at the site during proposed adjacent works.
6.	Although it is not a requirement for the works to proceed, an Aboriginal Site Impact Recording Form (ASIRF) should be prepared for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) to amend the previously incorrect recording of the site and past disturbance/destruction of the site due to salvage works, based on recent observations during site survey.
	General
7.	This ACHA covers earthworks within the Modification New Disturbance Area only, and any earthworks proposed to be undertaken outside the Modification New Disturbance Area (and outside the Existing Approved Disturbance Area) should be subject to separate assessment.
8.	All workers should complete relevant mandatory Aboriginal Cultural heritage training and follow the Permit to Disturb procedure during works within the Modification New Disturbance Area.
9.	In the event that previously unrecorded sites are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the management of previously unrecorded sites as detailed in Section 9.6 of the AHMP must be followed.
10.	In the event that human remains (skeletal remains) are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the discovery of human remains as outlined in Section 9.7 of the AHMP must be followed.

## Glossary and list of abbreviations

Term or abbreviation	Definition
Aboriginal cultural heritage	The tangible (objects) and intangible (dreaming stories, legends and places) cultural practices and traditions associated with past and present-day Aboriginal communities.
ACHA	Aboriginal Cultural Heritage Assessment.
Aboriginal object(s)	The legal definition for material Aboriginal cultural heritage under the NSW <i>National Parks and Wildlife Act 1974</i> .
Aboriginal stakeholders	Members of a LALC, registered holders of Native Title, Aboriginal groups or other Aboriginal people who may have an interest in the Modification.
AHIMS	Aboriginal Heritage Information Management System.
AHIP	Aboriginal Heritage Impact Permit.
AHMP	Aboriginal Heritage Management Plan (BHP 2022a)
Archaeology	The scientific study of material traces of human history, particularly the relics and cultural remains of past human activities.
Archaeological deposit	A layer of soil material containing archaeological objects and/or human remains.
Archaeological investigation	The process of assessing the archaeological potential of an impact area by a qualified archaeologist.
Archaeological site	An area that contains surface or sub-surface material evidence of past human activity in which material evidence (artefacts) of past activity is preserved.
Artefact	An object made by human agency (e.g. stone artefacts).
ASIRF	Aboriginal Site Impact Recording Form
Assemblage	A group of artefacts found in close association with one another. Any group of items designated for analysis that exist in spatial and/or vertical context – without any assumptions of chronological or spatial relatedness.
Avoidance	A management strategy which protects Aboriginal sites within an impact area by avoiding them totally in development.
Code of Practice	<i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> .
Cumulative impacts	Combination of individual effects of the same kind due to multiple actions from various sources over time.
DECCW	The Department of Environment, Climate Change and Water, and now Heritage NSW within DPE.
DPE	The Department of Planning and Environment.
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW).
EPBC Act	<i>Environment Protection and Biodiversity Act 1999</i> (Cth).
Existing Approved Disturbance Area	The area currently approved for disturbance under the Project Approval.
Flake	A piece of stone detached from a core, displaying a bulb of percussion and striking platform.



Term or abbreviation	Definition
ha	Hectare.
Harm	With regard to Aboriginal objects this has the same meaning as the NPW Act.
Heritage NSW	Aboriginal cultural heritage regulator within the DPE. Responsible for the management of Aboriginal Cultural Heritage regulation functions under the NPW Act.
HVEC	Hunter Valley Energy Coal Pty Ltd, a subsidiary of BHP.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
In situ	Latin term meaning ‘on the spot, undisturbed’.
Isolated artefact / find	A single artefact found in an isolated context.
km	Kilometre.
Landscape character	The aggregate of built, natural and cultural aspects that make up an area and provide a sense of place. Includes all aspects of a tract of land – built, planted and natural topographical and ecological features.
Land unit	An area of common landform, and frequently with common geology, soils and vegetation types, occurring repeatedly at similar points in the landscape over a defined region. It is a constituent part of a land system.
Landform	Any one of the various features that make up the surface of the earth.
LALC	Local Aboriginal Land Council.
LEP	Local Environmental Plan.
LGA	Local Government Area.
MAC	Mt Arthur Coal Mine.
Loci	Specific points in space.
Management plans	Conservation plans which identify short- and long-term management strategies for all known sites recorded within a (usually approved) Subject Area.
Methodology	The procedures used to undertake an archaeological investigation.
Mitigation	To address the problem of conflict between land use and site conservation.
ML	Mining Lease.
Modification	The proposal to modify the Project Approval under s4.55(2) of the EP&A Act as described in section 1.2.
Modification New Disturbance Area	New surface disturbance area (25 ha) within the Subject Area.
Mtpa	Million tonnes per annum.
NPW Act	<i>National Parks and Wildlife Act 1974 (NSW).</i>
NPW Regulation	<i>National Parks and Wildlife Regulation 2019 (NSW).</i>
NSW	New South Wales
OEH	Office of Environment and Heritage, replaced by Heritage NSW.
Open camp site	An archaeological site situated within an open space (e.g. archaeological material located on a creek bank, in a forest, on a hill, etc.).
PAD	Potential Archaeological Deposit. A location considered to have a potential for subsurface archaeological material.

Term or abbreviation	Definition
Open camp site	An archaeological site situated within an open space (e.g. archaeological material located on a creek bank, in a forest, on a hill, etc.).
PAD	Potential Archaeological Deposit. A location considered to have a potential for subsurface archaeological material.
Project Approval	Project Approval MP 09_0062 as modified.
RAP	Registered Aboriginal Party.
ROM	Run-of-mine.
Site recording	The systematic process of collecting archaeological data for an archaeological investigation.
Site	A place where past human activity is identifiable.
Subject Area	The area of approximately 35 ha covered by the ACHA located in the north-western extent of the MAC, within existing ML 1487, ML 1358 and ML 1548.
Survey coverage	A graphic and statistical representation of how much of an impact area was actually surveyed and therefore assessed.



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## 1. Introduction

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### 1.1 Background to the Modification

The Mt Arthur Coal Mine (MAC) is an open cut thermal coal mine situated approximately 5 kilometres (km) south-west of Muswellbrook in the Muswellbrook Local Government Area (LGA) in the Upper Hunter Valley of New South Wales (NSW) (Figure 1). The MAC is owned and operated by Hunter Valley Energy Coal Pty Ltd (HVEC), a subsidiary of BHP.

Mining operations at the MAC are currently approved until 30 June 2026, in accordance with the Project Approval MP 09\_0062 as modified (Project Approval). In June 2022, HVEC announced a decision to cease mining at the MAC in 2030, as part of a managed plan to provide a pathway to closure of the operation. Accordingly, HVEC is seeking a modification of the Project Approval for a four-year extension of mining operations at the MAC until 30 June 2030 and other associated changes (the Modification).

Mining has been undertaken at the MAC since the 1960s, and it remains the largest individual coal mine in the Hunter Valley and NSW. The MAC has been subject to a previous modification application, whereby in 2013, HVEC submitted an application to modify the Project Approval to extend the mine life of the MAC (MOD 1), which was subsequently approved in September 2014. The approval of MOD 1 authorised the extraction of up to 32 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal from the open cut operations until 30 June 2026.

The Modification is being sought under section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This Aboriginal Cultural Heritage Assessment (ACHA) forms part of a Modification Report which has been prepared to support the Modification Application in consideration of the *State Significant Development Guidelines* (Department of Planning and Environment [DPE], 2022a), in particular *Appendix E – Preparing a Modification Report* (DPE, 2022b).

### 1.2 Modification Description

The Modification seeks to modify the Project Approval as follows:

- A four-year extension of mining activities to 30 June 2030.
- A reduction in the approved open cut mining rate from 32 Mtpa of ROM coal to a maximum of 25 Mtpa ROM coal (similar to current actual ROM coal production).
- A reduction in the cumulative open cut and underground ROM coal handling rate from 36 Mtpa to 29 Mtpa.
- A reduction in maximum total (open cut and underground) coal rail transportation from 27 Mtpa of product coal to 20 Mtpa, and a reduction in train movements from 30 to 20 movements per day.
- A minor extension of the approved disturbance area in the north-west corner of the operation predominantly to allow for access and ancillary infrastructure (Modification New Disturbance Area).
- An overall reduction (387 ha) in approved disturbance, as some previously approved disturbance areas are no longer intended to be disturbed.
- A revised final landform and final void configuration, including an overall reduction in the approved height of the northern overburden emplacement areas and the final landform (to reflect the current actual height).

The Modification would involve no change to:

- existing mining tenements;
- existing coarse rejects and tailings management;
- existing workforce;
- the existing explosives facility;
- existing site accesses;
- existing electricity supply and distribution;
- existing offset and rehabilitation objectives;
- existing services, plant and equipment;
- the existing hours of operation and associated activities (undertaken 24 hours per day, seven days a week).

A detailed description of the Modification is included in Section 3 of the Modification Report which has been informed by the outcomes of environmental assessment and stakeholder engagement.

The MAC is managed in accordance with the approved Aboriginal Heritage Management Plan (BHP 2022a) (AHMP). The AHMP assists HVEC to mitigate the impacts of its operations on Aboriginal cultural heritage, complies with the requirements of the *National Parks and Wildlife Act 1974* (NPW Act) and the EP&A Act and regulates the consultation required with the Aboriginal community.

### 1.3 Subject Area

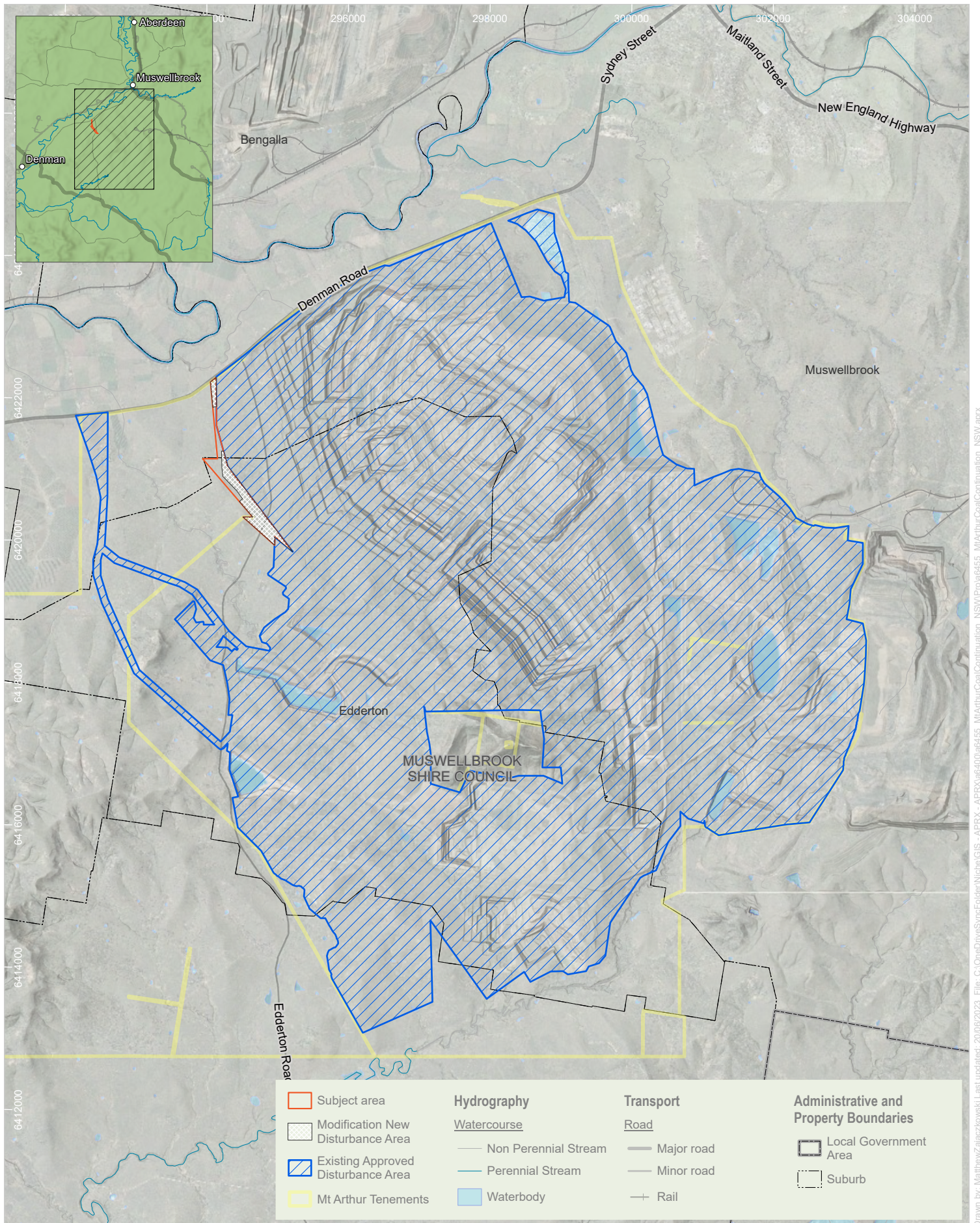
The ACHA covers the Subject Area, situated in the north-western extent of the MAC, within existing ML 1487, ML 1358 and ML 1548, and is approximately 35 ha in size (Figure 2). The entire Subject Area was initially intended for proposed new surface disturbance activities including infrastructure and open cut mining. However, after a review by HVEC of preliminary environmental survey outcomes (including the preliminary findings of this ACHA), the new surface disturbance area to be impacted by the Modification was refined comprising approximately 25 ha of land within the Subject Area, required for a minor extension in open cut mining as well as supporting ancillary and water management infrastructure, hereafter referred to as the Modification New Disturbance Area (Figure 1). The remaining 10 ha of the Subject Area is proposed by the Modification to be avoided, where no surface disturbance is proposed (Figure 2).

### 1.4 ACHA scope and objectives

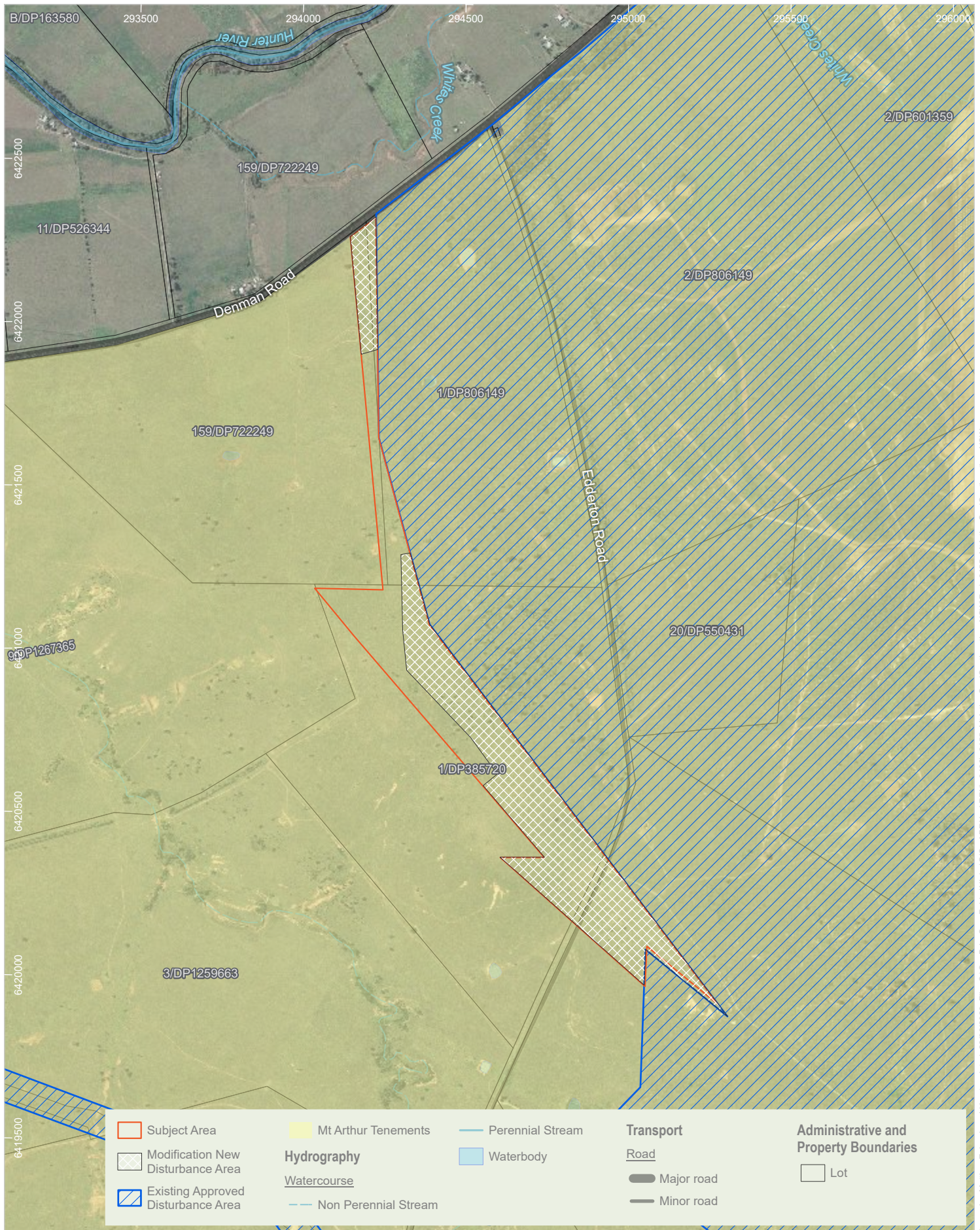
Niche Environment and Heritage Pty Ltd (Niche) have been engaged by HVEC to prepare an ACHA in accordance with:

- The *National Parks and Wildlife Regulation 2019* (NPW Regulation).
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW Department of Environment, Climate Change and Water [DECCW] 2010a) (the 'Consultation Requirements').
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b) (the 'Code of Practice').
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (Office of Environment and Heritage [OEH] 2011).
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council 2010).
- *The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance* (Australia International Council on Monuments and Sites [ICOMOS] 2013).











This assessment forms part of the Modification Report which has been prepared to support an application to modify the Project Approval to seek a four-year extension of mining operations and additional disturbance areas as shown in Figure 1 and Figure 2.

The assessment requirements and objectives for the ACHA are provided in Table 1.

**Table 1: ACHA requirements and objectives**

Objectives	Section addressed
Identify whether Aboriginal objects could be present within the Subject Area.	Section 4
Undertake further investigation within areas identified as having potential high sensitivity.	Section 5
Provide a description of the Aboriginal objects and declared Aboriginal places located within the area of the proposed activity.	Sections 4 and 5
Provide a description of the cultural heritage values, including the significance of the Aboriginal objects and any declared Aboriginal places, that exist across the whole area that will be affected by the proposed activity and the significance of these values for the Aboriginal people who have a cultural association with the land.	Section 5 and 6
Demonstrate how the requirements for consultation with Aboriginal people have been met (as specified in clause 60 of the NPW Regulation).	Section 3, Appendix 1 and Appendix 2
Present the views of those Aboriginal people regarding the likely impact of the proposed activity on their cultural heritage (if any submissions have been received as part of the consultation requirements, the report must include a copy of each submission and response).	Table 7, Table 9, and Appendix 1
Provide an assessment of actual or likely harm posed to the Aboriginal objects or declared Aboriginal places from the proposed activity, with reference to the cultural heritage values identified.	Section 7
Provide any practical measures that may be taken to protect and conserve those Aboriginal objects or declared Aboriginal places and any practical measures that may be taken to avoid or mitigate any actual or likely harm, alternatives to harm or, if this is not possible, to manage (minimise) harm.	Section 8 and Section 9

## 1.5 Statutory and regulatory framework

This section provides a summary of relevant legislation and associated planning instruments designed to protect and conserve significant heritage items and their values.

### 1.5.1 Commonwealth and National Legislation

#### 1.5.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth (Cth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, amongst other 'matters of national environmental significance'. Under the EPBC Act, protected heritage items of significance are listed on the National Heritage List (NHL) or the Commonwealth Heritage List (CHL). The NHL provides protection to places of cultural significance to the nation of Australia, while the CHL comprises natural, Aboriginal and historic heritage places owned and controlled by the Commonwealth.

No items on CHL or NHL were identified within the Subject Area.



### 1.5.1.2 Native Title Legislation

The *Native Title Act 1993* (Cth) (NTA) provides a legislative framework to:

- a) Recognise and protect native title.
- b) Establish ways in which future dealings affecting native title may proceed and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title.
- c) Establish a mechanism for determining claims to native title.
- d) Provide for, or permit, the validation of past acts that would otherwise be invalid because of the existence of native title.

The NTA was introduced to make sure laws of NSW are consistent with the Commonwealth's NTA on future dealings. It validates past and intermediate acts that may otherwise have been invalid because of the existence of native title.

The National Native Title Tribunal was contacted on 13 October 2022, whereby it was confirmed that there are no native title determinations, registered native title claims, or land use agreements that exist for the land contained within the Subject Area.

An updated Native Title Tribunal search was undertaken on 19 July 2023 whereby it was confirmed that there are no native title determinations, registered native title claims, or land use agreements that exist for the land contained within the Subject Area.

### 1.5.2 NSW State Legislation

#### 1.5.2.1 *Environmental Planning and Assessment Act 1979*

The EP&A Act establishes the framework for cultural heritage values to be formally assessed in the land use planning process in NSW. The EP&A Act also requires local governments to prepare planning instruments, such as Local Environmental Plans (LEP) which identify heritage items with statutory protections under the EP&A Act.

#### ***Muswellbrook Local Environmental Plan 2009***

Each LGA is required to create and maintain a LEP that identifies and conserves Aboriginal objects and historical items. These items are protected under the EP&A Act. Heritage items within each LGA are listed in Schedule 5 of an LEP and are subjects to the planning controls and provisions set out in Clause 5.10 (Heritage Conservation) of an LEP.

There are no heritage items with Aboriginal heritage values listed in the Muswellbrook LEP within the Subject Area. While Development Control Plans do not apply to State significant development, for completeness it is noted that there are no Aboriginal cultural heritage items or places within the Subject Area identified in the Muswellbrook Shire Council Development Control Plan 2009.

#### 1.5.2.2 *National Parks and Wildlife Act 1974*

Aboriginal objects and places are protected under the NPW Act. Under section 85 of the NPW Act, the Secretary of DPE is responsible for the protection of Aboriginal objects and places in NSW. In particular, the Secretary is responsible for the preservation and protection of any objects or places on land reserved under the NPW Act, and for the proper restoration of any such land that has been disturbed or excavated in accordance with an approval. Part 6 of the NPW Act provides specific protection for Aboriginal objects and

places by making it an offence to harm or desecrate them. Harm means any act or omission that destroys, defaces or damages an object or place or, in relation to an object, moves the object from the land on which it had been situated (section 5 of the NPW Act).

Heritage NSW maintains the Aboriginal Heritage Information Management System (AHIMS), a statutory list of Aboriginal objects and places in NSW. One previously recorded Aboriginal heritage site (MAN 91; Mt Arthur North [AHIMS ID# 37-2-0490]) was identified within the Subject Area, with two Aboriginal heritage sites (RPS MAC LN 2 AFT [AHIMS ID# 37-2-4533] and RPS MAC GG 1038 [AHIMS ID# 37-2-5833]) situated on the boundary of the Subject Area.

The management of Aboriginal heritage at the MAC is undertaken in accordance with the currently approved MAC AHMP.

The assessment, investigation and reporting on Aboriginal objects and cultural heritage is guided by the NPW Regulation, as amended, which establishes three subordinate regulatory instruments:

1. the Consultation Requirements.
2. *Guide to investigating, assessing and reporting Aboriginal cultural heritage in NSW* (OEH, 2011).
3. the Code of Practice.

This assessment has been conducted in accordance with these guidelines.

#### **1.5.2.3 Heritage Act 1977**

The NSW *Heritage Act 1977* provides statutory protection to those items identified as having heritage significance and which form part of the NSW heritage record. The Act defines a heritage item as a place, building, work, relic, moveable object or precinct (section 4 of the Act). Items that are assessed as having State heritage significance are listed on the NSW State Heritage Register (SHR) and can include items with Aboriginal heritage values. Proposals to alter, damage, move or destroy heritage items listed on the SHR (or protected by an Interim Heritage Order), require an approval under section 60 of the Act.

Archaeological features and deposits are afforded statutory protection by the 'relics provision' of the Act. A relic is defined as any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and is of State or local heritage significance (section 4 of the Act). Land disturbance or excavation that will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed is prohibited under the provisions of the Act, unless carried out in accordance with a permit issued under section 140 or section 139 of the Act.

There are no heritage items on the SHR within the Subject Area.

#### **State Heritage and Conservation (section 170) registers**

Under section 170 of the *Heritage Act 1977*, NSW government agencies are required to maintain a register of heritage assets under their control or ownership. Each government agency is responsible for ensuring that the items entered on its register under section 170 are maintained with due diligence in accordance with State Owned Heritage Management Principles. Items listed on section 170 Heritage and Conservation Registers are listed on the State Heritage Inventory, and some are also listed on the SHR.

There are no section 170 listings for items within the Subject Area.

#### 1.5.2.4 *Aboriginal Land Rights Act 1983*

The NSW *Aboriginal Land Rights Act 1983*, establishes the NSW Aboriginal Land Council (NSWALC) and Local Aboriginal Land Councils (LALCs). The Act requires these bodies to:

- a) Take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law.
- b) Promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area.

These requirements recognise and acknowledge the statutory role and responsibility of the NSWALC and LALCs.

The Modification is located within the boundaries of the Wanaruah LALC.

### 1.6 Investigators and contributors

This ACHA was managed by Associate consultant Deirdre Lewis-Cook. The Aboriginal community consultation, research, field assessment and report writing were undertaken by Riley Finnerty, Kate Morris, Catriona Graham, and Carly Todhunter. GIS mapping for this investigation was undertaken by Andrea Sward (Niche).

The ACHA was reviewed internally by Niche Senior Heritage Consultant Dr Marika Low (BA, PhD) and Associate Heritage Consultant Ben Slack (BA).

A list of Niche personnel who contributed to the preparation of this ACHA report is listed in Table 2.

**Table 2: List of Niche contributors to the ACHA report**

Contributor	Contribution	Qualification
Deirdre Lewis-Cook	Project Manager, Aboriginal community consultation, report writing, survey	MA (Hons) (Biological Anthropology) BA (Archaeology and Paleoanthropology)
Catriona Graham	Aboriginal community consultation, surveys, draft report author	BA, MA (Archaeological and Evolutionary Science)
Kate Morris	Aboriginal community consultation, draft report author	BA, BSc (Hons)
Riley Finnerty	Aboriginal community consultation, draft report author	BA (Hons)
Carly Todhunter	Draft report author	BA (Archaeology and Heritage Studies), BSc Hons (Archaeology)
Marika Low	Technical and quality review	BA(Hons), PhD
Ben Slack	Technical and quality review	BA
Chelsea Jones	Technical and quality review	BA (Hons)
Andrea Sward	GIS, Mapping	BEnv (Hons)

## 2. Description of the Area

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### 2.1 Location

The Subject Area is situated in the north-western extent of the MAC which is located 5 km south-west of Muswellbrook in the Upper Hunter Valley of NSW (Figure 1). The Subject Area is located within the administrative boundaries of the Muswellbrook LGA, the Wanaruah LALC and within the traditional country of the Wanaruah / Wonnarua people.

The Subject Area is located within the Upper Hunter region which has a long history of rural land use for a variety of agricultural and industrial activities, predominantly grazing and coal mining. The current dominant land uses within and adjacent to the existing ML boundaries include open cut coal mining, power generation and industrial activities, agriculture, and residential areas.

The Subject Area covers an area of 35 ha of land located within the existing ML 1487, ML 1358 and ML 1548 (Figure 2).

### 2.2 Description of land where Aboriginal objects are proposed to be harmed

The entire Subject Area was initially intended for proposed new surface disturbance activities including infrastructure and open cut mining. However, after a review by HVEC of preliminary environmental survey outcomes (including the preliminary findings of this ACHA), the new surface disturbance area to be impacted by the Modification was refined comprising approximately 25 ha of land within the Subject Area, required for a minor extension in open cut mining as well as supporting ancillary and water management infrastructure (Modification New Disturbance Area). Refinement of the Modification New Disturbance Area resulted in the avoidance of some of the known Aboriginal heritage sites. Of these known Aboriginal heritage sites, three are located wholly within the Modification New Disturbance Area and would therefore be directly impacted by the Modification. Details of Aboriginal cultural heritage sites are presented in Section 5.5. The AHIMS site cards with further information on site descriptions is provided in Appendix 5 – AHIMS site cards. Further details regarding the Modification activities and impact assessment are provided in Section 7.

### 2.3 Environmental context

Understanding the past and present environmental contexts of an area is a requisite in any Aboriginal archaeological and cultural heritage investigation (DECCW 2010b). The nature and distribution of Aboriginal archaeological sites are closely related to the environmental context. This provides information about the landscape including topography, hydrology, geology, soils, and fauna and flora, all of which are important factors relating to Aboriginal resource exploitation and Aboriginal site distribution. This section provides a broad overview of the environmental setting of the Subject Area.

#### 2.3.1 Topography

The Subject Area lies within the Central Lowlands of the Hunter Valley, which is largely characterised by undulating or gentle hills with a local relief in any given locality rarely exceeding 60 metres (m) (Umwelt 2007). The topography of the area is dominated by Mount Arthur (482 m Australian Height Datum (AHD)), located within the MAC and protected under an existing Conservation Agreement. Mount Arthur is located outside the Subject Area. The landscape consists of undulating slopes that become progressively steeper towards the mountains. North of the Subject Area, the elevation rises from the alluvial flats of the Hunter River Floodplain at approximately 120 m AHD in elevation, to approximately 230 m AHD at Macleans Hill, and becomes progressively steeper in the vicinity of Mount Arthur.



Photographs of the typical landforms/topography present within the Subject Area are provided in Plate 1 and Plate 2.



**Plate 1: Gentle landform; facing south.**



**Plate 2: Gentle upper slope landform; facing north.**

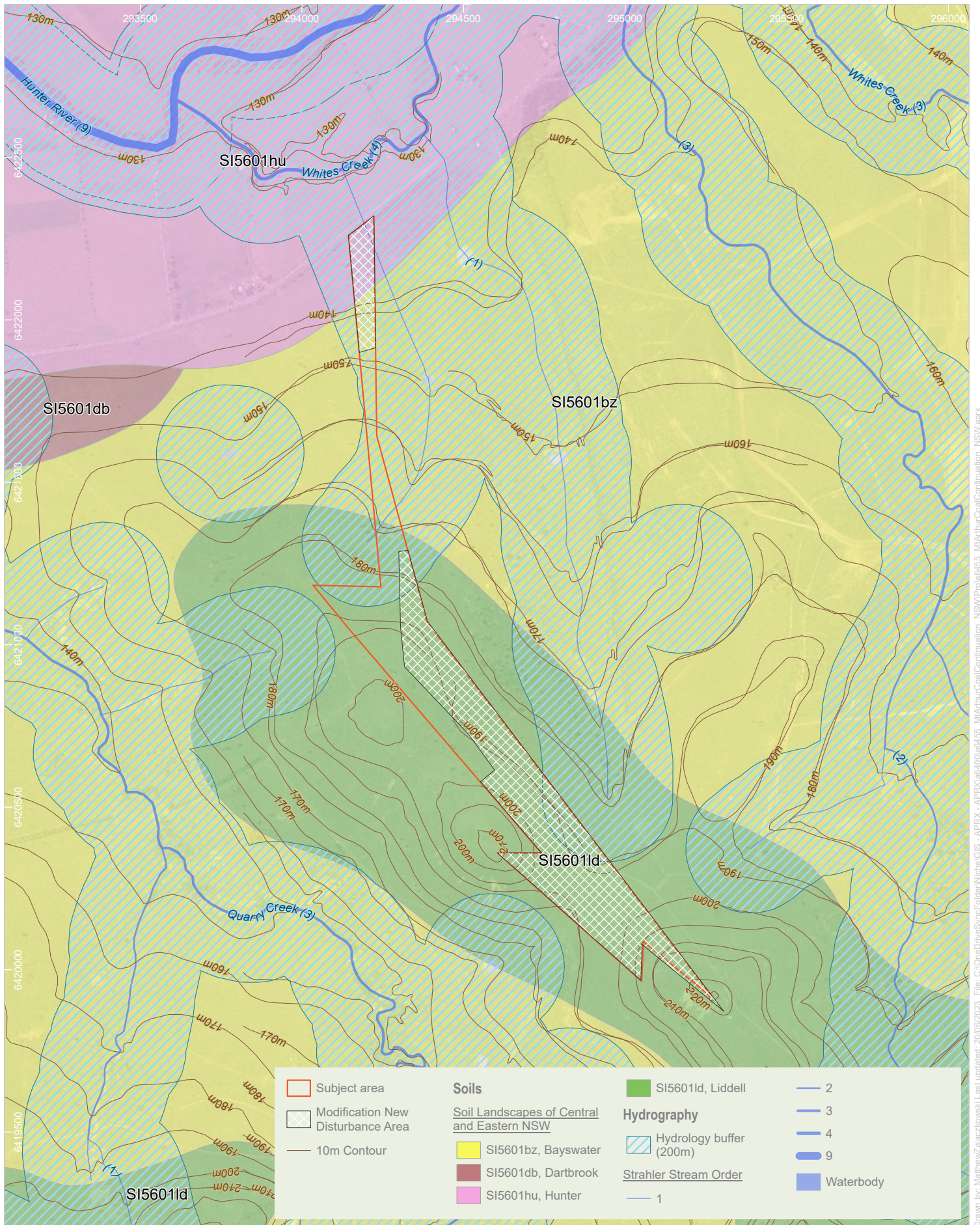
### **2.3.2 Geology and soil landscapes**

Analysis of the Subject Area's geology and soil landscapes are useful tools in identifying environmental proxies for the likely preservation and burial of Aboriginal objects within a landscape. Such analysis provides insight into resources that may have been available to Aboriginal people in the past, such as the presence of rock outcrops to provide surfaces for art or to sharpen and prepare implements, and/or stone for the manufacture of stone tools and plant species. Stone tools are often made using siliceous, metamorphic, or igneous rocks, and therefore understanding the local geology can provide important information regarding resources exploited by Aboriginal people within the Subject Area.

The Subject Area is situated within the Hunter Coalfields in the northern section of the Sydney Basin. This is characterised by the Late Permian Singleton Supergroup which is part of the Permian Singleton Coal Measures (sandstone, shale, mudstone, conglomerate, and coal seams) (RPS 2013). The presence of sandstone in areas surrounding the Subject Area is important for Aboriginal occupation as overhangs and caves in sandstone cliffs were sometimes used for shelter, and sandstone was commonly used for grinding stone artefacts. Other raw materials in the local area including silcrete, mudstone and silicified tuff, chert, basalt, rhyolite, and petrified wood were commonly used by Aboriginal people for manufacturing flaked stone tools (RPS 2013: 16).

The Subject Area is characterised by a mixture of soil landscapes including Bayswater, Hunter Soil and Liddell (Figure 3). A summary of the characteristics of these soil landscapes is provided in Table 3.





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**Table 3: Summary of soil landscapes present within the Subject Area (DPIE 2020)**

Land system	Landforms and soils	Vegetation
Bayswater soil landscape	<p>This landscape consists of Yellow Solodic Soils as well as Red, Yellow and Brown Podzolic Soils with Alluvial soils, and Brown and Yellow Earths occurring within drainage lines. Also present are Yellow Solodic Soil-Red-brown Earth intergrades. Moderate sheet and gully erosion are common on slopes.</p> <p>The landform is characterised by undulating low hills, ranging in elevation from 140 – 220 m. Slopes are 3 – 10% with local relief of 40 – 60 m. Drainage lines occur at 700-1,000 m intervals.</p>	Much of the landscape has been cleared out of woodland for grazing on unimproved pastures. Where there are remnants, forest red gum and forest oak occur. Broad-leaved red ironbark, narrow-leaved red ironbark, bull oak, grey box and swamp oak may also be found in some areas.
Liddell soil landscape	<p>This landscape consists of Yellow Soloths on the upper slopes and some Yellow Solodic Soils on concave slopes. Earthy and Siliceous Sands occur on the lower slopes with siliceous parent rock, and there are some Red Soloths, Red Solodic Soils and Red Podzolic Soils. Minor to severe sheet erosion is common.</p> <p>The landform is characterised by undulating low hills ranging in elevation from 140 – 220 m. Slopes are 4 – 7%. The local relief is 60 – 120 m with drainage lines occur at 300 – 1,000 m intervals.</p>	Characterised by an open woodland of narrow-leaved red ironbark, yellow box, white box and spotted gum with some Blakelys red gum, rough-barked apple and kurrajong. Bull oak and swamp oak are also common. There is some smooth-barked apple.
Hunter soil landscape	<p>This landscape consists of Brown Clays and Black Earths on stream channels and tributary flats. Alluvial soils occur on levels and flats adjacent to the river channel. Other soils include Red Podzolic soils, Lateritic Podzolic soils, Bon-calcic Brown soils and Yellow Solodic soils.</p> <p>The landform is characterised by level plains and river terraces of the Hunter River with elevations of 20 m to 60 m. Slopes are 0-3%. The width of the plains ranges from 200 to 3,200 m, with local relief less than 10 m.</p>	No native vegetation remains due to clearing for intensive agriculture including dairying and other grazing on improved pasture.

### 2.3.3 Hydrology

The undulating landscape is characterised by the low slopes and drainage lines associated with the slopes of Mount Arthur to the east and Ogilvies Hill to the west. The Hunter River is located approximately 500 m to 1 km to the north of the Subject Area. Stream orders within the Subject Area are all 1<sup>st</sup> order streams. A number of creeks and their tributaries surround the Subject Area, including Quarry Creek to the west, Whites Creek to the north and Saddlers creek to the south. Quarry Creek flows in a northerly direction to the Hunter River which is generally in poor condition with the erosion of the creek bed and banks from clearing of vegetation and past land use (RPS 2013).

### 2.3.4 Ecology

Prior to disturbance and clearing associated with past agricultural land use, much of the Subject Area is likely to have been vegetated by Eucalypt savannah woodland (associated with the Bayswater Soil Landscape), dominated by species of Box Gum, and Ironbark. Within this woodland landscape, there would have existed a variety of flora and faunal resources exploited by the local Aboriginal population. Many of the Aboriginal food plants that would have been available would be difficult to evaluate nowadays due to the degree of vegetation clearance. What could be discerned has been conducted and compiled by Umwelt (2007), which lists the local plants and their potential Aboriginal uses. It is likely that vegetation such as bulrushes, water ribbons, spike rush and sedges would have been gathered and processed within the lower reaches of the creek lines, including Saddlers Creek and Quarry Creek. Areas such as these would have been able to support longer-term occupation sites. The exploitation and resource strategies employed by Aboriginal occupants in the Subject Area would have been dictated by the locality and seasonal availability of these resources.

### 2.3.5 Disturbance and modification in the Subject Area

Much of the Subject Area has been historically cleared for grazing on unimproved pastures. Further evidence of previous agricultural land use and disturbances within the area includes dams, fencing, clearing of native vegetation, and accelerated erosion by pastoralism and agriculture. Impacts from European land use practices such as pastoralism and agriculture within the area have led to an increase in the erosion of topsoil along banks of creeks, slopes, and ridges (Umwelt 2007: 4.7). This erosion is likely to have resulted in the disturbance of sites located within close proximity to the creek lines in these areas. The only remnants of native vegetation which characterise the landscape are forest red gum and forest oak with broad-leaved red ironbark, narrow-leaved red ironbark, bull oak, grey box and swamp oak only found in some areas (Kovac and Lawrie 1991: 89).

Photographic evidence of the extent of vegetation clearance associated with historical pastoral and agricultural activities is provided for the period 1958 to 1998 in Figure 4.

### 2.3.6 Summary

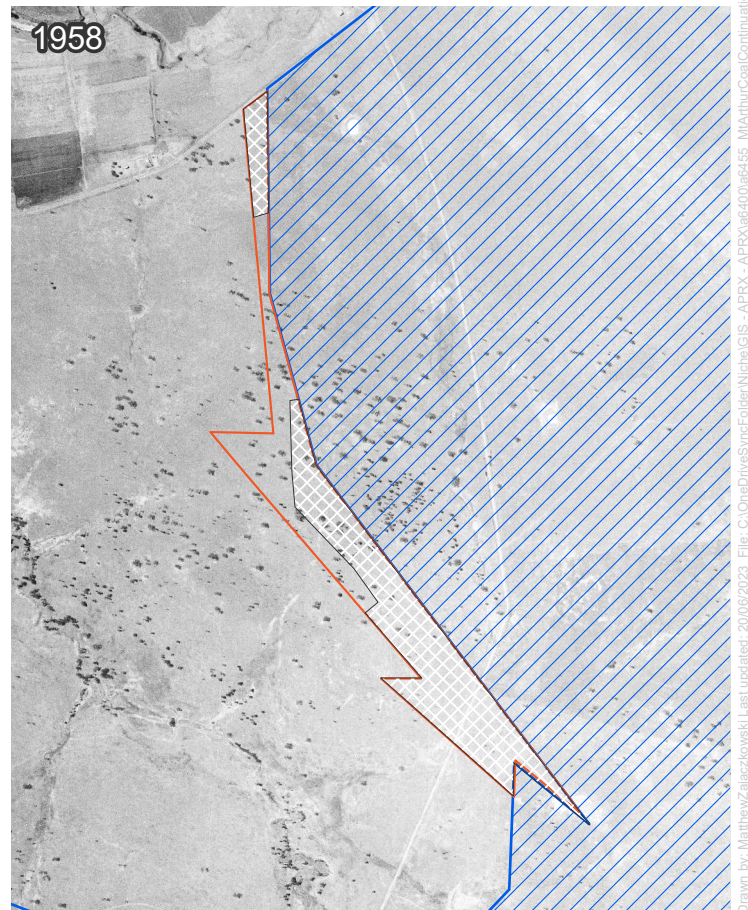
Though the landscape is currently extensively disturbed, the environmental setting of the Subject Area would have been conducive to occupation by past local groups as the raw materials available from the underlying geology, the proximity to freshwater and the presence of land and riverine resources would be abundant. The raw materials used for stone tool manufacture (such as silcrete, mudstone and silicified tuff, chert, basalt, rhyolite and petrified wood) have been identified in the local area. The perennial Hunter River and its associated tributaries would have provided fresh water and riverine resources. The original woodland environment and native flora and fauna that inhabited the environment would have also provided food, medicinal, shelter, tools, and clothing resources for local groups.

## 2.4 Ethnography and history

This section outlines the known archaeological context of the Subject Area and draws upon information recorded by early ethnographers and prior archaeological research. This information, along with information provided in previous sections, will be used to support the predictive model for site location and site types within the Subject Area (Section 4.2). It is essential to acknowledge that early historical documents contain bias and/or inaccuracies in their reporting of events or other aspects of Aboriginal culture.

The traditional lives and history of the Wonnarua (also spelt Wanaruah, Wonnaruah, but hereafter spelt as Wonnarua) were structured around a schedule of social interactions that were designed to take advantage of seasonal resources (Umwelt 2007). Prior to colonisation, the Wonnarua comprised of large groupings of individual family units and bands which came together for religious and ceremonial functions (Davidson and Lovell-Jones 1993:3). Social, religious, and economic responsibilities meant that people travelled freely within the broader area beyond their own territories to attend ceremonies, trade, and social networks with neighbouring nations (Umwelt 2007). It is noted that the Wonnarua have social links from the coast to the western plains of NSW (Brayshaw 1986: 38-41). Most ancestral Aboriginal people often lived and travelled in small groups of less than 20 people moving regularly from camp site to camp site and living on local resources. There is little ethnographic evidence of the location of these camps, however, there is mention of the importance of freshwater resources and vantage points (Umwelt 2007). Often these smaller groups would travel to meetings where hundreds to thousands of people would gather for weeks at a time. Large events like these were scheduled around the seasonal availability of resources. These gatherings were economic, social, and religious events where ceremonial songs and dances were performed and a range of goods from stones axes, spears and native tobaccos were traded (Umwelt 2007).







The abundance of resources and Aboriginal land use was documented by some early ethnographers. The exploitation of local resources by Aboriginal people included gathering plant foods, hunting and visiting areas that provided other required resources (stone, ochre, bark and resin) (Umwelt 2007). A major economic activity of the Wonnarua people was the practice of fire-stick farming which both took care of the land and provided a hunting strategy (Umwelt 2007). This practice had been documented by early accounts which detail the use of fire by Aboriginal people in the area (Fawcett 1898 and Cunningham 1827 in ERM 1994). Kangaroos, emus, possums, and fish were recorded as plentiful resources within the area which were exploited (Breton 1833, Cunningham 1827, Dawson 1830). Breton (1833) and Eyre (1859) noted bark from suitable trees was used for shelters and wooden implements such as shields.

The advent of colonization in the Hunter Valley began with the discovery of coal at Newcastle in 1797. By 1801 the Hunter Valley was reserved by the Crown for a new convict settlement and extraction of coal and timber resources. By 1825, the Hunter Valley had become rapidly settled, disrupting the Aboriginal economy and, in a very short time, the Aboriginal population was substantially affected by starvation, introduced diseases and massacres (Umwelt 2007). Initial contact between the Wonnarua and colonists may have been initially cordial, but rapidly turned hostile and violent with the colonial landholders and their stockmen implementing 'widespread and indiscriminate violence against Aboriginal people' (Umwelt 2007). Violence within the area escalated after 1826 by the institutionalised violence by the Mounted Police (Davidson and Lovell-Jones 1993, Macdonald and Davidson 1998). By this time, most traditional practices of land use, social structures, and interactions of the Wonnarua had been dramatically affected.

With colonisation, the natural landscape of the Hunter Valley had undergone changes. With the establishment of pastoral holdings, small towns and villages, the local Aboriginal communities had been displaced to 'the fringes of towns and on properties trying as best they could to survive in a European modified environment' (Davidson and Lovell-Jones 1993:17). It is also evident in primary historical documents that many areas where Europeans settled were originally Aboriginal camping grounds (Umwelt 2007). This included areas surrounding the Subject Area where designated areas for Aboriginal people were reserved (such as Mount Ogilvie and Glennies Creek). Some of these reserves are present to this day and are registered Aboriginal sites and places on the AHIMS database.

Past ethnographic investigations conducted by Davidson and Lovell-Jones (1993) within the vicinity of the Subject Area have provided information pertaining to an Aboriginal massacre at 'The Pocket' or 'Little Pocket'. The area of 'The Pocket' is located within the Mount Arthur Conservation Area and not within the Subject Area. The site is considered as having special significance to the community and would not be subject to impact by the Modification.

### 3. Aboriginal community consultation process

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Heritage NSW requires that proponents consult with Aboriginal people about the Aboriginal cultural heritage values (cultural significance) of Aboriginal object(s) and/or place(s) within any given development area.

Heritage NSW maintains that the objective of consultation with Aboriginal communities about the cultural heritage values of Aboriginal objects and places is to ensure that Aboriginal people have the opportunity to improve ACHA outcomes (DECCW 2010a). This is ensured by:

- Providing relevant information about the cultural significance and values of Aboriginal object(s) and/or place(s).
- Informing the design of the methodology to assess the cultural and significance of Aboriginal object(s) and/or place(s).
- Actively contributing to the development of cultural heritage management options and recommendations for any Aboriginal object(s) and/or place(s) within the proposed Subject Area.
- Commenting on draft assessment reports before they are submitted by HVEC to Heritage NSW.

Consultation, in the form outlined in the Consultation Requirements (DECCW 2010a), is a requirement in cases where a proponent is aware that their development activity has the potential to harm Aboriginal object(s) or place(s). Heritage NSW also recommends that these requirements be used when the certainty of harm is not yet established but a proponent has, through some formal development mechanism, been required to undertake a cultural heritage assessment to establish the potential harm their proposal may have on Aboriginal object(s) and/or place(s).

The Consultation Requirements (DECCW 2010a) outline a four-stage consultation process that includes detailed step-by-step guidance as to the aim of the stage, how it should proceed, and what actions are necessary for it to be considered successfully completed. The four stages are:

- Stage 1 – Notification of project proposal and registration of interest.
- Stage 2 – Presentation of information about the proposed project.
- Stage 3 – Gathering information about the cultural significance of the Modification area.
- Stage 4 – Review of the draft cultural heritage assessment report.

The Consultation Requirements (DECCW 2010a) also outline the roles and responsibilities of Heritage NSW, RAPs including local and State Aboriginal Land Councils, and proponents throughout the consultation process.

To meet the requirements of consultation it is expected that the proponent will:

- Bring the RAPs (or their nominated representatives) together and be responsible for ensuring appropriate administration and management of the consultation process.
- Consider the cultural perspectives, views, knowledge, and advice of the RAPs involved in the consultation process when they assess cultural significance and work together to develop any heritage management outcomes for Aboriginal object(s) and/or place(s).
- Provide evidence to Heritage NSW of consultation by including information relevant to the cultural perspectives, views, knowledge, and advice provided by the RAPs.

- Accurately record and clearly articulate all consultation findings in the final cultural heritage assessment report.
- Provide copies of their final cultural heritage assessment report to the RAPs who have been consulted.

The consultation process undertaken to seek active involvement from appropriate RAPs for the Modification followed the current NSW guidelines – the Consultation Requirements (DECCW 2010a). Section 1.3 of the Consultation Requirements (DECCW 2010a) describes the guiding principles of the document, which have been derived directly from the principles section of the Australian Heritage Commission’s *Ask First: A Guide to Respecting Indigenous Heritage Places and Values* (Australian Heritage Commission, 2002). Both documents share the aim of creating a system where advice can be sought from the Aboriginal community.

The following sections outline the process and results of the consultation conducted during this assessment to ascertain and reflect the Aboriginal cultural heritage values of the Subject Area. Further detail regarding the Aboriginal community consultation process is outlined in Appendix 1 (Aboriginal community consultation records) and Appendix 2 (Aboriginal community consultation log).

### 3.1 Stage 1 – Notification of Modification proposal and registration of interest

#### 3.1.1 Notification of agencies

A notification letter was sent to the organisations listed in Table 4. The notification letter was distributed on 25 October 2022 to all relevant organisations named under Section 4.1.2 of the Consultation Requirements. The list of the contacted organisations is provided in Table 4 below and a copy of the notification is provided in Appendix 1.

**Table 4: Agencies contacted during the consultation program**

Name	Date	Response
Native Title Tribunal	13 October 2022	Confirmed that there were no active native title determinations, claims, or land use agreements that exist for land contained within the Subject Area.
Hunter Local Land Services (LLS)	25 October 2022	Responded that Hunter LLS do not have a full list of the relevant Aboriginal Traditional Custodians.
Muswellbrook Shire Council	25 October 2022	Responded referring Niche to the Wanaruah LALC and Hunter Valley Aboriginal Corporation.
Wanaruah LALC	25 October 2022	Responded registering the Wanaruah LALC to the project.
Heritage NSW	25 October 2022	Provided contact details to relevant Aboriginal Stakeholders.
The Office of the Registrar	26 October 2022	Responded referring Niche to the Wanaruah LALC.
Native Title Services Corporation	25 October 2022	N/A

### 3.1.2 Advertisement

In accordance with Section 4.1.3 of the Consultation Requirements (DECCW 2010a), a newspaper advertisement was placed in the following newspapers:

- Hunter Valley News (23 November 2022)
- Singleton Argus (24 November 2022)

The advertisement included a close date of 5 pm on the 16 December 2022 (24 days from publication) to provide additional opportunities for Aboriginal people who may be interested in the Modification to come forward. A copy of the advertisement is included in Appendix 1.

### 3.1.3 Notification of potential stakeholders

As a result of the responses received, 77 individuals and organisation were identified as potential knowledge holders for the Subject Area. A notification letter was distributed to all relevant organisations named under Section 4.1.2 of the consultation requirements, identified in Table 5.

**Table 5: List of potential Aboriginal stakeholders**

Name of organisation	Date notification sent
Aboriginal Native Title Consultants	2 December 2022
AGA Services	2 December 2022
Alieria French Trading	2 December 2022
Cacatua General Services / Carcatchua P/L / Cacatua Cultural Consultants	2 December 2022
Culturally Aware	2 December 2022
Deslee Talbot Consultant	2 December 2022
Gomeroy Cultural Consultants	2 December 2022
Hunter Valley Aboriginal Corporation Muswellbrook	2 December 2022
Jarban & Mugrebea	2 December 2022
Kauwul /Wonn1	2 December 2022
Kawul Cultural Services	2 December 2022
Lower Hunter Aboriginal Inc.	2 December 2022
Myland Cultural & Heritage Group	2 December 2022
Tocomwall	2 December 2022
Ungooroo Aboriginal Corporation	2 December 2022
Upper Hunter Wonnarua Council	2 December 2022
Wanaruah LALC	2 December 2022
Wattaka Wonnarua Cultural Consultancy Services	2 December 2022
Yinarr Cultural Services	2 December 2022
A1 Indigenous Services	2 December 2022
Corroboree Aboriginal Corporation	2 December 2022
Widescope Indigenous Group	2 December 2022
Kevin Duncan, Nyanga Walang	2 December 2022
Murra Bidgee Mullangari Aboriginal Corporation	2 December 2022



Name of organisation	Date notification sent
Didge Ngunawal Clan	2 December 2022
Lower Hunter Wonnarua Cultural Services	2 December 2022
Wonnarua Elders Council	2 December 2022
Gidawaa Walang & Burkuma Neighbourhood Centre Inc	2 December 2022
Indigenous Learning	2 December 2022
Jumbunna Traffic Management Group Pty Ltd	2 December 2022
DFTV Enterprises	2 December 2022
Hunters & Collectors	2 December 2022
Robert Syron	2 December 2022
Steve Talbott	2 December 2022
Wonnarua Nation Aboriginal Corporation	2 December 2022
Hunter Traditional Owner	2 December 2022
Wallagan Cultural Services	2 December 2022
Nunawanna Aboriginal Corporation	2 December 2022
Gomerioi People (c/- NTSCorp Ltd)	2 December 2022
Bathurst LALC	2 December 2022
Gilay Consultants	2 December 2022
Bawurra	2 December 2022
Bunda Consultants	2 December 2022
Giwirr Consultants	2 December 2022
Crimson-Rosie	2 December 2022
Hunter Valley Cultural Consultants	2 December 2022
Hunter Valley Cultural Surveying	2 December 2022
Kayaway Eco Cultural & Heritage Services	2 December 2022
Lower Hunter Wonnarua Council Inc	2 December 2022
Nur-Run-Gee Pty Ltd	2 December 2022
Scott Smith	2 December 2022
Ungooroo Cultural & Community Services Inc	2 December 2022
Upper Hunter Heritage Consultants	2 December 2022
Valley Culture	2 December 2022
Warragil Cultural Services	2 December 2022
Wanaruah Aboriginal Custodians Corporation	2 December 2022
Glen Morris	2 December 2022
Mur-Roo-Ma	2 December 2022
Kamilaroi Yankuntjatjara Working Group	2 December 2022
Konanggo Aboriginal Cultural Heritage Services	2 December 2022
The Men's Shack Indigenous Corporations	2 December 2022

Name of organisation	Date notification sent
Thomas Dahlstrom	2 December 2022
Wurrumay Pty Ltd	2 December 2022
Michael Green Cultural Heritage Consultant	2 December 2022
Wonnarua Cultural heritage	2 December 2022
Lower Wonnarua Tribal Consultancy Pty Ltd	2 December 2022
Black Creek Aboriginal Corporation	2 December 2022
Breeza Plains Cultural Heritage Consultants	2 December 2022
Bullen Bullen Consultants	2 December 2022
Cheryl Moodie Consultants	2 December 2022
Gidawaa Walang Cultural Heritage Consultancy	2 December 2022
Hunter Traditional Owner Environmental Management	2 December 2022
Mooki Plains Consultants	2 December 2022
Roger Noel Matthews	2 December 2022
T & G Culture Consultants	2 December 2022
Yamuloong Group Initiatives	2 December 2022
Yarrowalk Enterprises	2 December 2022

A copy of the notification letter that was sent to the above organisations and individuals on Friday 2 December 2022 is provided in Appendix 1.

### 3.1.4 Registered Aboriginal Parties

As a result of the Stage 1 enquiries, organisations and/or individuals listed in Table 6 registered as RAPs for the Modification.

**Table 6: Consolidated list of RAP organisations and contacts 2022 - 2023**

Name of organisation	Contact <sup>#</sup>
A1 Indigenous Services	
Aboriginal Native Title Consultants	
AGA Services	
Aliera French Trading	
Bathurst LALC	
Bawurra	
Black Creek Aboriginal Corporation	
Breeza Plains Cultural Heritage Consultants	
Bullen Bullen Consultants	
Bunda Consultants	
Cacatua General Services/ Carcatchua P/L / Cacatua Cultural Consultants	
Cheryl Moodie Consultants	
Corroboree Aboriginal Corporation	

Name of organisation	Contact#
Crimson-Rosie	
Culturally Aware	
Deslee Talbot Consultant	
DFTV Enterprises	
Didge Ngunawal Clan	
Gidawaa Walang & Barkuma Neighbourhood Centre Inc.	
Gidawaa Walang Cultural Heritage Consultancy	
Gilay Consultants	
Giwirr Consultants	
Gomerioi People (c/-NTSCorp Ltd)	
Gomery Cultural Consultants	
Hunter Traditional Owner	
Hunter Traditional Owner Environmental Management	
Hunter Valley Aboriginal Corporation Muswellbrook	
Hunter Valley Cultural Consultants	
Hunter Valley Cultural Surveying	
Hunters & Collectors	
Indigenous Learning	
Jarban & Mugrebea	
Jumbunna Traffic Management Group Pty Ltd	
Kauwul/ Wonn1	
Kawul Cultural Services	
Kamilaroi Yankuntjatjara Working Group*	
Kayaway Eco Cultural & Heritage Services	
Nyanga Walang	
Lower Hunter Aboriginal Inc	
Lower Hunter Wonnarua Council Inc	
Lower Hunter Wonnarua Cultural Services	
Lower Wonnaruah Tribal Consultancy Pty Ltd	
Michael Green Cultural Heritage Consultant	
Mooki Plains Consultants	
Murra Bidgee Mullangari Aboriginal Corporation	
Myland Cultural & Heritage Group	
Nur-Run-Gee Pty Ltd	
Nunawanna Aboriginal Corporation	
Robert Syron	
Roger Noel Matthews	

Name of organisation	Contact <sup>#</sup>
Scott Smith	
Steve Talbott	
T & G Culture Consultants	
Thomas Dahlstom*	
Tocomwall	
Ungooroo Aboriginal Corporation	
Ungooroo Cultural & Community Devices Inc	
Upper Hunter Heritage Consultants	
Upper Hunter Wonnarua Council	
Valley Culture	
Wallagan Cultural Services	
Wanaruah Aboriginal Custodians Corporation	
Wanaruah LALC	
Warragil Cultural Services	
Wattaka Wonnarua Cultural Consultancy Services	
Widescope Indigenous Group	
Wonnarua Cultural heritage	
Wonnarua Elders Council	
Wonnarua Nation Aboriginal Corporation	
Yamuloong Group Initiatives	
Yarrawalk Enterprises	
Yinarr Cultural Services	
	<b>Total 72 RAPs</b>

\*Individuals/organisations who were potential Aboriginal stakeholders and registered late, nonetheless were included as a RAP for this Modification.

# The black shading represents redacted name of RAPs for the purposes of privacy.

### 3.1.5 Notification to Heritage NSW and LALC

Notification of RAPs to Heritage NSW and the Wanaruah LALC, as per Section 4.1.6 of the Consultation Requirements was sent on 2 February 2023 and correspondence is included in Appendix 1 and Appendix 2.

## 3.2 Stages 2 and 3 – Presentation of Modification information, assessment methodology and gathering information about the cultural significance of the Subject Area

### 3.2.1 Project information and assessment methodology

RAPs identified in Stage 1 of the Consultation Process, were provided with a letter outlining information about the Modification and the proposed assessment methodology in accordance with the Consultation Requirements (DECCW 2010a) and the Code of Practice (DECCW 2010b). The Modification information was provided on 16 January 2023.

The purpose of the provided documents was to:

- Describe the project, and outline the project scope, timeframe, and proposed works.

- Describe the environment of the Subject Area, and information relevant to the ACHA process.
- Provide an opportunity for the RAPs to understand the process and comment on the proposed methodology.
- Set a timeframe for providing feedback and comments on the methodology and project information.

The draft methodology was submitted to the RAPs on 16 January 2023, and the closing date for comments was at 5 pm on 14 February 2023 (to meet the minimum 28 days review period). A copy of the cover letter and methodology is included in Appendix 1.

The RAPs provided feedback on the project information and assessment methodology. Their comments and/or review are outlined in Table 7 below, and copies of all submissions made are included in Appendix 1.

**Table 7: Details of RAP feedback on the project information and assessment methodology provided to RAPs**

RAP	Stakeholder	Comment made
Gomeroi People (c/- NTSCorp Ltd)		No comments relating specifically to the Proposed Methodology.
Aliera French Trading		Proposed Methodology accepted.
Didge Ngunawal Clan		Proposed Methodology accepted.
Jarban & Mugrebea		Proposed Methodology accepted.
Nyanga Walang		Proposed Methodology accepted.
Kamilaroi Yunkutjara Working Group		Proposed Methodology accepted.

### 3.2.2 Cultural heritage survey

A cultural heritage survey was completed with representatives of the RAPs on 21 February 2023 to 23 February 2023. Given the size of the Subject Area it was not logistically possible for all RAPs to be involved in the Aboriginal heritage survey. RAPs onboarded with the HVEC field survey process were engaged for the heritage survey. During the survey, landscape features and areas of archaeological and Aboriginal heritage potential were assessed. It was noted that visibility was hindered by dense vegetation coverage within a majority of the Subject Area.

Overall, approximately 12 Aboriginal cultural heritage sites were identified in the Subject Area and nearby surrounds (within 5m of the Subject Area boundary), with five (5) new isolated finds, six (6) new Artefact Scatters; two (2) of which were associated with Potential Archaeological Deposits (PADs), and one (1) previously AHIMS recorded Aboriginal cultural heritage site being identified.

Those who participated in the cultural heritage survey work are provided in Table 8 below.



**Table 8: List of fieldwork participants, affiliation, and dates of attendance**

Participants	Affiliation	Dates
Deirdre Lewis-Cook	Niche	21 February 2023 22 February 2023 23 February 2023
Catriona Graham	Niche	21 February 2023 22 February 2023 23 February 2023
[REDACTED]	RAP - Jarban & Mugrebea	21 February 2023 22 February 2023 23 February 2023
[REDACTED]	RAP - Ungooroo Aboriginal Corporation	21 February 2023 22 February 2023 23 February 2023
Andrew McManus	BHP	21 February 2023 22 February 2023 23 February 2023
Peter Hornburg	BHP	21 February 2023

Throughout the field assessment process, RAPs provided feedback regarding the cultural values and Aboriginal cultural heritage potential of the Subject Area. Details of this feedback are summarised in Table 9 below and have been considered in this report.

**Table 9: Details of RAP feedback provided during the archaeological field survey**

RAP	Stakeholder	Comment made	Niche response
Jarban & Mugrebea; Ungooroo Aboriginal Corporation	[REDACTED]	Both RAPs during the entirety of the survey discussed past assessments and works that have occurred within the broader context of the Subject Area, and across the immediate associated landscape. Comments made included that the area was very likely travelled across and visited regularly, and that there is potential for more surface sites to be present, that at the time of the survey were not visible.	RAP feedback incorporated into ACHA.
Jarban & Mugrebea; Ungooroo Aboriginal Corporation	[REDACTED]	Comment made by both RAPs that initial site boundary of MAC-AS-4 recorded on 21 <sup>st</sup> March 2023, should be extended further uphill towards a present tree on re-assessment on 23 March 2023 due to high potential of archaeological deposits being present. Additional feedback is that this PAD at MAC-AS-4 should be further investigated.	Initial site boundary extended to include extension of PAD. RAP feedback incorporated into ACHA.  Impacts to MAC AS-4 ultimately avoided by a change in the Modification New Disturbance Area by HVEC.
Jarban & Mugrebea; Ungooroo Aboriginal Corporation	[REDACTED]	When assessing MAC-AS-6, discussion was had on the identified Artefact Scatter. Comments made were that it was likely more extensive, as identified during the survey, with the initial boundary being extended downhill. RAPs identified the site as a Resource site as well as PAD and Artefact Scatter.	Initial site boundary extended to include extension of PAD. RAP feedback incorporated into ACHA.  Impacts to MAC AS-6 ultimately avoided by a change in the Modification New Disturbance Area by HVEC.

### 3.3 Stage 4 – Review of draft Aboriginal cultural heritage assessment report

A copy of the draft ACHA was emailed to RAPs on the 26 June 2023 and mailed on the 28 June 2023 (for those where an email address was not applicable) for their review and comment in accordance with the Consultation Requirements (DECCW 2010b). RAPs were given a minimum of 28 days to review and provide comments on the draft ACHA, with a request for comments to be provided by 5pm 27 July 2023.

Prior to the closing date, an information session and site visit was undertaken for the draft ACHA. Further details are provided below.

#### 3.3.1 Project information session and site visit

An invitation was provided to all RAPs with the distribution of the draft ACHA to participate in an information session and site visit. The information session and site visit took place on the 12 July 2023, commencing at Balmoral Homestead, and provided in-person and virtual attendance options.

Those who participated in the information session and site visit are listed below in Table 10. A representative from Wonnarua Nation Aboriginal Corporation attended the information session virtually and therefore did not attend the site visit.

**Table 10: List of project information session participants**

Participants	Affiliation
Ray Marten	BHP
Mark Nolan	BHP
Liam Lawford	BHP
Deirdre Lewis-Cook	Niche
[REDACTED]	RAP - Cacatua General Services
[REDACTED]	RAP - Jarban & Mugrebea
[REDACTED]	RAP - Ungooroo Aboriginal Corporation
[REDACTED]	RAP - Wonnarua Nation Aboriginal Corporation

The purpose of the information session was to discuss the key findings of the draft ACHA and to provide an opportunity for RAPs to discuss, ask questions and/or provide comments on the draft ACHA. Throughout the information session, RAPs provided feedback regarding the cultural values and Aboriginal cultural heritage potential of the Subject Area. Details of this feedback are summarised below.

After the information session, RAPs present at the information session, with the exception of the representative from Wonnarua Nation Aboriginal Corporation who attended the session virtually, undertook a site visit of the Subject Area and specifically observed the Modification New Disturbance Area.

During the site visit, an additional isolated artefact was identified within the Modification New Disturbance Area. In consultation with the RAPs present, it was concluded that the site boundary for nearby MAC-AS-3 (AHIMS ID# 33-2-0049) be extended to include the isolated artefact.

No material comments regarding the Modification were received from RAPs during the information session and site visit.

### 3.3.2 Comment received on the draft ACHA

Two RAPs provided feedback on the draft ACHA. Their comments are outlined in Table 11 and copies of the submissions made and received are included in Appendices 1 and 2.

**Table 11: Details of RAP feedback on the draft ACHA**

Registered Aboriginal Party	Stakeholder	Comment made	Response from Niche
Murra Bidgee Mullangari Aboriginal Corporation	██████	Murra Bidgee Mullangari Aboriginal Corporation endorsed the recommendations made for the ACHA.	No response required.
Wonnarua Nation Aboriginal Corporation	██████	<p>Wonnarua Nation Aboriginal Corporation support the recommendations on the basis that the following be undertaken at Mt Arthur Coal:</p> <ul style="list-style-type: none"><li>• Further support for the local Indigenous community from BHP.</li><li>• Establishment of employment targets for the Indigenous community,</li><li>• Increasing Indigenous procurement.</li></ul>	Comment referred to BHP for consideration as part of broader cultural engagement for the MAC.

## 4. Summary and analysis of background information

### 4.1 Archaeological context

#### 4.1.1 Heritage register searches

##### 4.1.1.1 AHIMS register

A search of the AHIMS for the Subject Area was conducted on 6 December 2022 (AHIMS Client ID# 738387). One Aboriginal cultural heritage site (AHIMS ID#37-2-0490) and no declared Aboriginal places have been previously recorded within the Subject Area.

The location of identified AHIMS sites is provided in Figure 5. A copy of the AHIMS extensive search results is provided in Appendix 4. Relevant site card records are provided in Appendix 5.

Man 91; Mt Arthur North (AHIMS ID# 37-2-0490) is an Open Camp Site containing artefact(s) identified inside the Subject Area during the field surveys. The site has previously been destroyed as part of a salvage program undertaken by RPS on 21 November 2016. Site details are summarised in Table 12 below.

**Table 12. Details of Man 91; Mt Arthur North (AHIMS ID# 37-2-0490)**

AHIMS ID	Site name	Site features	Site status	AHIP* permit	Details
37-2-0490	Man 91; Mt Arthur North	Artefacts	Destroyed (as part of a salvage program)	1384	<p>The site was first recorded in 1985 during an archaeological survey undertaken by Koettig and Hughes (1985). The artefacts were identified within a large exposure containing approximately 100% clay. The site is situated on a hilltop on a moderate area of a slope with a small creek situated approximately 500 m to the north. Artefacts were found to have been washed downslope and were identified in proximity to a bedrock exposure. A low density of artefacts (3 artefacts /m<sup>2</sup>) extending across an area 60 x 40 m was identified in the 1985 recording.</p> <p>The site has been investigated archaeologically as part of a salvage program undertaken by RPS on 21 November 2016.</p>

\* Aboriginal Heritage Impact Permit

### Limitations

There are several limitations to the AHIMS dataset. These limitations include the following:

- The status of the registered sites, whereby the current sites status does not match the AHIMS database.
- Some sites within the area have previously been recorded under the AHMP but are not reflected within the current AHIMS database. Sites within the Mt Arthur vicinity have been updated during this Modification assessment to reflect the real status.
- Some datum and locational errors within the AHIMS dataset – particularly of sites with loci.
- Sites that have not been registered in AHIMS.







Where possible, updates to both the MAC master database of Aboriginal cultural heritage sites and AHIMS have been made. It is recommended that the AHMP is updated to include the recently identified Aboriginal cultural heritage sites and audit the existing BHP database. An audit would include confirmation of AHIMS search results for consistency of site status and location.

#### 4.1.1.2 Other registers

In addition to AHIMS, searches of the World Heritage Database, the Commonwealth Heritage List, the National Heritage List, the State Heritage Register, the State Heritage Inventory, the Muswellbrook LEP and the Muswellbrook Shire DCP 2009 were conducted on 14 March 2023. Clause 5.10 of the Muswellbrook LEP outlines the controls for heritage conservation including the conservation of Aboriginal objects and Aboriginal places of heritage significance (Table 13).

**Table 13: Listed heritage items in proximity to the Subject Area**

Heritage register	Items in the Subject Area	Items within wider region
World Heritage Database	N/A	N/A
Commonwealth Heritage List	N/A	N/A
National Heritage List	N/A	N/A
State Heritage Register	N/A	<ul style="list-style-type: none"> <li>• Edinglassie Homestead No.00170 (1.2 km to the northeast of the Subject Area)</li> <li>• Rous Lench Homestead No.00211 (3 km to the northeast of the Subject Area)</li> </ul>
Schedule 5 of Muswellbrook LEP 2009	N/A	<ul style="list-style-type: none"> <li>• Yammanie (The Hut) No.182 (6.3 km to the northeast Subject Area)</li> <li>• Edinglassie Homestead No.184 (1.2 km to the northeast Subject Area)</li> <li>• Rous Lench No 185 (3 km to the northeast of the Subject Area)</li> <li>• Edderton Homestead No.189 (5.5 km to the southeast of the Subject Area)</li> <li>• Beer Homestead No.187 (4.7 km to the south of the Subject Area)</li> <li>• Belmont No.188 (4.7 km to the south of the Subject Area)</li> </ul>
Muswellbrook Shire DCP 2009	N/A	N/A

Edinglassie and Rous Lench are State Heritage Listed items located more than 1 km northeast of the Subject Area, along the southern side of the Hunter River and north of Denman Road. The Edinglassie Homestead, all associated buildings and Rous Lench homestead are closely associated with the earliest European occupation in the area. Collectively, these two properties represent one of the earliest land grants of the initial settlement of Hunter Valley and most likely points of first contact with local Aboriginal populations. It has been noted in primary historical documents that many of the locations where Europeans first settled (homestead locations) and established farms were originally Aboriginal camping grounds (Umwelt 2007).

The Edinglassie and Rous Lench Homesteads are managed under a Heritage Management Program (HVEC, 2012a) and separate management plan (HVEC, 2012b) implemented by HVEC.

A further three homesteads (Belmont, Edderton, and Beer Homesteads) within close proximity to the Subject Area are listed in Schedule 5 of the Muswellbrook LEP, but will not be impacted by the Modification.

#### **4.1.2 Previous regional heritage and archaeological assessments**

The Subject Area is located in the traditional Country of the Wonnarua people. Tindale (1974) considered Wonnarua boundaries to extend from Aberdeen in the north, Maitland in the southeast, Cessnock in the south, and west to Wollar and Turral.

It is essential to acknowledge that early historical documents likely contain bias and/or inaccuracies in their reporting of events or other aspects of Aboriginal culture, therefore historical records sourced directly from Aboriginal stakeholders are considered the most reliable (L'Oste-Brown, Godwin & Porter 1998). Some historical documents provide important information and insights into local Aboriginal customs and material culture at the time of colonial occupation of the region.

A number of writers described the Aboriginal community of the Hunter Valley in the late nineteenth century. Fawcett (1898:152) described the "Wonnah-ruah" tribal district as the area drained by the Hunter River and its tributaries, an area covering approximately 5,180 square kilometres (km<sup>2</sup>). More recently, Moore (1970:28) described the Wonnarua territory as being bounded by the Worimi people who occupied the estuarine Hunter River and coastal lands to the east, the Gamilaroi people to the south-west, the Gewegal people to the north-west, and the Darkinjung people to the south.

Ongoing archaeological investigations in the Hunter Valley have demonstrated that open artefact scatters are common, with large open sites generally located near large creeks which provided a more reliable source of water, and smaller open sites being distributed through a variety of landforms including large and small creeks, slopes and crests (RPS 2013). Many of the sites have been dated by certain typological temporal markers such as backed blades and eloueras within assemblages. Based on the presence of backed artefacts, which are often considered to date to the last 4000 years, the majority of sites in the Hunter Valley date to the late Holocene (Kuskie and Kamminga 2000).

#### **4.1.3 Previous heritage assessments**

Archaeological studies provide material evidence of Aboriginal use of the landscape at times both before and after written history and complement the oral histories and cultural knowledge held by the Aboriginal community.

A summary of local archaeological assessments undertaken in the vicinity of the Subject Area is provided in Table 14 below. The below assessments are all relevant to the Subject Area as they inform the Predictive Model and ethnographic context for the Modification (Section 4.2).

**Table 14: Summary of previous archaeological investigations**

Author	Date	Title
BHP	2022	<p><b>Aboriginal Heritage Management Plan (February 2022)</b></p> <p>This AHMP was prepared to satisfy HVEC's obligations for the care and management of Aboriginal cultural heritage at the MAC. The AHMP has been prepared in consultation with HVEC's RAPs and in accordance with requirements set out in PA 09_0062 (as Modified on 26 September 2014) specifically, Schedule 3, Condition 45, and Planning Approval PA 06_0091 (granted on 2 December 2008) specifically, Schedule 3, Condition 11. Objectives of the AHMP included to:</p> <ul style="list-style-type: none"> <li>• facilitate the involvement of the Wonnarua people, represented by the RAPs, in the decision making process for the ongoing monitoring and management of Aboriginal cultural heritage at MAC;</li> <li>• minimise the impacts of HVEC's operations on Aboriginal cultural heritage;</li> <li>• achieve cultural heritage management outcomes which RAPs consider acceptable;</li> <li>• continue effective engagement through collaboration and open and transparent communication with the RAPs, to further enhance the relationship between the RAPs and HVEC; and</li> <li>• comply with the requirements of the NPW Act, EP&amp;A Act and HVEC's Planning Approvals.</li> </ul> <p>The AHMP would be updated incorporating results and recommendations as part of this ACHA.</p>
RPS	2013	<p><b>Aboriginal and Non-Indigenous Cultural Heritage Assessment. Mt Arthur Coal Open Cut Modification. Mt Arthur Coal Mine.</b></p> <p>An ACHA was undertaken for Modification 1 involving a four-year extension of mining to 2026. The proposal included an increase in the open-cut disturbance areas of the mine. The survey program was undertaken across four survey units based on landform and location and included floodplain, creek banks, lower slope, mid-slope and upper-slope areas. Identified historical disturbances include impacts related to previous farming, land clearance, fence line construction, dam and pipeline infrastructure, livestock grazing, a historic rail line and various trail and road construction work. In total, 301 previously identified Aboriginal cultural heritage sites were identified within the proposed disturbance for Modification 1 and surrounds. The majority of the sites were identified on the mid and lower-slope areas of rolling hills, in close proximity to the creek lines.</p>
HVEC	2012	<p><b>Aboriginal Heritage Management Plan</b></p> <p>The AHMP is designed to satisfy HVEC's obligations for the care and management of Aboriginal cultural heritage at MAC mine, developed in accordance with the requirements set out by Schedule 3, Condition 11 of the PA 06_0091 (2 December 2008). This was updated in 2022 to be in accordance with the requirements of the modified PA 09_0062 (26 September 2014), in order to facilitate involvement of the Wonnarua people, minimise HVEC's operations on Aboriginal cultural heritage, achieve cultural heritage management outcomes, continue effective engagement through collaboration and open communication with RAPs, and comply with relevant Acts and HVEC's Planning Approvals.</p>
AECOM	2009a	<p><b>Aboriginal Archaeology and Cultural Heritage Assessment, Mt Arthur Coal.</b></p> <p>An archaeological assessment was undertaken in response to the proposed Consolidation Project (where all existing planning approvals would be consolidated into a single planning approval). The study included previously investigated areas as well as a number of new areas. One of these areas was an offset area (extending 495 ha) east of Thomas Mitchell Drive where low levels of previous disturbance were identified. A total of 67 sites were identified within the offset area, with many showing higher artefact densities suggesting their favourable occupation. A number of sites were identified as having subsurface</p>



Author	Date	Title
		archaeological potential. Two scarred trees were also identified approximately 1 km from Ramrod Creek. The survey program found that sites were most likely to occur along gentle drainage depressions or on the terraces or banks of Ramrod Creek.
Umwelt	2008	<p><b>Mt Arthur Underground Project Aboriginal Archaeological Assessment.</b></p> <p>The archaeological assessment was undertaken by Umwelt to assess the proposed Mt Arthur Underground Project within the Bayswater No. 3 mining lease and adjacent Exploration License 5965. A similar survey strategy was adopted to that by South East Archaeology Pty Ltd (1999) (discussed below). The extent of site identification within the survey program was found to be influenced by visibility issues, with the largest number of sites identified in the eastern portion where good visibility was offered following local bushfires. The majority of identified sites were found to be open campsites containing artefact scatters or isolated finds. In total, 77 sites were identified within the survey area of which 46 were artefact scatters, 30 were isolated finds and one scarred tree was also identified. The most common raw material observed was mudstone and the second most common was silcrete. Other raw materials included quartzite, quartz, porcellanite, petrified wood, jasper, chert, basalt, chalcedony, tuff, siltstone and sandstone. The most common tool type was flakes, however, covers, microliths, thumbnail scrapers, blades, backed blades, Bondi points, ground axes, hammerstones, a grindstone, horseshoe cores, a sandstone anvil and an ochre cake were also identified amongst the assemblage. The results of the survey program supported earlier predictive models developed for Mt Arthur, including that the majority of artefact scatters identified would be situated within 50 m from high-order watercourses. The highest artefact concentrations were found at sites with the lowest slope gradients with moderately to steeply sloped locations having only moderate archaeological significance due to their lower levels of preservation.</p>
Umwelt	2007	<p><b>Aboriginal Archaeological Assessment – South Pit Extension Project Mt Arthur Coal.</b></p> <p>An archaeological assessment was undertaken in response to a proposal for an extension to the South Pit of Mt Arthur North into the Bayswater No. 3 mining lease, including a proposed disturbance area of 303 ha. The survey program was intended to include areas not previously surveyed as part of the extensive survey program undertaken three years earlier by South East Archaeology Pty Ltd (2004) (detailed below).</p> <p>The survey program resulted in the identification of seven new Aboriginal cultural heritage sites and the ground-truthing of one previously identified site. The identified sites were generally located on very gentle to gentle slopes associated with waterways and drainage depressions (most sites were situated within 50 m of a drainage depression). The most common site type identified were open campsites containing artefacts, with scatters most likely in proximity to sources of permanent water. These campsites were often identified in areas of existing erosion where visibility was improved. Areas of modified terrain or areas of moderate to steep slopes and depressions were found to contain only a low frequency of sites.</p>
South East Archaeology Pty Ltd	2004	<p><b>Salvage of Aboriginal Heritage Sites in the Mt Arthur North Coal Mine Lease, Hunter Valley, NSW. Report to BHP.</b></p> <p>An extensive salvage program was undertaken in response to a proposal for mining at Mt Arthur which was predicted to result in impacts (whole or partial) to a total of 283 recorded Aboriginal cultural heritage sites during a 21-year mining period. A cultural salvage was undertaken by the Upper Hunter Wonnarua Council under Section 90 Consent and Permit to Salvage (#SZ347). A separate excavation permit was provided to RPS (#SZ346) to permit an archaeological salvage program. The cultural salvage program was intended to mitigate the impacts of the proposed development on the cultural values of the Aboriginal sites and objects by conserving a portion of the ‘heritage evidence’ for future generations.</p>

Author	Date	Title
		<p>In total, 32,866 stone artefacts were recovered during the salvage program. Silcrete artefacts were identified as the most common (accounting for approximately 60% of the assemblage) and tuff being the second most common (accounting for approximately 20%). Formalised tools included various flakes, backed artefacts, geometric microliths and elouras. Various core types were also identified, including bipolar cores, microblade cores, flaked river pebbles and cobbles and 'non-descript' cores' indicating a range of knapping techniques. Heated silcrete (some of which appeared to be deliverable) was also identified amongst the assemblage.</p> <p>Broad site patterning suggested that sites containing high densities of artefacts tended to be localized and relatively discrete and were interspersed by sites with significantly lower artefact densities. The distribution of tool types reflected relatively intact spatial patterning suggesting only minor post-depositional lateral movement had occurred.</p> <p>The results of radiocarbon dating undertaken suggested that there was at least four episodes of occupation over the past 1,400 years. The earliest dated occupation site was a stone-lined hearth with a maximum age of 1,350 years BP. There was also evidence of modern Aboriginal occupation of the area in the form of ethnographic accounts and a glass artefact present in the assemblage. The archaeological evidence supported a view that Aboriginal people were practicing a traditional lifestyle within the study area in the early 1800s even after European contact.</p>
South East Archaeology Pty Ltd	1999	<p><b>An Aboriginal Archaeological Assessment of the Proposed Mt Arthur North Coal Mine, near Muswellbrook, Hunter Valley, NSW. Volume A. A Report to Dames and Moore. The Mount Arthur North Coal Project EIS Appendix L, April 2000 URS.</b></p> <p>The archaeological assessment comprised an extensive study area (approximately 37 km<sup>2</sup>), with the total area divided into 'archaeological terrain units' with combinations of specific environmental variables relevant to Aboriginal occupation and use of the local area. Working in pairs (one archaeologist and one Aboriginal community representative), the survey program covered an area of 30 to 40 ha per team per day.</p> <p>A total of 17,330 artefacts were identified across 294 sites; 15,970 of these were recorded in detail. Fifteen raw material sources were identified amongst the assemblage, with silcrete and indurated rhyolitic tuff being the most common. Porcellanite, chert, quartz, various volcanics, quartzite, banded rhyolite, porphyritic rhyolite, chalcedony, petrified wood, siltstone, sandstone and ochre artefacts were also identified. The dominance of flakes as the most common tool type (accounting for 35%) of the assemblage was considered evidence of general or non-specific knapping activities reflecting casual, opportunistic behaviour. The presence of larger cores was also interpreted as evidence that procurement activities were likely also occurring locally.</p> <p>This study is relevant to the present Subject Area as it provides extensive evidence of site occurrence within Mt Arthur and the surrounds. The extensive artefactual evidence that it documents also provides a useful comparative assemblage to compare and contrast with the assemblages identified for the present Subject Area.</p>
Dyall	1981	<p><b>Report on Aboriginal Relics from Mt Arthur South Coal Lease, Muswellbrook. Report to NSW National Parks and Wildlife Service (NPWS).</b></p> <p>As part of the preparation for the open-cut mine development, Dyall (1981) completed a four-day survey program investigating various creeks, ridges and ploughed paddocks in proximity to the current Subject Area. A total of 24 open campsites are being identified within the lease area. All 24 were found to be located along creek lines which provided evidence to confirm the predictive model developed for the project. Over 500 artefacts were recorded at two sites with flakes, microlithic-backed blades, ground edge axes, choppers and grinding stones noted within the assemblages. Dyall (1981) confirmed with predictive models that sensitive landscapes such as waterways and ridges have a higher</p>

Author	Date	Title
		potential to contain Aboriginal objects and cultural heritage, including Aboriginal objects unique to the Hunter Valley.
Dyall	1980	<p><b>Report on Aboriginal Relics from Mt Arthur North Coal Lease, Muswellbrook. Report to NSW NPWS.</b></p> <p>Dyall's 1980 study included the results of a four-day survey program which included interviews with local residents of the area in order to identify burial sites, marked trees, axe grinding grooves and open campsites. A pedestrian survey was undertaken along all major creeks and many tributaries and along ridge lines of Mount Arthur, in addition to investigation of the flood plains. A number of basalt sources were identified for axe making as well as sites containing burials and axe grinding grooves however all were identified outside the Mt Arthur North mining lease area. Four open campsites containing artefacts were identified at locations along the creeks varying in artefact number between 20 and 100 flakes per 1,000 square metres (m<sup>2</sup>). Various tools were identified including Bondi points, geometric microliths, edge-ground axes, flaked basalt hand axes and Bulga knives. Two axe grinding groove sites were also identified.</p>

## 4.2 Synthesis and predictive model

Several archaeological models regarding how Aboriginal people use the landscape have been developed for the region (Kuskie 2000, Kuskie and Clarke 2004, Umwelt 2007, RPS 2013). The purpose of archaeological models is to assist in the prediction of what Aboriginal cultural heritage sites may be present in the landscape and where they might be located. It is generally assumed that the environment and its resources were a major factor influencing Aboriginal movement and campsite locations. Further socio-cultural and demographic factors may also influence patterns of occupation.

Kuskie and Clarke (2004) have posited a model of past occupation within the Mt Arthur North locality which uses the concept of "resource zones". The model determines three zones of resources: primary resource zones, secondary resource zones and a third zone that encompasses the land beyond primary and secondary resource zones. The model states that occupation focused where multiple resource zones were present, particularly along the Hunter River (referred as a primary resource zone). Within these primary zones, large and reliable resources are seen to be areas of longer and more frequent occupation. Outside of the primary zones, occupation becomes more sporadic and focused within 50 m of higher-order watercourses and associated levels to very gently inclined valley flats (termed secondary resource zones). These areas are more likely to be occupied by smaller groups of people for shorter lengths of time (often seasonally). Beyond the primary (e.g., Hunter River) and secondary resource zones (e.g. higher order tributary watercourses such as Saddlers and Quarry Creek) tended to involve hunter and gathering activities by small parties. This involved transitory movements between locations and procurement of stone materials. These areas are typically associated with landforms such as simple slopes, ridge crests, spur crests and lower-order watercourses.

The predictive model developed for the Subject Area included consideration of previous archaeological surveys and assessments in the local area and wider surrounds (as detailed above), the distribution and patterning of known sites within the Subject Area and surrounds, the landform units and landscape context and the previous known land uses within and surrounding the Subject Area.

The predictive model developed for the Subject Area is as follows:

- The majority of sites will be located near or within drainage channels.
- The majority of sites will be within 50 m of watercourses.

- Sites will be more common along the ephemeral tributaries that drain the slopes rather than floodplains of the major creek lines as sedimentation in these landforms will bury sites, making them more difficult to detect during surveys.
- Simple slopes will also contain considerable artefact densities based on previous work.
- Artefact densities will be lower on ridge crests and spur crests.
- Grinding grooves have been found in areas where sandstone outcrops occur within or near creeks, and also in association with rock shelters.

In view of the foregoing, the following describes physical features with potential to be associated with artefacts, however, given the absence of suitable landscape units, are unlikely to occur in the Subject Area:

- The main watercourses where sites have previously been identified and are sensitive include Saddlers, Quarry, and Saltwater Creeks.
- High-density artefact sites will be located near more permanent watercourses.
- Rock shelters will usually be located in sandstone formations in areas with steeper gradients (such as the high slopes of Mount Arthur).



## 5. Field survey

### 5.1 Survey strategy

Opportunistic and systematic inspection of exposures across the Subject Area was undertaken during the field survey. The Subject Area was divided into five survey units (Table 15 and Figure 6), defined by mapping developed prior to survey works. The survey method for each unit included long linear parallel transects, from south-north and west-east alignments via a pedestrian survey. Transects were spaced evenly between each of the survey participants in attendance each day, at approximately 10 to 20 m.

The survey coverage is shown in Figure 6, however, it should be noted that survey tracks are representative of the Niche heritage consultant in attendance on each day.

**Table 15: Survey units investigated during the survey program**

Date	Area surveyed
21 February 2023	Survey Units 1, 2, 3 and start of Survey Unit 4 (central to north)
22 February 2023	Survey Unit 5 (most of the southern section, south of Edderton Road)
23 February 2023	Survey Unit 4 completion, walking north towards Denman Road.

Note: Survey units described in Table 16.

### 5.2 Survey methods

The purpose of the field survey was to assist in the identification of cultural heritage values and to record a representative sample of the material traces and evidence of Aboriginal land use that are visible at or on the ground surface, exposed in sections or visible as features, and to identify those areas where it can be inferred that, although not visible, material traces or evidence of Aboriginal land use have a likelihood of being present under the ground surface (PADs) (DECCW 2010b).

The Subject Area was inspected on foot from 21 February 2023 to 23 February 2023, with the Subject Area being separated into 5 Survey Units (Figure 6) in order to assess differential landscape features and aspects of the Subject Area. An assessment methodology was developed during the consultation with RAPs prior to survey works and is outlined below.

The methodology was used to ensure adequate cover for the Subject Area, ground truth previously registered sites, collect data for new sites identified and identify archaeologically sensitive areas.

The cultural heritage survey was conducted over a period of 3 days covering the Subject Area. The area was surveyed in accordance with the requirements of the Code of Practice (DECCW 2010b) and the survey sampling strategy defined above.

The survey methodology is outlined below.

- A hand-held differential global positioning system (GPS) unit was used to record all tracks and appropriate site data for the survey with spatial data recorded in terms of Datum and grid co-ordinates (i.e. Zone, Easting, Northing) as per Requirement 8b of the Code of Practice (DECCW 2010b). All positional recordings used Map Grid of Australia (MGA) coordinates (zone 56) based on the Geocentric Datum of Australia (GDA94) and uploaded to a GIS for presentation on maps and figures.
- A digital camera was used for all photography. Representative photographs were taken of survey units, different visibility levels, exposures, and disturbed areas.

- All Aboriginal cultural heritage sites, artefacts and/or features identified during the survey were flagged and their location was recorded using a hand-held differential GPS unit. The context of flagged sites, artefacts and/or features were additionally photographed, and the following details recorded on recording forms: description, photographic recording, context of the recorded site sketched, and the boundary/extent recorded using a hand-held non-differential GPS unit.
- Different types and levels of exposure were recorded (Plates 3 and 4). Exposure was defined as an estimate of the area which has a likelihood of revealing buried artefacts and/or deposits. Exposure is represented as a percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Or as Burke and Smith (2004: 78-80) phrase it: exposure refers to what reveals. Exposure types are based on the results of erosional processes (e.g. sheet wash, gullying, blow-outs, animal tracks or pads, vehicle or walking tracks etc).
- Archaeological visibility was recorded and defined as the amount of bare ground which might reveal artefacts or other archaeological materials. Or as Burke and Smith (2004: 78-80) phrase it: visibility refers to what conceals. Visibility is affected by vegetation, leaf litter, stone ground, introduced material etc.
- The information recorded during the survey included (but was not limited to):
  - landform;
  - gradient and aspect;
  - vegetation;
  - geology and soils;
  - occurrence of Aboriginal resources (food and medicine plants, prey animals, stone and water);
  - average ground surface visibility;
  - extent of any exposures;
  - any information provided by RAPs in relation to cultural values;
  - the nature of any site, PAD or landscape feature of Aboriginal cultural value located;
  - the nature of any artefacts observed; and
  - all mature trees and rock outcrops suitable for shelter, art, engraving or grinding observed.
- A skeletal remains procedure was put in place as follows:
  - If skeletal remains are encountered, survey in that area will stop and Heritage NSW, NSW Police and on-site personnel would be notified.
  - The survey will not re-commence until permission is given by these authorities.

### 5.3 Survey limitations

The majority of the Subject Area possessed very low visibility (Plate 3 and Plate 4), with much of the Subject Area being covered by dense low grasses. Despite the limited archaeological visibility within the Subject Area during the survey works, 12 Aboriginal cultural heritage sites (comprising one existing known site and 11 new sites), inclusive of isolated finds, PADs and Artefact Scatters were identified across the landscape, particularly in areas in which exposures and higher visibility occurred. These were inclusive of vehicle tracks, slips and scalds.



**Plate 3: Extensive exposure with excellent Ground Surface Visibility (GSV) was present in areas such as MAC-AS-4; facing west.**



**Plate 4: Isolated exposures were identified during the site inspection providing improved GSV within areas of thick grass; facing east.**

#### 5.4 Sensitive cultural information management protocol

During the Proposed Methodology review period, HVEC and Niche provided the opportunity for RAPs to provide cultural information, including a statement of the value of identified sites and other matters. Comments on the draft methodology are outlined in Table 7.

RAPs were made aware that HVEC and Niche staff were seeking cultural information and supporting evidence in regard to matters of cultural value.

In the event that a stakeholder had sensitive or restricted public access information, it was proposed that HVEC and Niche would manage this information (if provided by the Aboriginal community) in accordance with a sensitive cultural information management protocol. If required, it is anticipated that the protocol would include making note of and managing the material in accordance with the following key limitations as advised by Aboriginal people at the time of the information being provided:

- Any restrictions on access to the material.
- Any restrictions on communication of the material (confidentiality).
- Any restrictions on the location/storage of the material.
- Any cultural recommendations on handling the material.
- Any names and contact details of persons authorised within the relevant RAP(s) to make decisions concerning the Aboriginal material and the degree of authorisation.
- Any details of any consent given in accordance with customary law.
- Any access and use by the RAPs of the cultural information in the material.

#### 5.5 Cultural heritage survey

The field survey program undertaken within the Subject Area included an inspection of previously identified Aboriginal cultural heritage sites (detailed in Section 0) as well as a systematic survey of sensitive landforms resulting in the identification of 11 previously unrecorded Aboriginal cultural heritage sites (detailed in Appendix 3).

### 5.5.1 Landforms

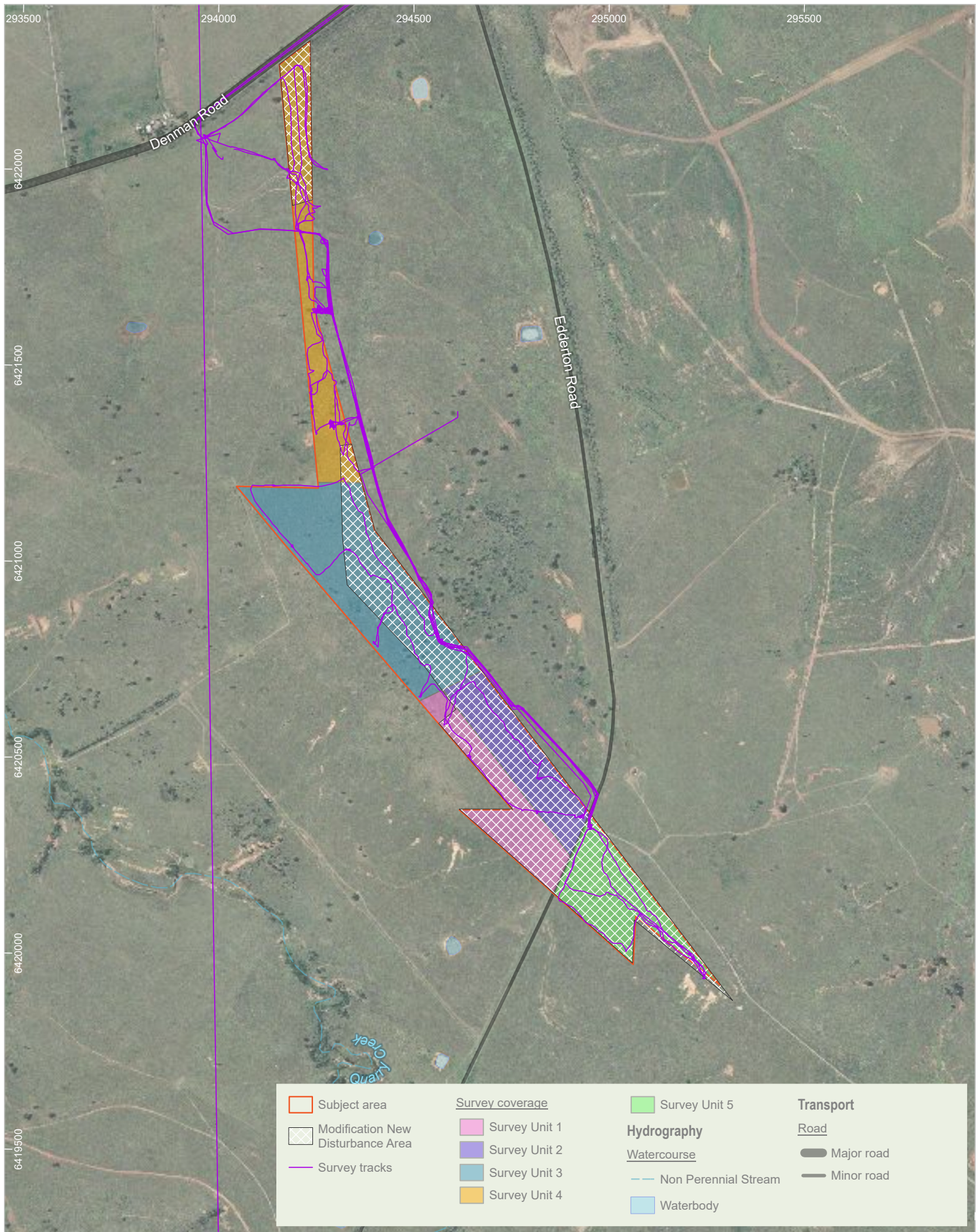
Table 16 below describes each of the observations recorded in each survey unit within the Subject Area. The five survey units are also depicted in Figure 6.

**Table 16: Survey unit observations and landform information**

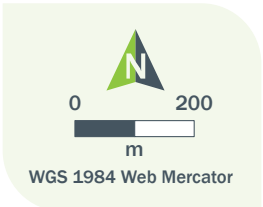
Area surveyed	Brief description
Survey unit 1	Rolling hills landform with Quarry Creek located approximately 800 m southwest of the unit. Primarily dense grasses with isolated stands of trees and introduced species such as thistles and prickly pear. Light orange loamy clay soils are present, identified in contour exposures and ant nests. Disturbances include a fence line running on the western boundary and eastern boundary, and a vehicle track on the eastern boundary. Slopes towards the north to a hilltop, before sloping moderately towards Survey unit 3 to the north and Survey unit 2 to the west. One isolated find was located on a vehicle track, and a previously identified site was recorded to have present artefacts.
Survey unit 2	Rolling hills landform with Quarry Creek approximately 900 m west of the unit. Primarily dense grasses with isolated stands of trees and introduced species such as thistles and prickly pear. Orange and yellow fine clays and light orange loamy soils are present. Primarily lower slopes and relatively flat. Existing disturbances include telecommunication infrastructure, ant's nests, drill pad located within the survey unit off the vehicle track to the west of the unit. A vehicle access track also bounds Survey unit 2 to the east. One artefact scatter was identified.
Survey unit 3	Rolling hills landform with Quarry Creek approximately located 900 m southwest of the unit. Primarily dense grasses with isolated stands of trees such as Casuarina and introduced species such as thistles and prickly pear. Light orange to yellow loamy clay soils were present, identified in contour exposures, ant nests and drilling test sites. Primarily slopes at a gentle to moderate angle are located to the north before sloping north towards survey unit 4. Erosion is predominantly identified in exposed areas. Two isolated finds identified primarily on vehicle tracks located within the survey unit were present, as well as two artefact scatters.
Survey unit 4	Rolling hills landform, approximately 1 km from the Hunter to the North, and less than 1 km to the north of Whites Creek. Primarily dense grasses with isolated stands of trees and introduced species such as thistles and prickly pear. Light orange to orange clays, with brown loamy soils present. Primarily downslope, with contour erosions and exposures. Vehicle tracks, test drills and borehole sites and tree roots are included in exposure types. Disturbed in 30% of the survey unit, with three artefact scatters present. Slopes downhill to Denman Road.
Survey unit 5	Rolling hills landform, approximately 700 m east from Quarry Creek. Very low visibility due to dense grasses with isolated stands of trees. Disturbances present, inclusive of vehicle tracks, pipelines, mining-related activity on boundaries and infrastructure such as fencing. Primarily located mid-slope, and downslope to the north towards Edderton Road which bounds the northern boundary of the survey unit. Contour erosion, exposures and cattle tracks are present. No Aboriginal heritage sites were identified within this survey unit.

Plate 5 and Plate 6 provide photographs of the landforms observed in the Subject Area. Eucalyptus and Casuarina trees occur predominately encompassing the Subject Area as isolated strands within dense grass pastures and areas of cleared farming paddock used in the past for cattle grazing. Minimal waterways and water points were observed during the survey, with these primarily being located outside the Subject Area. Signs of runoff and washout in erosion scalds and slips were present (Plate 6).





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**Survey units**

**HVEC Mt Arthur Coal Mine Modification 2 - ACHA**

**Figure 6**

Niche PM: Deirdre Lewis-Cook  
 Niche Proj. #: 6455  
 Client: Hunter Valley Energy Coal (HVEC)

public/NSW\_Imagery: © Department of Customer Service 2020/Terrain: Multi-Directional Hillshade: Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodastylereisen,GSA,GS! and the GIS User Community | Watercourses, Waterbodies, Road and Rail alignments, Protected areas of NSW © Spatial Services 2021. | Niche uses GDA2020 as standard for all project-related data. In order to ensure that data from numerous sources and coordinate systems is aligned, on-the-fly transformation to WGS1984 Web Mercator Auxilliary Sphere is used in the map above. For ease of reference, the grid tick marks and labels shown around the border of the map are presented in GDA2020, using the relevant MGA zone.





**Plate 5: Sample of rolling hill landform observed at Survey Unit 5; facing southwest**



**Plate 6: Sample of exposure revealing contour erosions within Survey Unit 4; facing northwest**

### 5.5.2 Survey coverage

Ground Surface Exposure (GSE) across the Subject Area ranged from 5-20% due to limitations caused by the present dense grasses covering most of the Subject Area. Multiple exposure types were present within the Subject Area, inclusive of sheet wash erosion and the presence of slips and scalds. Smaller areas of exposure types were also present from animal burrowing and wind exposure.

The Ground Surface Visibility (GSV) across the Subject Areas was low, approximately 5-10%, due to dense vegetation coverage, primarily grasses present across the majority of the Subject Area. Areas of exposure were associated with vehicle access tracks, such as road verges, and past activity such as borehole testing.

A summary of the survey coverage across the five survey units is provided in Table 17.

**Table 17: Survey coverage summary for each unit type**

Survey unit	Landform	Survey unit area (m <sup>2</sup> )	Visibility (%)	Exposure (%)	Effective coverage (m <sup>2</sup> )	Effective coverage (%)
1	Rolling hills	38,470.2	5	5	36,546.69	95%
2	Rolling hills	33,093.1	10	10	31,438.45	95%
3	Rolling hills	142,162.0	10	10	135,053.9	95%
4	Rolling hills	68,643.2	20	20	65,211.1	95%
5	Rolling hills	51,618.06	5	5	46,456.25	90%

A summary of the effective survey coverage, site frequency and degree of artefact/feature occurrence in regard to identified landform/survey units is detailed in Table 18.

**Table 18: Landform summary – sampled areas**

Survey Unit	Landform area (m <sup>2</sup> )	Area effectively surveyed (m <sup>2</sup> )	Landform effectively surveyed (m <sup>2</sup> )	Number of sites*	Number of artefacts or features
1	38,470.2	36,546.69	36,546.69	2	3
2	33,093.1	31,438.45	31,438.45	1	5
3	142,162.0	135,053.9	135,053.9	3	9
4	68,643.2	65,211.1	65,211.1	3	21+
5	51,618.06	46,456.25	46,456.25	0	0

\* Sites recorded wholly or partially within the Subject Area

### 5.5.3 Survey results

#### 5.5.3.1 Previously recorded sites within the Subject Area

The Aboriginal cultural heritage sites detailed in Table 19 have previously been identified and occur within or in close proximity to the Subject Area boundary (Figure 7).

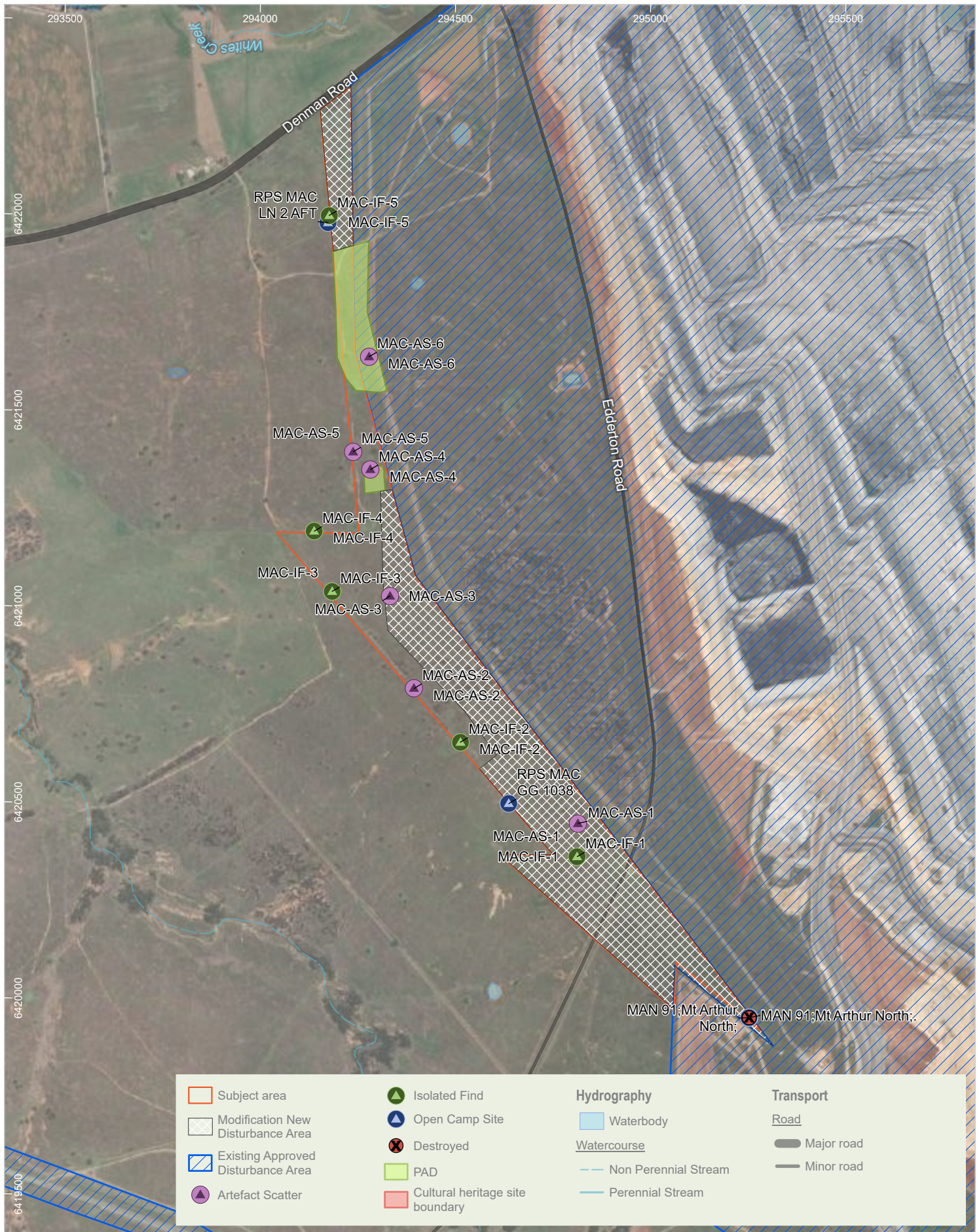
During the cultural heritage survey, the records of all Aboriginal cultural heritage sites listed in Table 19 were investigated and assessed to determine whether any Aboriginal objects were present. As a result of previous salvage works, no artefacts were identified at MAN91; Mt Arthur North (AHIMS ID# 37-2-0490), Mt Arthur North (AHIMS ID# 37-2-0271) and RPS MAC LN 2 AFT (AHIMS ID# 37-2-4533).

Newly identified artefacts and an area of PAD were located at RPS MAC GG 1038 (AHIMS ID# 37-2-5833) (on the boundary of the Subject Area) (Appendix 3).

**Table 19: Previously recorded Aboriginal cultural heritage sites situated within or in proximity to the Subject Area**

AHIMS ID	Site name	Site features	Site status	Location
37-2-0490	MAN91; Mt Arthur North	Artefact	Destroyed (as part of salvage program)	Located within Survey Unit 5, at the southern end of the Subject Area.
37-2-0271	MAN91; Mt Arthur North	Artefact	Destroyed (as part of salvage program)	Duplicate of AHIMS ID#37-2-0490. Outside the Subject Area
37-2-4533	RPS MAC LN 2 AFT	Isolated Artefact	Destroyed (as part of salvage program)	Located on the western boundary outside of the Subject Area, south of Denman Road.
37-2-5833	RPS MAC GG 1038	Artefact Scatter & PAD	Destroyed (as part of salvage program)	Located on the western boundary of the Subject Area, along the vehicle track running on the western boundary north of Edderton Road.





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## 5.5.4 Analysis and discussion of results

### 5.5.4.1 Site types and features within the Subject Area

As a result of the survey, a total of 11 new Aboriginal cultural heritage sites were identified within or in close proximity to the Subject Area. A summary of the site types is provided in Table 20.

**Table 20: Summary of newly recorded site types within or in vicinity of the Subject Area**

Site features	Total sites	Percentage
Artefact Scatter	4	36.36%
Artefact Scatter with PAD	1	9.09%
Artefact Scatter, PAD and Resource Site	1	9.09%
Isolated Find	5	45.46%
<b>Total</b>	<b>11</b>	<b>100%</b>

Consistent with the predictive model, site distribution of artefact scatters were located on gentle slopes/rolling hills located near watercourses. There were no rock shelters present within the Subject Area due to the absence of sandstone formations, consistent with the predictive model.

Surface visibility was very low across much of the Subject Area, due to the presence of dense grasses and vegetation across the ground surface. Evidence of impact by livestock grazing is present within areas containing erosion and sudden changes in vegetation communities. The vegetation species within the Subject Area were inclusive of exotic plants and weeds, as well as native grasses and trees. The vegetation across the Subject Area tended to include dense grasses with isolated stands of native tree species such as *Casuarina* and *Eucalypt* spp.

Plate 7 and Plate 8 below provide examples of current vegetation within the Subject Area as observed during the cultural heritage survey.



**Plate 7: Vegetation present in Survey Unit 4; facing north**



**Plate 8: Vegetation present in Survey Unit 5; facing north**

### 5.5.5 Results summary

The site survey was completed over three days, from 21 February 2023 to 23 February 2023. Surveys identified that there was limited visibility across the majority of the Subject Area due to dense low grasses. While survey works attempted to cover 100% of the Subject Area, primary focus points were relevant landforms and areas of exposure where ground visibility was present.

During the course of the survey, 11 new Aboriginal cultural heritage sites were identified within or in close proximity to the Subject Area (MAC-AS-1 (AHIMS ID #33-2-0047), MAC-AS-2 (AHIMS ID #33-2-0050), MAC-AS-3 (AHIMS ID #33-2-0049), MAC-AS-4 (AHIMS ID #33-2-0048), MAC-AS-5 (AHIMS ID #33-2-0051), MAC-AS-6 (AHIMS ID #33-2-0052), MAC-IF-1 (AHIMS ID #33-2-0042), MAC-IF-2 (AHIMS ID #33-2-0043), MAC-IF-3 (AHIMS ID #33-2-0044), MAC-IF-4 (AHIMS ID #33-2-0045) and MAC-IF-5 (AHIMS ID #33-2-0046)), and one previously recorded site was located and identified to contain artefacts post previous salvage works in 2013 (RPS MAC GG 1038 (AHIMS ID# 37-2-5833)).

Of those 11 sites, 9 new Aboriginal cultural heritage sites were identified wholly within the Subject Area during the site inspection completed by Niche and representatives of the RAPs. These are outlined in Figure 7. MAC-IF-4 (AHIMS ID #33-2-0045) and MAC-IF-5 (AHIMS ID #33-2-0046) were found to be situated adjacent to the Subject Area and separated by existing fence lines.

Two of the new Aboriginal cultural heritage sites were identified to have PADs associated MAC-AS-4 (AHIMS ID #33-2-0048), MAC-AS-6 (AHIMS ID #33-2-0052)) (as depicted in Figure 7). A PAD was also identified at RPS MAC GG 1038 (AHIMS ID# 37-2-5833) during the site inspection. Further detail is provided in Table 24.

## 6. Cultural heritage values and significance assessment

### 6.1 Methods for assessing cultural heritage significance

Heritage significance is assessed by considering each cultural, or archaeological site, against the significance criteria outlined in the *Guide to investigating, assessing and reporting Aboriginal cultural heritage in NSW* (OEH 2011).

In all cases, the assessment of significance detailed below is informed by the Aboriginal community, which is documented in this report. If any culturally sensitive values were identified they would not be specifically included in the report, or made publicly available, but would be documented and lodged with the knowledge holder providing the information.

### 6.2 Assessment frameworks

The Burra Charter (Australia ICOMOS, 2013) defines the basic principles and procedures to be observed in the conservation of important places. It provides the primary framework within which decisions about the management of heritage sites in Australia should be made. The Burra Charter defines cultural significance as being derived from the following values summarised in Table 21 below.

**Table 21: Values as outlined by the Burra Charter**

Value type	Description
Aesthetic value	Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture, and material of the fabric; the smells and sounds associated with the place and its use.
Historic value	Historic value encompasses the history of aesthetics, science, and society, and therefore to a large extent underlies all of the terms set out in this section.  A place may have historic value because it has influenced, or has been influenced by, a historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place, the significance will be greater where evidence of the association or event survives <i>in situ</i> , or where the setting is substantially intact than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
Scientific value	The scientific or research value of a place will depend upon the importance of the data involved, its rarity, quality, or representativeness (conservation value), and on the degree to which the place may contribute further substantial information.
Social value	Social or cultural value refers to the spiritual, traditional, historical, or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them.  Places of social or cultural value have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods, or events. Communities and individuals can experience a sense of loss should a place of social or cultural value be damaged or destroyed.



The NSW Aboriginal cultural heritage regulatory framework supports the significance assessment of Aboriginal archaeological sites and provides guidelines for this ACHA within the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011). The guide outlines two main themes in the overall Aboriginal cultural heritage significance assessment process namely, the identification of the cultural/social significance of Aboriginal objects and/or places to Aboriginal people and the identification of the scientific (archaeological) significance to the scientific/research community. These themes encapsulate those aspects of the Burra Charter that are relevant to Aboriginal objects and places.

### 6.3 Assessing values and scientific significance

This stage is used to assess and discuss the cultural significance of the values identified during the identification and assessment of cultural significance by consulting Aboriginal people and preparing a statement of significance. The assessment of values is a discussion of what is significant and why.

An assessment of values is more than simply restating the evidence collected during the background review and identification of values in stages of the project. Rather, the assessment should lead to a statement of significance that sets out succinct and salient values that have been identified.

The assessment and justification in the statement of significance must discuss whether any value meets the following criteria (NSW Heritage Office, 2001):

- Does the Subject Area have a strong or special association with a particular community or cultural group for social, cultural, or spiritual reasons? (Social value).
- Is the Subject Area important to the cultural or natural history of the local area and/or region and/or state? (Historic value).
- Does the Subject Area have the potential to yield information that would contribute to an understanding of the cultural or natural history of the local area and/or region and/or state? (Scientific (archaeological) value).
- Is the Subject Area important in demonstrating aesthetic characteristics in the local area and/or region and/or state? (Aesthetic value).

Assessment of each of the criteria (above) should be graded in terms that allow the significance to be described and compared, for example, as high, moderate, or low. The guidelines specific to the following criteria for scientific (archaeological) significance are further detailed in Table 22:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the Subject Area) exists, what is already conserved, and how much connectivity is there?
- Rarity: is the Subject Area important in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Educational potential: does the Subject Area contain teaching sites that might have teaching potential?
- Aesthetic potential: does the Subject Area contain visual beauty? Does the Subject Area's visual landscape contribute to its significance?

The assessment should then discuss what is significant and why- this should be summarised into a statement of significance. Thus, the statement of significance is a succinct summary of the salient values drawn from the identification of values.

**Table 22: Criteria specified for scientific (archaeological) significance**

Criteria	Description
Research potential	It is the potential to elucidate past behaviour which gives significance under this criterion rather than the potential to yield collections of artefacts. Matters considered under this criterion include – the intactness of a site, the potential for the site to build a chronology and the connectedness of the site to other sites in the archaeological landscape.
Representativeness	As a criterion, representativeness is only meaningful in relation to a conservation objective. Presumably, all sites are representative of those in their class, or they would not be in that class. What is at issue is the extent to which a class of sites is conserved and whether the particular site being assessed should be conserved in order to ensure that we retain a representative sample of the archaeological record as a whole. The conservation objective which underwrites the ‘representativeness’ criteria is that such a sample should be conserved.
Rarity	<p>This criterion cannot easily be separated from that of representativeness. If a site is ‘distinctive’ then it will, by definition, be part of the variability which a representative sample would represent. The criteria might best be approached as one which exists within the criteria of representativeness, giving a particular weighting to certain classes of site. The main requirement for being able to assess rarity will be to know what is common and what is unusual in the site record but also the way that archaeology confers prestige on certain sites because of their ability to provide certain information.</p> <p>The criterion of rarity may be assessed at a range of levels: local, regional, state, national, and global.</p>
Educational Potential	Heritage sites and areas should be conserved and managed in relation to their value to people. It is assumed that archaeologists have the ability to speak of the value of sites to members of their own profession. Where archaeologists or others carrying out assessments are speaking for the educational value of sites to the public, the onus is on them to go to the public for an assessment of this value, or to reputable studies which have canvassed public demand for education. The danger, otherwise, is that archaeologists would be projecting their values onto a public which is itself given no voice on the matter.
Aesthetics	<p>Archaeologists are not expected to include an assessment of aesthetic significance along with their assessment of scientific significance. In relation to heritage places, aesthetic significance is generally taken to mean the visual beauty of the place. Aesthetic value is not inherent in a place but arises in the sensory response people have to it.</p> <p>Although the guidelines provide no expectation for archaeologists to consider aesthetic values it is often the case that a site’s or a landscape’s aesthetic is a significant contributory value to significance. Examples of archaeological sites that may have high aesthetic values would be rock art sites, or sites located in environments that evoke strong sensory responses. For this reason, we consider it appropriate to include aesthetic values as part of the significance assessments for the sites identified during this assessment.</p>

Educational potential and aesthetic values are not considered to be criteria against which scientific values and significance can be assessed. Aesthetic values should be considered as a distinct category (rather than a criterion that contributes to scientific value) in accordance with the Burra Charter and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011). Educational potential is considered to be a criterion that contributes to social value, rather than scientific value, and hence this is considered below in the overall cultural significance assessment.

### 6.3.1 Grading scientific values

The following gradations, where a site or zone satisfies at least one criterion, have been applied to provide a measure of the values/significance for Aboriginal objects identified within the Subject Area, and to provide an overall assessment of the significance of each of the zones used that define the Subject Area.

A description of the criteria used to grade the scientific values of Aboriginal objects within the Subject Area is included in Table 23.

**Table 23: Criteria for grading scientific values**

Gradation	Description
<b>Low</b>	The site or object contains only a single or limited number of features and has no potential to meaningfully inform our understanding of the past beyond what it contributes through its current recording (i.e. no or low research potential). The site or object is a representative but unexceptional example of the most common class of sites or objects in the region. Many more similar examples can be confidently predicted to occur within the Subject Area and in the region.
<b>Moderate</b>	The site or object derives value because it contains features, both archaeological and contextual, which through further investigation may contribute to our understanding of the local past. These features include, but are not limited to the relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a relatively large assemblage of stone artefacts. The presence of a diverse artefact and feature assemblage and connectedness with landscape features and other notable sites provide relatively higher representative and rarity values than sites of low significance.
<b>High</b>	The site or object has value because it contains archaeological and/or contextual features which through further investigation may significantly contribute to our understanding of the past, both locally and on a regional scale. These features include but are not limited to Aboriginal ancestral remains; the site's relationship with landscape features or other Aboriginal archaeological sites or areas of identified heritage importance; diagnostic archaeological or landscape features that inform a chronology; and a very large assemblage of stone artefacts associated with other features such as oven remains or shell midden. Such sites will be relatively rare and representative of a limited number of similar sites that make up this class; hence they derive high representative and rarity values.



## 6.4 Assessment of archaeological (scientific) significance

Table 24 provides an assessment of significance and summarises identified heritage values for individual Aboriginal sites within the Subject Area. A statement of significance, including an assessment of the social, aesthetic, cultural and historic values is provided in Section 6.5.

**Table 24: Significance assessment for individual Aboriginal cultural heritage sites**

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
37-2-5833	RPS MAC GG 1038	Artefact scatter	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	Low – The site type and features are common in the local region.	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context.	Low – The site has low aesthetic significance at the local level as it is located in a grassy paddock with limited visibility.	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – The Subject Area is a part of the greater landscape which has been occupied and cared for by the Traditional Custodians, the Wonnarua people, for tens of thousands of years. Traditional Custodians have a spiritual connection to the land, water systems and sky. Tangible and intangible values connected to Country must be respected and acknowledged. Cultural and creation stories are embedded within the landscape which has sustained the local community for generations. Every effort should be made to protect the lore, kinship, cultural practices and customs woven into and throughout the landscape.
33-2-0047	MAC-AS-1	Artefact Scatter	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional representative values	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context.	Low – The site has low aesthetic significance at the local level as it is located in a grassy paddock with limited visibility.	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
			of its material or site class type, its value in terms of representativeness is considered low.					
33-2-0050	MAC-AS-2	Artefact Scatter	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context.	Low – MAC AS-2 has low aesthetic significance at the local level as it is located on a vehicle track within a disturbed context.	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above
33-2--0049	MAC-AS-3	Artefact Scatter	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context.	Low – MAC AS-3 has low aesthetic significance at the local level as it is located in a grassy paddock with limited visibility outside of an associated eroded slip.	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
			representativeness is considered low.					
33-2-0048	MAC-AS-4	Artefact Scatter + PAD	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low. Unknown – the representativeness of the PAD cannot be determined without further archaeological investigation.	Moderate – The site type while relatively common, becomes more significant due to the significant size of the present artefact scatter Unknown – the rarity of the PAD cannot be determined without further archaeological investigation.	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context. Unknown – the educational potential of the PAD cannot be determined without further archaeological investigation.	Low – MAC-AS-4 has low aesthetic significance at the local level as it is located in a grassy paddock with limited visibility outside of an associated eroded slip.	Unknown – The location of the site suggests moderate scientific values which cannot be determined without archaeological test excavations. There is the possibility that subsurface archaeological material will be present, including dateable material, therefore the scientific value of the PAD cannot be determined without further archaeological investigation	High – As above
33-2-0051	MAC-AS-5	Artefact Scatter	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region. As the site does not present any differing or additional	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as a common site type in a disturbed context.	Low – MAC-AS-5 has low aesthetic significance at the local level as it is located on a vehicle track within a disturbed context	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
			representative values of its material or site class type, its value in terms of representativeness is considered low.					
33-2-0052	MAC-AS-6	Artefact Scatter + Resource Site + PAD	<p>Moderate – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., artefact scatter) in the region however, its role as a Resource site makes it rarer in its representativeness and adds additional value.</p> <p>Unknown – the representativeness of the PAD cannot be determined without further archaeological investigation.</p>	<p>Moderate – The site type while relatively common, becomes more significant due to the significant size of the present artefact scatter, and potential use as a resource site</p> <p>Unknown – the rarity of the PAD cannot be determined without further archaeological investigation.</p>	<p>Moderate – The site has some educational potential due to its nature as a large example of a common site type with limited representativeness of a Resource site type.</p> <p>Unknown – the educational potential of the PAD cannot be determined without further archaeological investigation.</p>	Low – MAC-IF-6 has low aesthetic significance at the local level as it is located in a grassy paddock with limited visibility outside of an associated eroded slip.	<p>Unknown – The location of the site suggests moderate scientific values which cannot be determined without archaeological test excavations.</p> <p>There is the possibility that subsurface archaeological material will be present, including dateable material, and therefore the scientific value of the PAD cannot be determined without further archaeological investigation.</p>	High – As above



AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
33-2-0042	MAC-IF-1	Isolated Find	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., isolated find) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as an isolated artefact in a disturbed context.	Low – MAC-IF-1 has low aesthetic significance at the local level as it is located on a vehicle track within a disturbed context	Low - The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above
33-2-0043	MAC-IF-2	Isolated Find	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., isolated find) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as an isolated artefact in a disturbed context.	Low – MAC-IF-2 has low aesthetic significance at the local level as it is located on a vehicle track within a disturbed context	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above
33-2-0044	MAC-IF-3	Isolated Find	Low –	Low –	Low –	Low – MAC-IF-3 has low aesthetic	Low - The site has limited scientific value	High – As above

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
			The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., isolated find) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	The site type and features are common in the local region	The site is of limited educational potential due to its nature as an isolated artefact in a disturbed context.	significance at the local level as it is located on a vehicle track within a disturbed context	and research potential as it is a common site type, within a disturbed context.	
33-2-0045	MAC-IF-4	Isolated Find	Low – The site is representative of one of the most frequent Aboriginal cultural heritage site types (i.e., isolated find) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	Low – The site type and features are common in the local region	Low – The site is of limited educational potential due to its nature as an isolated artefact in a disturbed context.	Low – MAC-IF-4 has low aesthetic significance at the local level as it is located on a vehicle track within a disturbed context	Low – The site has limited scientific value and research potential as it is a common site type, within a disturbed context.	High – As above
33-2-0046	MAC-IF-5	Isolated Find	Low – The site is representative of one of the most frequent	Low – The site type and features are common	Low – The site is of limited educational potential due to its	Low – MAC-IF-5 has low aesthetic significance as it is located in a grassy	Low – The site has limited scientific value and research potential as it is a common site	High – As above

AHIMS ID	Site name	Features	Representativeness/ conservation value	Rarity	Educational potential	Aesthetic value	Scientific significance /research potential	Social or cultural value
			Aboriginal cultural heritage site types (i.e., isolated find) in the region. As the site does not present any differing or additional representative values of its material or site class type, its value in terms of representativeness is considered low.	in the local region	nature as an isolated artefact in a disturbed context.	paddock with limited visibility outside of associated eroded slip.	type, within a disturbed context.	

## **6.5 Statement of significance for the Subject Area as a whole**

Statements of significance for the Subject Area are presented in the following sub-sections. These statements of significance have been prepared in consideration of comments received from the RAPs during the consultation process including those related to the cultural significance of the Subject Area and the interrelationships between the cultural and spiritual values with the natural landscape.

### **6.5.1 Social value**

The Subject Area is of social significance to the Aboriginal community as it is part of a broader cultural landscape in which the sum of known cultural heritage and associated resources identified within the Subject Area help to define the community's identity and historic relationship to the region.

### **6.5.2 Aesthetic value**

The Subject Area has limited aesthetic value due to the extent of existing disturbance and surface modification that was observed during the site inspection.

### **6.5.3 Historic value**

The Subject Area contains no identified historic values relating to Aboriginal heritage, however, there is a strong likelihood that the Subject Area would have been visited many times by the Aboriginal community in the past.

### **6.5.4 Scientific (archaeological) value**

The Subject Area contains 9 Aboriginal cultural heritage sites and is located within 20 m of two additional known Aboriginal cultural heritage sites. The archaeological value of the Subject Area is considered moderate. While many of the Aboriginal cultural heritage sites are considered to have low archaeological value and representativeness of identified Aboriginal cultural heritage site types are common, MAC-AS-4 (AHIMS ID #33-2-0048) and MAC-AS-6 (AHIMS ID #33-2-0052) have the potential to yield information that would contribute to a further understanding of the cultural history of the local area. Both sites have unknown scientific value and would require further investigation to determine their subsurface nature and extent.



## 7. The proposed activity and impact assessment

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### 7.1 Summary of the Modification New Disturbance Area's history

The environmental setting of the Modification New Disturbance Area prior to European settlement provided numerous resources that made it conducive to Aboriginal occupation. Much of the Modification New Disturbance Area is likely to have been vegetated by a Eucalypt savannah woodland (associated with the Brays Hill Soil Landscape). This woodland landscape is associated with a variety of flora and fauna resources including numerous trees with bark suitable for use to construct canoes and shields. Vegetation including bulrushes, water ribbons, spike rush and sedges would have been gathered and processed within the lower reaches of the creek lines including Saddlers and Quarry Creek. Areas such as these would have been able to support longer-term occupation sites. Early settlers' observations (as outlined in Brayshaw 1986) indicate that birds, snakes, wombats, kangaroos, bandicoot, possum, fruit bats, lizards and various other species were consumed by local inhabitants of the area. Marine resources were also available along watercourses, with the exploitation and resource strategies employed by Aboriginal occupants of the local region being dictated by the locality and seasonal availability of these resources. Identified stone raw materials typical of the local region include silcrete, mudstone, silicified tuff, chert, basalt and rhyolite.

The Modification New Disturbance Area has, however, been extensively cleared of vegetation for grazing on unimproved pastures. Evidence of this previous land use include dams, fencing, a broad absence of native vegetation and accelerated erosion resulting from previous vegetation removal.

Figure 8 provides an overview of the current land use within and adjoining the Modification New Disturbance Area.

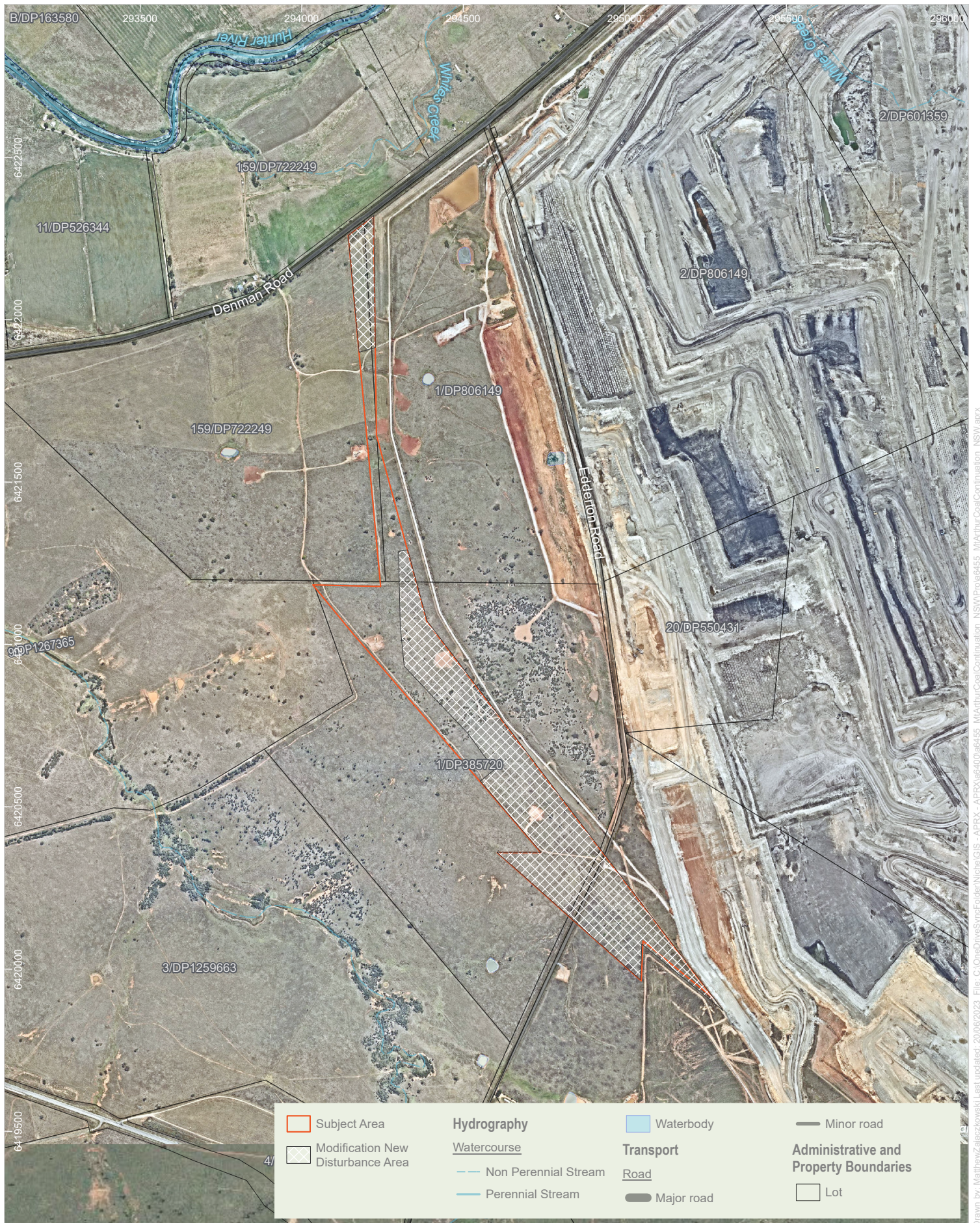
### 7.2 Proposed activity, staging and timeline

In June 2022, HVEC announced a decision to cease mining operations at the MAC in 2030, as part of a plan to provide a pathway to closure of the operation. Accordingly, HVEC is seeking a modification of the Project Approval for a four-year extension of mining operations at the MAC until 30 June 2030 and other associated changes. The Modification would involve (BHP 2022b):

- A four-year extension of mining activities to 30 June 2030.
- A reduction in the approved open cut mining rate from 32 Mtpa of ROM coal to a maximum of 25 Mtpa ROM coal (similar to current actual ROM coal production).
- A reduction in the cumulative open cut and underground ROM coal handling rate from 36 Mtpa to 29 Mtpa.
- A reduction in maximum total (open cut and underground) coal rail transportation from 27 Mtpa of product coal to 20 Mtpa, and a reduction in train movements from 30 to 20 movements per day.
- A minor extension of the approved disturbance area in the north-west corner of the operation predominantly to allow for access and ancillary infrastructure (Modification New Disturbance Area).
- An overall reduction (387 ha) in approved disturbance, as some previously approved disturbance areas are no longer intended to be disturbed.
- A revised final landform and final void configuration, including an overall reduction in the approved height of the northern overburden emplacement areas and the final landform (to reflect the current actual height).

Further details regarding the proposed Modification are provided in Section 3 of the Modification Report, including a comparison between the existing approval and the proposed Modification.





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### 7.3 Modification justification

The Modification New Disturbance Area is located in an area characterised by extensive existing mining operations including the approved Mt Arthur, Bengalla and Mount Pleasant mines. The Modification New Disturbance Area proposed by the Modification would be a modest extension to the total surface disturbance area in the north-west part of the MAC (with overall disturbance decreased as set out below). The proposed extension of mining operations would provide approximately 4 years of additional mining between 2026 and 2030.

Justification for the Modification proceeding includes:

- The Modification would result in a net decrease in the total disturbance area for MAC from 6,710 ha to 6,323 ha.
- Following review of preliminary environmental survey outcomes (including Aboriginal cultural heritage), the Modification New Disturbance Area was refined and reduced by approximately 10 ha.
- Additional time would be allowed for extraction of economically viable coal resources, whilst allowing additional time to plan for closure of the site.
- The Modification would provide incremental economic benefits to NSW, such as increased royalties (AnalytEcon, 2023), and would allow continued operational employment for a further 4 years.

### 7.4 Potential for harm and likely impacted values

*The Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011) requires that both direct and indirect harm to Aboriginal objects and Aboriginal places be considered. Generally, direct harm refers to occasions where an activity physically impacts a site or objects and therefore affects the heritage values possessed by the site or objects (e.g. disturbance of the ground surface or soil units in areas where known Aboriginal objects exist, or in areas that require further investigation to confirm the presence or absence of Aboriginal objects or cultural value). Indirect harm is usually taken to mean harm stemming from secondary consequences of the activity and may affect sites or objects as an indirect consequence of the activity. Examples of such indirect harm are increased visitors to a site, or increased erosion in an area as a result of an activity.

The Modification involves the implementation of avoidance in part of the Subject Area (10 ha) to minimise and avoid harm to Aboriginal cultural heritage sites. The remainder of the Subject Area (approximately 25 ha) comprises the Modification New Disturbance Area, within which disturbance through ancillary infrastructure or mining operations would occur.

Of the nine newly recorded Aboriginal heritage sites located within the Subject Area, with the implementation of avoidance by HVEC, the Modification would avoid disturbance of six sites, and result in direct disturbance to three sites, and partial indirect impacts to RPS MAC GG 1038 (AHIMS ID# 37-2-5833) (Table 25). These sites are shown on Figure 9.

The proposed management and mitigation strategies outlined in Section 8 of this ACHA will provide further data and information regarding past Aboriginal land use practices within the landscape. Various approaches have been recommended to reduce potential impacts to identified Aboriginal cultural heritage sites.





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A summary of the impact assessment for the Modification New Disturbance Area is provided in Table 25.

**Table 25: Impact assessment summary**

Site name	Type of harm (Direct/Indirect/None)	Degree of harm (Total/Partial/None)	Consequence of harm
RPS MAC GG 1038 (AHIMS ID# 37-2-5833)	Indirect disturbance from adjacent Modification activities	Partial	Partial loss of value as site boundary is directly adjacent to the Subject Area boundary
MAC -AS-1 (AHIMS ID #33-2-0047)	Direct disturbance from activities associated with the Modification.	Total	Total loss of value
MAC-AS-3 (AHIMS ID #33-2-0049)	Direct disturbance from activities associated with the Modification.	Total	Total loss of value
MAC-IF-1 (AHIMS ID #33-2-0042)	Direct disturbance from activities associated with the Modification.	Total	Total loss of value

#### 7.4.1 Direct Impacts

A total of three known Aboriginal heritage sites are located wholly or partially within the Modification New Disturbance Area and would therefore be directly impacted by the Modification.

This would include total direct impact to those three sites, each of low archaeological significance.

#### 7.4.2 Indirect Impacts

One known Aboriginal heritage site of low archaeological significance (RPS MAC GG 1038 [AHIMS ID# 37-2-5833] is located directly adjacent the Modification New Disturbance Area (outside the Subject Area) and has the potential to be indirectly impacted from ancillary infrastructure activities.

Recommended management and mitigation measures are provided in detail in Table 29 of this ACHA.

## 8. Avoiding and minimising harm

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### 8.1 Conservation principles and management framework

The two founding principles behind the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011:12) are ecologically sustainable development and intergenerational equity. These principles hold that “the present generation should make every effort to ensure the health, diversity and productivity of the environment – which includes cultural heritage – is available for the benefit of future generations” (OEH 2011).

The strong emphasis, as in the Burra Charter (Australia ICOMOS 2013), is to quantify and understand the heritage values of a place, a site, or an object and exhaust avenues of avoiding harm to those values. If harm cannot be avoided, then there must be a consideration and implementation of strategies to minimise harm.

It follows that the hierarchy for consideration in terms of the management strategies available for surface stone artefacts and subsurface stone artefacts and areas of archaeological potential, fall into four general categories, in order of preference from a conservation perspective:

- Avoidance and in-situ conservation.
- Partial avoidance and partial in-situ conservation (including partial harm).
- Harm caused with mitigating circumstances such as collection or salvage.
- Unmitigated harm.

The four general categories (described above) have been considered in the following subsections with regard to both direct impacts (e.g. surface disturbance) and indirect impacts (e.g. monitoring activities).

Management and mitigation measures have been prepared in consideration of the results of archaeological investigations, and comments received from the RAPs during the consultation process. Since harm to Aboriginal sites is proposed, the management and mitigation measures in Table 26 should be implemented to mitigate the harm where possible.

Where possible, harm would be avoided, and sites would be retained *in situ*.

### 8.2 Justifying harm and mitigating harm

After implementing avoidance to the greatest extent possible, the proposed Modification New Disturbance Area within the Subject Area would directly impact and cause total harm to the following Aboriginal cultural heritage sites (Table 25):

- MAC-AS-1 (AHIMS ID #33-2-0047)
- MAC-AS-3 (AHIMS ID #33-2-0049)
- MAC-IF-1 (AHIMS ID #33-2-0042)

With the implementation of the recommendation to install temporary fencing along the site boundary to RPS MAC GG 1038 (AHIMS ID# 37-2-5833), indirect impacts may be avoided for this site.

Where harm to Aboriginal sites and objects cannot be avoided, surface salvage will be required. Surface salvage collection as a mitigation strategy should be conducted under the AHMP.

As detailed in the AHMP, the salvage program would incorporate the following components:

- RAP consultation and field work engagement.
- Salvage of surface artefacts.
- A process of designation of areas approved for development.
- Temporary storage of recovered materials in the approved Temporary Keeping Place.

Details regarding the methodology of surface salvage works are outlined in the AHMP in Section 9.3.2 and 9.3.3 respectively. According to the AHMP, at the completion of the salvage works an attending archaeologist must provide a letter report as part of the formal designation of the area as cleared for site disturbance (see section 9.3.4 of the AHMP). The updated site details are also to be integrated into the master GIS database in a timely manner.

**Table 26: Summary of Aboriginal Heritage Management Measures**

Site name	Site feature	Significance rating	Type of harm	Management measure
RPS MAC GG 1038 (AHIMS ID# 37-2-5833)	Artefact Scatter	Low	Indirect	<ul style="list-style-type: none"> <li>• Temporary fencing to be installed around the site boundary to avoid any potential indirect impacts</li> </ul>
MAC-AS-1 (AHIMS ID #33-2-0047)	Artefact Scatter	Low	Direct	<ul style="list-style-type: none"> <li>• Community Surface Collection prior to disturbance as part of the AHMP</li> </ul>
MAC-AS-3 (AHIMS ID #33-2-0049)	Artefact Scatter	Low	Direct	<ul style="list-style-type: none"> <li>• Community Surface Collection prior to disturbance as part of the AHMP</li> </ul>
MAC-IF-1 (AHIMS ID #33-2-0042)	Isolated Find	Low	Direct	<ul style="list-style-type: none"> <li>• Community Surface Collection prior to disturbance as part of the AHMP</li> </ul>

The aforementioned management measures are warranted to mitigate the loss of value to the Aboriginal sites that would be impacted from the proposed activities within the Modification New Disturbance Area. Management and mitigation measures are further discussed in Table 27.



**Table 27: Consideration of management and mitigation strategies**

Management risk / impacted value	Strategies considered	Response
<b>Management risk - impacted cultural and scientific values</b>	Avoidance/Conservation	Despite the educational value being low for sites within the Modification New Disturbance Area, they have still been identified by the Aboriginal community as holding high cultural value and therefore consideration should be given to avoid impact where possible.
	Mitigating harm through salvage surface collection of the remaining Aboriginal object located in the Subject Area	If avoidance is not possible then a community surface collection of remaining Aboriginal objects located within the Modification New Disturbance Area as outlined in Table 26 should be undertaken as a management option to mitigate impacts to cultural value, as all Aboriginal objects hold cultural value to the community.
	Ongoing consultation	HVEC should continue to consult with the RAPs in accordance with the Consultation Requirements and in accordance with the requirements outlined in the AHMP.
<b>Management risk - compliance</b>	Completion of Aboriginal Site Cards and Aboriginal Site Impact Recording Forms (ASIRF)	Site cards will need to be completed and submitted to the AHIMS register for all of the sites identified within the Subject Area, and a revised site card for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) submitted to include survey observations. An ASIRF of impacted sites within the Modification New Disturbance Area will need to be completed once harm has occurred as a result of the proposed activity and following any mitigation measures, such as surface salvage, undertaken as a condition of the AHMP.
	Entering into a Care Agreement with the RAPs to determine the keeping place of Aboriginal objects collected during surface salvage collection under the AHMP	Long term storage and care of Aboriginal objects recovered during the surface salvage collection and outlined in the AHMP as part of the ongoing management of the Aboriginal objects. Provision should be made to rebury Aboriginal objects on site, or return Aboriginal objects to RAPs entitled to, and willing to accept possession, custody or control of the Aboriginal object in accordance with Aboriginal tradition.
	Updates to the AHMP	Update the current AHMP to include management considerations for sites within the Modification New Disturbance Area. Update the current AHMP to include management considerations for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) in light of the newly identified artefacts.
<b>Management risk – compliance and previously unrecorded finds (excluding human remains)</b>	Communication with employees, site visitors, contractors and landowners	All workers should complete relevant mandatory Aboriginal Cultural heritage training and follow the Permit to Disturb procedure during works within the Modification New Disturbance Area. In the event that previously unrecorded sites are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the management of previously unrecorded sites as detailed in Section 9.6 of the AHMP must be followed.

Management risk / impacted value	Strategies considered	Response
Management risk – human remains	Stop work and follow the procedure for the discovery of suspected human remains	In the event that human remains (skeletal remains) are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the discovery of human remains as outlined in Section 9.7 of the AHMP must be followed.

### 8.3 Consideration of cumulative impacts

Cumulative impacts are the successive, incremental, and combined impacts of one or more activities on the environment, including cultural heritage values. The Modification New Disturbance Area is surrounded by pre-existing mining operations (including the MAC, Bengalla Mine and Mount Pleasant Operation), as well as previously cleared land for agricultural purposes. The Modification New Disturbance Area is also located within existing approved mining and exploration tenements.

The AHMP provides an overall management tool for facilitating the involvement of Wonnarua people in the decision-making process for the ongoing maintenance and management of Aboriginal cultural heritage at the MAC. The AHMP covers all land associated with mining activities at the MAC including the Thomas Mitchell Drive and Saddlers Creek Biodiversity Conservation Areas.

To manage known Aboriginal cultural heritage associated with the MAC, a GIS database has been developed and updated over time. Over 900 registered Aboriginal cultural heritage sites are presently managed within this GIS database, including details of the appropriate avoidance and mitigation measures implemented. The Modification would result in a minor increase in the number of Aboriginal cultural heritage sites with potential impacts from mining operations at the MAC. Existing procedures and policies would be maintained and implemented to provide a consistent framework for mitigating and avoiding impacts to the newly identified Aboriginal cultural heritage within the Modification New Disturbance Area.

The Aboriginal heritage sites within the Modification New Disturbance Area represent a well-documented and researched segment of Aboriginal archaeological resources in the local area consisting of either isolated finds and artefact scatters. Several similar sites are also presently protected within the Thomas Mitchell Drive and Saddlers Creek Offset areas. The Modification is therefore not expected to cause a loss of heritage resources that could be viewed as being very rare or unique or unlikely to exist elsewhere. Therefore, the Modification would not result in any significant cumulative impact on Aboriginal heritage in the region.

### 8.4 Considerations for Ecological Sustainable Development

Section 5(vii) of the EP&A Act requires proponents to consider the key principles of Ecologically Sustainable Development (ESD) in the design of their projects. The principles of ESD are defined within the *NSW Protection of the Environment Administration Act 1991*. This Act defines the precautionary principle and the principles of inter-generational equity, conservation of biological diversity and ecological integrity. The precautionary principle is defined as:

*"if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation".*

Australia's National Strategy for ESD (1992) defines ecologically sustainable development as 'using, conserving and enhancing the communities' resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.' Aboriginal heritage programs which seek to address indigenous concerns in relation to land, heritage, economic and cultural development include the Commonwealth Indigenous Protected Areas Initiative, Land Acquisition and Maintenance, Heritage Protection Programs, the Victorian Aboriginal Capital Projects, Aboriginal Cultural Heritage Programs, and the South Australian Aboriginal Tourism Strategy (Australian Government 1992:22).

ESD in regard to the aforementioned Aboriginal cultural heritage sites needs to consider intergenerational equality; this is fundamental to identifying Aboriginal culture and identity into the future. Table 28 considers the key principles of ESD with respect to the results of the literature review, Aboriginal heritage survey results and significance assessment contained within this report.

**Table 28: Assessment of ESD**

Principles of the ESD guidelines	ESD assessment
A fundamental consideration for the conservation of biological diversity and ecological integrity	This assessment considers the conservation of cultural heritage. The Modification would result in irreversible direct impact to three sites within the Modification New Disturbance Area. This ultimately would result in an impact to the cultural heritage environment and intergenerational loss of cultural heritage.
Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment	HVEC has commissioned Niche to undertake an ACHA and has considered all options to avoid, where practical, harm to Aboriginal objects. The following sites within and in proximity of the Subject Area would be avoided, MAC-AS-2 (AHIMS ID #33-2-0050), MAC-AS-4 (AHIMS ID #33-2-0048), MAC-AS-5 (AHIMS ID #33-2-0051), MAC-AS-6 (AHIMS ID #33-2-0052), MAC-IF-2 (AHIMS ID #33-2-0043), MAC-IF-3 (AHIMS ID #33-2-0044), MAC-IF-4 (AHIMS ID #33-2-0045) and MAC-IF-5 (AHIMS ID #33-2-0046). Temporary fencing should be installed at RPS MAC GG 1038 (AHIMS ID# 37-2-5833) to avoid any indirect impact during adjacent works.
Consideration of intergenerational equity	Consistent with ESD, all Aboriginal heritage artefact scatter sites identified within the Modification New Disturbance Area are culturally significant to the Aboriginal community as tangible links to their culture and Country. However due to low educational and archaeological value and their similarity to a number of other sites within the regional context of the Modification New Disturbance Area; any harm suffered at these sites will not cause significant harm to the Aboriginal communities' connection to Country or cultural development within the community.
Where risk of serious or irreversible harm and lack of scientific knowledge of the nature of environmental harm combine, the precautionary principle applies.  Where there is risk of serious or irreversible harm, it is necessary to establish whether there is adequate scientific knowledge of the subject to evaluate the perceived threat.	This assessment has considered a review of all Aboriginal heritage items and their associated significance identified in heritage searches of a 2 km radius of the Subject Area. Consultation with the RAPs has been undertaken in accordance with the Consultation Requirements (DECCW 2010a). The assessment was sufficient to identify Aboriginal objects, their likelihood and associated significance. Significance and impact assessments are outlined in Sections 6 and 7.

Principles of the ESD guidelines	ESD assessment
An assessment of the risk-weighted consequences of various options	A consideration of harm and mitigation is provided in Section 8.2. Avoidance is always preferred and the majority of sites within the Subject Area have been avoided. Given the low archaeological value of the three identified Aboriginal sites within the Modification New Disturbance Area and the lack of practical alternatives to avoid these sites, other management and mitigation measures are considered appropriate (e.g. surface salvage) and have been proposed in this ACHA.



## 9. Draft recommendations

Based on the scientific (archaeological) significance of the Aboriginal heritage sites presented in Section 6, the Impact Assessment in Section 7, and the suggested management and mitigation measures outlined in Section 8, the following draft recommendations are made regarding Aboriginal archaeological and cultural heritage within the Modification New Disturbance Area.

In addition, written comments and responses from RAPs during the consultation process have been considered in this assessment (Table 29).

**Table 29: Recommendations**

Recommendations	
	Known Aboriginal sites
1.	Ongoing consultation should continue for the life of further mining operations at MAC. All RAPs should continue to be consulted in accordance with the AHMP.
2.	Update the current AHMP to include management considerations for the sites within the Modification New Disturbance Area.
3.	Where impacts cannot be avoided due to the Modification the following are required: <ul style="list-style-type: none"> <li>MAC-AS-1 (AHIMS ID #33-2-0047) – Community surface collection</li> <li>MAC-AS-3 (AHIMS ID #33-2-0049) – Community surface collection</li> <li>MAC-IF-1 (AHIMS ID #33-2-0042) – Community surface collection</li> </ul>
4.	A portion of the Aboriginal cultural heritage site MAC-AS-6 (AHIMS ID#33-2-0052) is located within the Existing Approved Disturbance Area. The procedures for reporting previously unrecorded Aboriginal cultural heritage sites, outlined in Section 9.6 of the AHMP, must be followed to ensure compliance with section 89A of the NPW Act.
5.	Temporary fencing should be installed around the site boundary for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) to ensure no harm occurs at the site during proposed adjacent works.
6.	Although it is not a requirement for the works to proceed, an Aboriginal Site Impact Recording Form (ASIRF) should be prepared for RPS MAC GG 1038 (AHIMS ID# 37-2-5833) to amend the previously incorrect recording of the site and past disturbance/destruction of the site due to salvage works, based on recent observations during site survey.
	General
7.	This ACHA covers earthworks within the Modification New Disturbance Area only, and any earthworks proposed to be undertaken outside the Modification New Disturbance Area (and outside the Existing Approved Disturbance Area) should be subject to separate assessment.
8.	All workers should complete relevant mandatory Aboriginal Cultural heritage training and follow the Permit to Disturb procedure during works within the Modification New Disturbance Area.
9.	In the event that previously unrecorded sites are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the management of previously unrecorded sites as detailed in Section 9.6 of the AHMP must be followed.
10.	In the event that human remains (skeletal remains) are discovered at any time during disturbance activities within the Modification New Disturbance Area, the protocol for the discovery of human remains as outlined in Section 9.7 of the AHMP must be followed.

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Appendix 1 – Aboriginal community consultation records

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Redacted from public version

Appendix 2 – Aboriginal community consultation log

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Redacted from public version

## Appendix 3 – Description of Individual Sites

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### MAN 91; Mt Arthur North (AHIMS ID# 37-2-0490)

MAN 91; Mt Arthur North (AHIMS ID# 37-2-0490) was recorded as an open campsite including an artefact. The site was first recorded in 1985 as a part of an archaeological survey for the 'Plashett Dam and the Mount Arthur North and Mount Arthur South Coal Mining Project Areas, Hunter Valley, NSW' report developed by Koettig and Hughes for ELCOM NSW and Mount Arthur South Coal Pty Ltd. The site is recorded to be located on the southern boundary of the Subject Area. The site has additionally been recorded to have been salvaged previously.

Following the previous salvage of the site, the site reinspection did not identify any previously unidentified cultural material confirming the site's status as destroyed (see Figure 6 for survey effort).

### MAN 91; Mt Arthur North (AHIMS ID# 37-2-0271)

This Aboriginal cultural heritage site was identified to be a duplicate of MAN 91; Mt Arthur North (AHIMS ID# 37-2-0490), which has previously been discussed.

### RPS MAC LN 2 AFT (AHIMS ID# 37-2-4533)

RPS MAC LN 2 AFT (AHIMS ID# 37-2-4533) is recorded as an open campsite isolated artefact. The site was previously recorded by RPS in 2013 and was described as including one silcrete flake, off a vehicle track. The artefact is recorded to have been a part of salvage works by RPS in 2019 as per the Aboriginal Heritage Management Plan.

On 23 February 2023, Niche heritage consultants and RAPs conducting survey works for the Mt Arthur Modification ACHA program attempted to find RPS MAC LN 2 AFT (AHIMS ID# 37-2-4533) due to its close proximity to the Subject Area boundary.

Following the previous salvage of the site, the site reinspection did not identify any previously unidentified cultural material confirming the site's status as destroyed (see Figure 6 for survey effort).

### RPS MAC GG 1038 (AHIMS ID# 37-2-5833)

RPS MAC GG 1038 (AHIMS ID# 37-2-5833) is recorded as an open campsite artefact scatter with a PAD. The site was previously recorded in 2018 by RPS. The site was contained two silcrete flakes atop a soil erosion scald, located approximately 1 km South of Denman Road, off Edderton Road. The Aboriginal cultural heritage site had been recorded as being 'destroyed' due to salvage works.

On 21 February 2023, Niche heritage consultants and RAPs conducting survey works for the Mt Arthur Modification ACHA program attempted to find RPS MAC GG 1038 (AHIMS ID# 37-2-5833) due to its close proximity to the Subject Area boundary and were able to locate the approximate location.

Despite previous salvage of the site, previously unrecorded Aboriginal cultural heritage was identified during the present site inspection. Two (2) flakes were identified within a soil erosion scald present. Additional yellow clay boulders were also located, which may have been used as a cultural resource. The artefacts and boulders were left in place as they were outside of the Subject Area, but it was noted that the identification of the two flakes may be associated with a PAD. Justification of there being a PAD was determined through the identification of new Aboriginal cultural heritage items at the previously salvaged site, with these being located within exposures consisting of alluvial soils identified within the extent. The PAD extends approximately 20 m in length and 10 m in width, encompassing the site extent.



Photographic records of RPS MAC GG 1038 (AHIMS ID# 37-2-5833) are provided in Plate 9 and Plate 10 below.



**Plate 9: General view of RPS MAC GG 1038 (AHIMS ID# 37-2-5833; facing south)**



**Plate 10: General view of RPS MAC GG 1038 (AHIMS ID# 37-2-5833; facing south)**

### Newly recorded sites in the vicinity of the Subject Area

The Aboriginal cultural heritage sites detailed below have been identified during the survey works completed as a part of this assessment and occur within or in close proximity to the Subject Area boundary (Figure 7).

#### MAC-IF-1 (AHIMS ID #33-2-0042)

MAC-IF-1 (AHIMS ID #33-2-0042) is identified as an Isolated Find which contains one silcrete flake with quartz inclusions. The Aboriginal cultural heritage site is located on a hillslope within rolling plains, situated approximately 800 m north of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

It was noted during survey works that the dense grass growth was present within the environmental context of MAC-IF-1 (AHIMS ID #33-2-0042), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, or slips. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-IF-1 (AHIMS ID #33-2-0042).

Site details as recorded during the current archaeological survey program are provided in Table 30, while the photographic record of this assessment is provided in Plate 11 and Plate 12.

**Table 30: Site details for MAC-IF-1 (AHIMS ID #33-2-0042)**

Overview					
Site type	Isolated Find	GDA 94 Zone 55 Easting	294856	GDA 94 Zone 55 Northing	6420392
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55
Location description					
Landform	Hill slope	Land use	Vehicle track, paddocks, offset area	Slope	0-5%
Landscape type	Rolling hills	Visibility	100%	Exposure	100%

Vegetation		Dense grasses and isolated stands of native tree species	Proximity to water		Quarry Creek located 800 m SE	Disturbance	Vehicle track
Artefacts Identified							
	Material	Form	Length (millimetres (mm))	Width (mm)	Thickness (mm)	Notes	
1	Silcrete	core	17	22	8	Some retouch. Retouch on both margins. Potentially flaked. Light orange in colour with quartz inclusions	



**Plate 11: General view of MAC-IF-1 (AHIMS ID #33-2-0042); facing west**



**Plate 12: Silcrete core identified at MAC-IF-1 (AHIMS ID #33-2-0042)**

### MAC-IF-2 (AHIMS ID #33-2-0043)

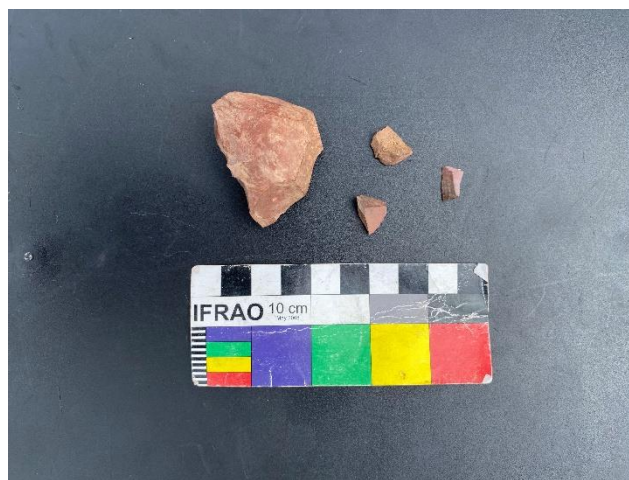
MAC-IF-2 (AHIMS ID #33-2-0043) is identified as an Isolated Find which contains one silcrete core with evidence of crushing and fresh breakage. The Aboriginal cultural heritage site is located on a lower slope within a hillslope within rolling hills, located approximately 900 m northeast of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

It was noted during survey works that the dense grass growth was present within the environmental context of MAC-IF-2 (AHIMS ID #33-2-0043), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds or slips. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-IF-2 (AHIMS ID #33-2-0043).

Site details as recorded during the current archaeological survey program are provided in Table 31 while the photographic record of this assessment is provided in Plate 13 and Plate 14.

**Table 31: Site details for MAC-IF-2 (AHIMS ID #33-2-0043)**

Overview						
Site type	Isolated Find	GDA 94 Zone 55	294592	GDA 94 Zone 55	6420673	
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55	
Location description						
Landform	Lower slopes	Land use	Vehicle track, paddocks, offset area	Slope	0-5%	
Landscape type	Rolling hills	Visibility	100%	Exposure	100%	
Vegetation	Dense grasses and isolated stands of native tree species	Proximity to water	Quarry Creek located 900 m SE	Disturbance	Vehicle track	
Artefacts Identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Silcrete	core	40	30	17	Evidence of crushing with fresh breakage. 8 potential flake scars. Maroon in colour with white inclusions

**Plate 13: General view of MAC-IF-2 (AHIMS ID #33-2-0043); facing south****Plate 14: Artefacts at MAC-IF-2 (AHIMS ID #33-2-0043)****MAC-IF-3 (AHIMS ID #33-2-0044)**

MAC-IF-3 (AHIMS ID #33-2-0044) is identified as an Isolated Find which contains one siliceous tuft flake. The Aboriginal cultural heritage site is located downslope within rolling hills, located approximately 816 m northeast of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

It was noted during survey works that the dense grass growth was present within the environmental context of MAC-IF-3 (AHIMS ID #33-2-0044), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds or slips. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-IF-3 (AHIMS ID #33-2-0044).



Site details as recorded during the current archaeological survey program are provided in Table 32 while the photographic record of this assessment is provided in Plate 15 and Plate 16.

**Table 32: Site details for MAC-IF-3 (AHIMS ID #33-2-0044)**

Overview							
Site type		Isolated Find	GDA 94 Zone 55		294215	GDA 94 Zone 55	6421055
Previous recording		No	Date of Niche recording		21/02/2023	Zone	55
Location description							
Landform		Down slope	Land use		Vehicle track, paddocks, offset area	Slope	0-5%
Landscape type		Rolling hills	Visibility		100%	Exposure	100%
Vegetation		Dense grasses and isolated stands of native tree species	Proximity to water		Quarry Creek located 816 m SE	Disturbance	Vehicle track
Artefacts identified							
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes	
1	Siliceous tuft	flake	33	13	12	Stepped platform. Some retouch. Use wear, broken termination.	



**Plate 15: General view of MAC-IF-3 (AHIMS ID #33-2-0044); facing east**



**Plate 16: Artefact identified at MAC-IF-3 (AHIMS ID #33-2-0044)**

### MAC-IF-4 (AHIMS ID #33-2-0045)

MAC-IF-4 (AHIMS ID #33-2-0045) is identified as an Isolated Find which contains one quartzite flake. The Aboriginal cultural heritage site is located mid-slope within rolling hills, located approximately 900 m northeast of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023. The site is situated along an existing track and is situated approximately 5 m north of the Subject Area.



It was noted during survey works that the dense grass growth was present within the environmental context of MAC-IF-4 (AHIMS ID #33-2-0045), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, or slips. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-IF-4 (AHIMS ID #33-2-0045).

Site details as recorded during the current archaeological survey program are provided in Table 33 while the photographic record of this assessment is provided in Plate 17 and Plate 18.

**Table 33: Site details for MAC-IF-4 (AHIMS ID #33-2-0045)**

Overview							
Site type		Isolated Find	GDA 94 Zone 55		294165	GDA 94 Zone 55	6421208
Previous recording		No	Date of Niche recording		21/02/2023	Zone	55
Location description							
Landform		hill slope	Land use		Vehicle track, paddocks, offset area	Slope	0-5%
Landscape type		Rolling hills	Visibility		100%	Exposure	100%
Vegetation		Dense grasses and isolated stands of native tree species	Proximity to water		Quarry Creek located 900 m SE	Disturbance	Vehicle track
Artefacts identified							
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes	
1	Quartzite	flake	26	31	12	Termination and platform present.	



**Plate 17: General view of MAC-IF-4 (AHIMS ID #33-2-0045); facing south**



**Plate 18: Artefact identified at MAC-IF-4 (AHIMS ID #33-2-0045)**

### MAC-IF-5 (AHIMS ID #33-2-0046)

MAC-IF-5 (AHIMS ID #33-2-0046) is identified as an Isolated Find which contains proximal end silcrete flake. The Aboriginal cultural heritage site is located mid-slope within rolling hills within an exposure located approximately 900 m south of Whites Creek. The site is closely associated with an isolated tree and is 5 m west of a fence line. The Aboriginal cultural heritage site is outside the boundaries of the Subject Area and was identified by Niche heritage consultants and RAPs while conducting survey works on 23 February 2023 (the site is situated 5 m to the west of the Subject Area).

It was noted during survey works that the dense grass growth was present within the environmental context of MAC-IF-5 (AHIMS ID #33-2-0046), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, or slips. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-IF-5 (AHIMS ID #33-2-0046).

Site details as recorded during the current archaeological survey program are provided in Table 34 while the photographic record of this assessment is provided in Plate 19 and Plate 20.

**Table 34: Site details for MAC-IF-5 (AHIMS ID #33-2-0046)**

Overview						
Site type	Isolated Find	GDA 94 Zone 55	294148	GDA 94 Zone 55	6422040	
Previous recording	No	Date of Niche recording	23/02/2023	Zone	55	
Location description						
Landform	hill slope	Land use	Vehicle track, paddocks, offset area	Slope	5-10%	
Landscape type	Rolling hills	Visibility	100%	Exposure	100%	
Vegetation	Dense grasses and isolated stands of native tree species	Proximity to water	Whites Creek located 900 m north.	Disturbance	Paddocks, erosion.	
Artefacts identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Silcrete	Proximal end flake	36	27	14	Proximal end. Bulb of percussion present. Light orange and red in colour. Evidence of slight use wear. Flat platform.



**Plate 19: General view of MAC-IF-5 (AHIMS ID #33-2-0046); facing east**



**Plate 20: Artefact identified at MAC-IF-5 (AHIMS ID #33-2-0046)**

### MAC-AS-1 (AHIMS ID #33-2-0047)

MAC-AS-1 (AHIMS ID #33-2-0047) is identified as an Open Camp site containing an artefact scatter that contains five artefacts. The Aboriginal cultural heritage site is located on a lower slope within rolling hills, located approximately 900 m northeast of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

The Aboriginal cultural heritage site is located under a double-pronged tree approximately 20 m southeast of a present drill pad located in the southern section of the Subject Area. It was noted during survey works that the dense grass growth was present within the environmental context of MAC-AS-1 (AHIMS ID #33-2-0047), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, slips or under trees. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-AS-1 (AHIMS ID #33-2-0047).

Site details as recorded during the current archaeological survey program are provided in Table 35 while the photographic record of this assessment is provided in Plate 21 and Plate 22.

**Table 35: Site details for MAC-AS-1 (AHIMS ID #33-2-0047)**

Overview					
Site type	Artefact scatter	GDA 94 Zone 55	294857	GDA 94 Zone 55	6420476
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55
Location description					
Landform	Lower slope	Land use	Vehicle track, paddocks, offset area	Slope	5-10%
Landscape type	Rolling hills	Visibility	100%	Exposure	100%
Vegetation	Dense grasses and isolated stands of native tree species	Proximity to water	A first-order tributary is situated 170 m to the NE. Quarry Creek located 900 m SE	Disturbance	Paddocks, erosion, drill pad within 20 m of site.



Artefacts identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Silcrete	flake	14	19	2	Distal end of flake. Termination broken. Use wear on right ventral. Potential retouch. 50% of cortex (ventral) left.
2	Quartzite	Angular fragment	14	14	8	Light grey in colour
3	Silcrete	Angular fragment	19	18	4	Red in colour, negative flake scars present
4	Quartzite	Angular fragment	12	16	2	Light grey. 50% cortex present on dorsal. Crushed platform.
5	Quartzite	flake	17	12	2	Broken platform and broken termination. Use wear present on the right margin. Light grey, with fine grained inclusions.



**Plate 21: General view of MAC-AS-1 (AHIMS ID #33-2-0047); facing south**



**Plate 22: Artefacts identified at MAC-AS-1 (AHIMS ID #33-2-0047)**

### MAC-AS-2 (AHIMS ID #33-2-0050)

MAC-AS-2 (AHIMS ID #33-2-0050) is identified as an Open Camp site containing an artefact scatter that contains two artefacts. The Aboriginal cultural heritage site is located on a lower slope within rolling hills, located approximately 900 m west of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

The Aboriginal cultural heritage site is located on the road verge, of a vehicle track within the Subject Area, with a Casuarina located to the left of the Artefact Scatter. It was noted during survey works that the dense grass growth was present within the environmental context of MAC-AS-2 (AHIMS ID #33-2-0050), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, slips or under trees. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-AS-2 (AHIMS ID #33-2-0050).

Site details as recorded during the current archaeological survey program are provided in Table 36 while the photographic record of this assessment is provided in Plate 23 and Plate 24.



**Table 36: Site details for MAC-AS-2 (AHIMS ID #33-2-0050)**

Overview						
Site type	Artefact scatter	GDA 94 Zone 55	294429	GDA 94 Zone 55	6420812	
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55	
Location description						
Landform	Continuous slope	Land use	Vehicle track, paddocks, offset area	Slope	0-5%	
Landscape type	Rolling hills	Visibility	100%	Exposure	100%	
Vegetation	Dense grasses and isolated stands of native tree species	Proximity to water	First-order tributary to Hunter River is situated 520 m to the E	Disturbance	Vehicle tracks, fence line	
Artefacts identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Siliceous tuft	flake	40	50	10	Platform, termination and bulb of percussion/potlid present. Retouch and use wear present. Maroon with white inclusions.
2	Siliceous tuft	Angular fragment	25	15	10	30% cortex present, light orange with red patches.

**Plate 23: General view of MAC-AS-2 (AHIMS ID #33-2-0050); facing south****Plate 24: Close up of soils present at MAC-AS-2 (AHIMS ID #33-2-0050)****MAC-AS-3 (AHIMS ID #33-2-0049)**

MAC-AS-3 (AHIMS ID #33-2-0049) is identified as an Open Camp site containing an artefact scatter that contains four artefacts. The Aboriginal cultural heritage site is located on a continuous slope within rolling hills, located approximately 1.1 km northeast of Quarry Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works program on 21 February 2023.

The Aboriginal cultural heritage site is located under an isolated patch of Eucalyptus situated off the vehicle track. Several scalds have developed at the site in association with ant nests. It was noted during survey works that the dense grass growth was present within the broader environmental context of MAC-AS-3 (AHIMS ID #33-2-0049), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, slips or under trees, such as MAC-AS-3 (AHIMS ID #33-2-0049). Recorders identified that there was low archaeological potential and no subsurface potential within MAC-AS-3 (AHIMS ID #33-2-0049).

Site details as recorded during the current archaeological survey program are provided in Table 37 while the photographic record of this assessment is provided in Plate 25 and Plate 26.

**Table 37: Site details for MAC-AS-3 (AHIMS ID #33-2-0049)**

Overview						
Site type	Artefact scatter	GDA 94 Zone 55	294364	GDA 94 Zone 55	6421047	
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55	
Location description						
Landform	continuous slope	Land use	Vehicle track, paddocks, offset area	Slope	0-5%	
Landscape type	Rolling hills	Visibility	100%	Exposure	100%	
Vegetation	Dense grasses and isolated stands of native tree species	Proximity to water	First-order tributary to Hunter River is 350 m to the N. Quarry Creek located 900 m SE	Disturbance	Ants nest, water erosion	
Artefacts identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Quartzite	flake	21	22	7	Flat platform and cross termination present. Light brown and orange in colour, with volcanic inclusions.
2	Fine-grained volcanic	flake	57	33	15	Flat and stepped platforms present, with some feathering retouch present.
3	Quartzite	Medial break	12	12	2	Red in colouration
4	Quartzite	Proximal fragment	10	13	5	Grey in colouration



**Plate 25: General view of MAC-AS-3 (AHIMS ID #33-2-0049); facing south**



**Plate 26: Artefacts identified at MAC-AS-3 (AHIMS ID #33-2-0049)**

### MAC-AS-4 (AHIMS ID #33-2-0048)

MAC-AS-4 (AHIMS ID #33-2-0048) is identified as an Open Camp site containing an artefact scatter and Potential Archaeological Deposit (PAD) which contains 15 artefacts. The Aboriginal cultural heritage site is located on a lower slope within rolling hills, located approximately 1.5 km south of the Hunter River, and 1.0 km northeast of Whites Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 21 February 2023.

The Aboriginal cultural heritage site is located within an eroded slip that has been impacted by water and is highly disturbed. The slip is located approximately 20 m from the vehicle track and is associated with a PAD located to the north of the slip. It was noted during survey works that the dense grass growth was present within the environmental context of MAC-AS-4 (AHIMS ID #33-2-0048), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, slips or under trees, with there being potential for further artefacts to have eroded from the PAD or slip within the broader area. This was confirmed with continued surveying, with additional artefacts being identified directly 10 m east of the slip underneath a Eucalyptus tree. Recorders identified that there was high archaeological potential and high subsurface potential within MAC-AS-4 (AHIMS ID #33-2-0048). This was justified due to presence of artefacts located within washout which were running downhill and being identified in areas where wash out had been identified at MAC-AS-6 (AHIMS ID#33-2-0052). Further artefacts were additionally identified eroding from within the alluvial soil context of the main exposure of which a majority of the artefacts were identified. The extent of PAD was determined to extend 76 metres in length and 54 metres in width.

Site details as recorded during the current archaeological survey program are provided in Table 38 while the photographic record of this assessment is provided in Plate 27 and Plate 28.

**Table 38: Site details for MAC-AS-4 (AHIMS ID #33-2-0048)**

Overview					
Site type	Artefact scatter and PAD	GDA 94 Zone 55	294306	GDA 94 Zone 55	6421368
Previous recording	No	Date of Niche recording	21/02/2023	Zone	55
Location description					
Landform	Lower slope	Land use	Offset area, paddock	Slope	5-10%



Landscape type		Rolling hills		Visibility	100%		Exposure	100%	
Vegetation		Grasses and scattered trees		Proximity to water	1.2 km south of Whites Creek		Disturbance	Disturbed context, erosion	
Artefacts identified									
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes			
1	Quartzite	Flake	22	23	11	White, plain platform			
2	Silcrete	Flake	21	16	6	Light grey, fine-grained, broken termination.			
3	Silcrete	Flake	50	32	16	Light grey, fine-grained, crushed platform.			
4	Silcrete	Proximal flake	16	15	4	Light grey, fine-grained, retouch and usewear present.			
5	Silcrete	Proximal flake	19	22	6	Light grey, fine-grained, retouch and usewear present.			



**Plate 27: General view of MAC-AS-4 (AHIMS ID #33-2-0048); facing west**



**Plate 28: Artefact 2 identified at MAC-AS-4 (AHIMS ID #33-2-0048)**

### MAC-AS-5 (AHIMS ID #33-2-0051)

MAC-AS-5 (AHIMS ID #33-2-0051) is identified as an Open Camp site containing an artefact scatter that contains three artefacts. The Aboriginal cultural heritage site is located on a gentle upper slope within rolling hills, located approximately 1.2 km south of Whites Creek. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 23 February 2023.

The Aboriginal cultural heritage site is located on the road verge of a vehicle track within the Subject Area. It was noted during survey works that the dense grass growth was present within the environmental context of MAC-AS-5 (AHIMS ID #33-2-0051), preventing visibility outside of areas that may have been exposed due to vehicle track use, scalds, slips or under trees. Recorders identified that there was low archaeological potential and no subsurface potential within MAC-AS-5 (AHIMS ID #33-2-0051) due to location within a disturbed context.

Site details as recorded during the current archaeological survey program are provided in Table 39 while the photographic record of this assessment is provided in Plate 29 and Plate 30.



**Table 39: Site details for MAC-AS-5 (AHIMS ID #33-2-0051)**

Overview						
Site type	Artefact scatter	GDA 94 Zone 55	294261	GDA 94 Zone 55	6421413	
Previous recording	No	Date of Niche recording	23/02/2023	Zone	55	
Location description						
Landform	Gentle upper slope	Land use	Vehicle track, offset area	Slope	0-5%	
Landscape type	Rolling hills	Visibility	80%	Exposure	80%	
Vegetation	Dense grasses	Proximity to water	1.2 km south of Whites Creek	Disturbance	Vehicle track	
Artefacts identified						
	Material	Form	L (mm)	W (mm)	Th (mm)	Notes
1	Silcrete	Flake	37	37	8	Light brown, retouch/break and usewear present.
2	Silcrete	Flake	35	31	13	Red brown, fine-grained, retouch present.
3	Silcrete	Broken flake	28	30	6	Red brown.

**Plate 29: General view of MAC-AS-5 (AHIMS ID #33-2-0051); facing south****Plate 30: Artefacts identified at MAC-AS-5 (AHIMS ID #33-2-0051)****MAC-AS-6 (AHIMS ID #33-2-0052)**

MAC-AS-6 (AHIMS ID #33-2-0052) is identified as a highly disturbed Open Camp site, PAD, Resource site containing an extensive artefact scatter which contains more than 50 artefacts. The Aboriginal cultural heritage site is located downslope within rolling hills, located approximately 1.0 – 1.3 km south of the Hunter River. The Aboriginal cultural heritage site was identified by Niche heritage consultants and RAPs while conducting survey works on 23 February 2023.

The Aboriginal cultural heritage site was identified near a borehole testing site but continues to less disturbed paddocks which continue downslope towards a vehicle track that crosses from east to west within the Subject Area. It was noted during survey works that the dense grass growth was present within the environmental context of MAC-AS-6 (AHIMS ID #33-2-0052), preventing visibility outside of areas that

may have been exposed due to vehicle track use, scalds, slips or under trees, with much of the Artefact Scatter being identified due to exposures, such as slips and scalds. It is likely that additional Aboriginal objects may be present within the site extent. Recorders identified an area of PAD at the site.

Justification for the PAD was determined through the presence of the extensive Artefact Scatter, identification of artefacts located within eroding within alluvial soil exposures across the Aboriginal cultural heritage site, and evidence of past disturbance to soil matrix causing the movement of artefacts from a previously subsurface context. The extent of the PAD, and overall Aboriginal cultural heritage site was determined to be 364 metres in length, and 110 metres in width. This was determined through the continued identification of artefacts during survey works downhill through the extent of the Aboriginal cultural heritage site, with artefacts eroding out of alluvial soil exposures present within the Aboriginal cultural heritage site.

Site details as recorded during the current archaeological survey program are provided in Table 40 while the photographic record of this assessment is provided in Plate 31 and Plate 32.

**Table 40: Site details for MAC-AS-6 (AHIMS ID #33-2-0052)**

Overview							
Site type		Artefact scatter, PAD, Resource Site		GDA 94 Zone 55	294296	GDA 94 Zone 55	6421656
Previous recording		No		Date of Niche recording	23/02/2023	Zone	55
Location description							
Landform		Lower slope		Land use	Bore hole site, tank, offset area and grass paddocks	Slope	1%
Landscape type		Rolling hills		Visibility	70%	Exposure	70%
Vegetation		Dense grass, isolated tree stands		Proximity to water	1.1 km south of Hunter River, 1 km south of Whites Creek	Disturbance	Bore hole drilling
Artefacts identified							
1	Silcrete	Flake	29	921	18	Light brown.	
2	Silcrete	Angular fragment	23	12	8	Light brown, fine-grained.	
3	Silcrete	Core fragment	40	34	14	Light brown, bipolar break with 2 negative flake scars.	
4	Silcrete	Flake	42	52	12	Grey, usewear and retouch present.	
5	Silcrete	Distal flake	33	27	8	Light brown, fine-grained, broken.	
6	Silcrete	Broken flake	9	18	4	Fine-grained.	
7	Silcrete	Flake	19	9	2	Yellow, quartz inclusions and usewear present.	
8	Silcrete	Scraper	26	46	11	Light grey, retouch along termination.	
9	Silcrete	Scraper	80	44	12	Usewear present (medial break).	
10	Silcrete	Flake	66	37	11	Light grey.	
11	Silcrete	Flake	27	52	11	Light grey, fine-grained.	

12	Silcrete	Flake	61	17	7	Light grey, fine-grained. Left medial flake.
13	Silcrete	Flake	25	15	5	Grey, medium-grained. Backed and featuring potlids.



**Plate 31: General view of MAC-AS-6 (AHIMS ID #33-2-0052); facing west**



**Plate 32: Artefacts identified at MAC-AS-6 (AHIMS ID #33-2-0052)**

Appendix 4 – AHIMS search results

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Appendix 5 – AHIMS site cards

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### Environmental management and approvals

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Development and activity approvals  
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Stakeholder consultation and facilitation  
Project management

### Biodiversity offsetting

Offset strategy and assessment (NSW, QLD, Commonwealth)  
Accredited BAM assessors (NSW)  
Biodiversity Stewardship Site Agreements (NSW)  
Offset site establishment and management  
Offset brokerage  
Advanced Offset establishment (QLD)