



Moolarben Coal Complex Open Cut Optimisation Modification

Environmental Assessment

APPENDIX D

Aboriginal Cultural Heritage Assessment





Moolarben Coal Complex Open Cut Optimisation Modification

Aboriginal Cultural Heritage Assessment

Prepared for Moolarben Coal Operations Pty Ltd

27 October 2017

Mid-Western Regional Council Local Government Area

Document control

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Project Director:	Jamie Reeves
Project Manager:	Balazs Hansel
Authors:	Balazs Hansel
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Niche Environment and Heritage

Excellence in your environment.
ABN: 19 137 111 721

Head Office

Level 1, 19 Sorrell Street
Parramatta NSW 2150
All mail correspondence to:
PO Box 2443

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Cover photograph: ML 1691 looking down Moolarben Creek (Balazs Hansel, Niche 2017)

Executive Summary

This assessment presents the results of an Aboriginal Cultural Heritage Assessment (ACHA) which has been prepared to support an Environmental Assessment for the proposed Moolarben Coal Complex Open Cut Optimisation Modification (the Modification) at the Moolarben Coal Complex (MCC), near Ulan in New South Wales. Moolarben Coal Operations Pty Ltd (MCO) has identified that an opportunity exists to optimise open cut mining operations, to improve mining efficiencies and increase run-of-mine coal production.

A total of ten (10) Aboriginal heritage sites were identified and/or inspected during the field survey for the ACHA, including one previously recorded Aboriginal site S1MC140 (AHIMS ID #36-3-0949). The new Aboriginal heritage sites identified during the survey include five (5) artefact scatters, three (3) isolated finds and one (1) rock shelter with Potential Archaeological Deposit (PAD). The previously recorded Aboriginal heritage site which was reinspected during the surveys was an artefact scatter. Nine (9) of the recorded sites were assessed as having low scientific significance and one (1) site was assessed as having moderate scientific significance. Notwithstanding, consultation undertaken to date with the Aboriginal community indicates that all Aboriginal heritage sites at the MCC, known or otherwise, have high cultural significance.

Of the ten (10) sites, only two (2) are assessed as being potentially subject to impacts associated with the Modification, as the proposed disturbance area has been refined during the assessment process. This refinement has resulted in avoidance of disturbance to several sites identified during the field surveys, including the rock shelter with PAD.

The existing *Moolarben Coal Complex Heritage Management Plan* (MCO 2016) anticipates the type of impact described in this assessment, and as such provides a robust management framework within which to manage both the impacts and avoidance of impact to Aboriginal heritage sites and values.

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Glossary and abbreviations

Term	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
ACHCRs	<i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (NSW Department of Environment, Climate Change and Water [DECCW], 2010a)
AHIP	Aboriginal Heritage Impact Permit
AHIMS	Aboriginal Heritage Information Management System
AHMP	Aboriginal Heritage Management Plan
Aboriginal object(s)	The legal definition for material for Aboriginal cultural heritage under the NSW <i>National Parks and Wildlife Act 1974</i>
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 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)
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
BP	Before Present
Catchment	The area from which a surface watercourse or a groundwater system derives its water
cm	centimetre
Cumulative impacts	Combination of individual effects of the same kind due to multiple actions from various sources over time
CHL	Commonwealth Heritage List
CHPP	Coal Handling Processing Plant
DEC	Department of Environment and Conservation
DECCW	The Department of Conservation, Climate Change and Water, now the Office of Environment and Heritage (OEH)
Development	The processes involved in preparing the Study Area for the proposed activities that will have direct and/or indirect physical impact(s) in the one or more forms such as construction, excavation, demolition, clearing etc.
Drainage	Natural or artificial means for the interception and removal of surface or subsurface water
ESD	Ecologically sustainable development
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
Flake	A piece of stone detached from a core by human activity, displaying a number of attributes such as bulb of percussion, striking platform, termination etc.
GSV	Ground Surface Visibility
Harm	As defined in the NSW <i>National Parks and Wildlife Act 1974</i>

Term	Definition
ha	hectare
Impact	Influence or effect exerted by a development or other activity on the natural, built and community environment
Impact area	An area that will be the subject to the particular impact
In situ	Latin words meaning 'on the spot, undisturbed' - In archaeological terminology it is used for objects found in their original location of discard
Isolated artefact / find	A single artefact found in an isolated context
km	kilometre
km ²	square kilometres
Landscape 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
MCC	Moolarben Coal Complex
MCM	Moolarben Coal Mines Pty Ltd
MCO	Moolarben Coal Operations Pty Ltd
Methodology	The procedures used to undertake an activity, e.g. archaeological investigation
m	metre
m ²	square metres
Mitigation	To address the problem of conflict between land use and site conservation
ML	Mining Lease
MLALC	Mudgee Local Aboriginal Land Council
MGATSIC	Murong Gialinga Aboriginal and Torres Strait Islanders Corporation
Mtpa	Million tonnes per annum
NEWCO	North-East Wiradjuri Company Ltd
NHL	National Heritage List
NPW Act	<i>NSW National Parks and Wildlife Act 1974</i>
NPW Regulation	<i>NSW National Parks and Wildlife Regulation 2009</i>
NSW	New South Wales
OC1	Open Cut Area 1
OC2	Open Cut Area 2
OC3	Open Cut Area 3
OC4	Open Cut Area 4
OEH	NSW Office of Environment and Heritage
PAD	Potential archaeological deposit A location considered to have a potential for subsurface archaeological material
RAP	Registered Aboriginal Party Members of a local Aboriginal land council, registered holders of Native Title, Aboriginal groups or other Aboriginal people who may have an interest in the Modification
RNE	Register of the National Estate
ROM	Run-of-mine

Term	Definition
SHI	State Heritage Inventory
SHR	State Heritage Register
Site	See 'Archaeological site' above
Study Area	A given area that is the subject to the investigation (i.e. the Modification area)
Survey coverage	A graphic and statistical representation of how much of a particular area was actually surveyed and therefore assessed
UG1	Underground 1
UG2	Underground 2
UG4	Underground 4
WNTCAC	Warrabinga Native Title Claimants Aboriginal Corporation
WVWAC	Wellington Valley Wiradjuri Aboriginal Corporation

1. Introduction

1.1 Background and Scope

The Moolarben Coal Complex (MCC) is located approximately 40 kilometres (km) north of Mudgee, in the Western Coalfields of New South Wales (NSW) (Figure 1). The MCC is situated within in the Mid-Western Regional Council Local Government Area.

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

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

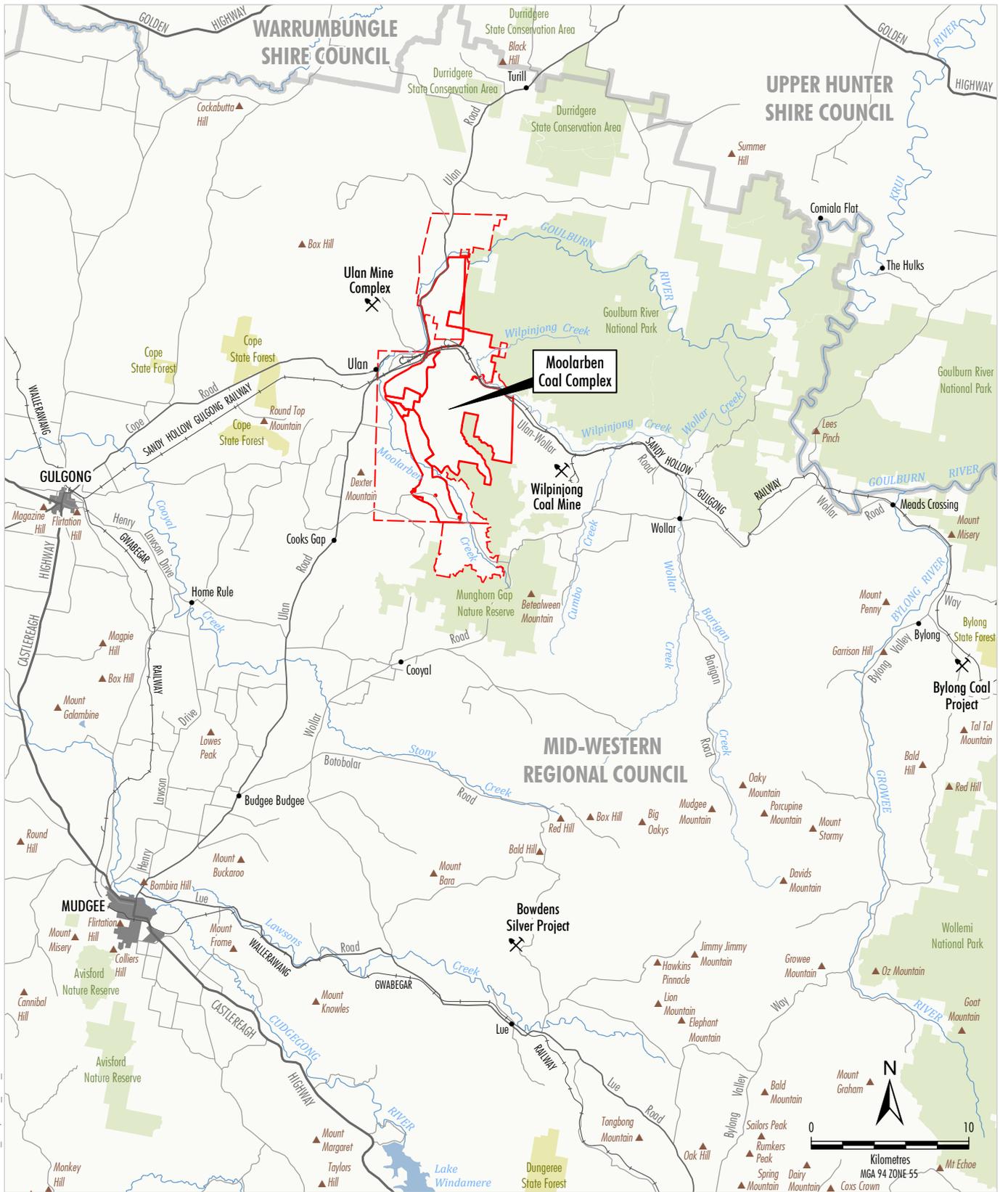
Stage 1 at the MCC has been operating for several years and at full development will comprise three open cut mines (OC1, OC2 and OC3), a longwall underground mine (UG4), and mining related infrastructure (including coal processing and transport facilities). Stage 2 at the MCC has commenced and at full development will comprise one open cut mine (OC4), two longwall mines (UG1 and UG2) and mining related infrastructure (Figure 2).

The management of Aboriginal heritage at the MCC is undertaken in accordance with the currently approved *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).

MCO has identified that an opportunity exists to optimise open cut mining operations, to improve mining efficiencies and increase run-of-mine (ROM) coal production. The Open Cut Optimisation Modification (herein referred to as the Modification) would require a modification to both the Stage 1 and Stage 2 Moolarben Coal Project Approvals (05_0117 and 08_0135) under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act). Details and proposed activities under the Modification are provided in Section 3 below.

Niche Environment and Heritage (Niche) has been commissioned by MCO to undertake an Aboriginal Cultural Heritage Assessment (ACHA) and archaeological assessment report to inform the Environmental Assessment being prepared for the Modification. The ACHA for the Modification will specifically assess those areas within the mining tenements of the MCC that have not been covered by previous Aboriginal cultural heritage assessments. The ACHA, in particular, will assess the components of the Modification that fall within Mining Leases (ML) 1606, 1628, 1691 and 1715 (Figures 3, 3.1, 3.2 and 3.3).

The objective of the ACHA is to provide an assessment of the potential for the Modification to impact Aboriginal objects and values and outline recommended management measures (where required), in accordance with current best practice and informed by the Aboriginal community.



ANCA-16-14_DC Opr Mod_ACHA_201A

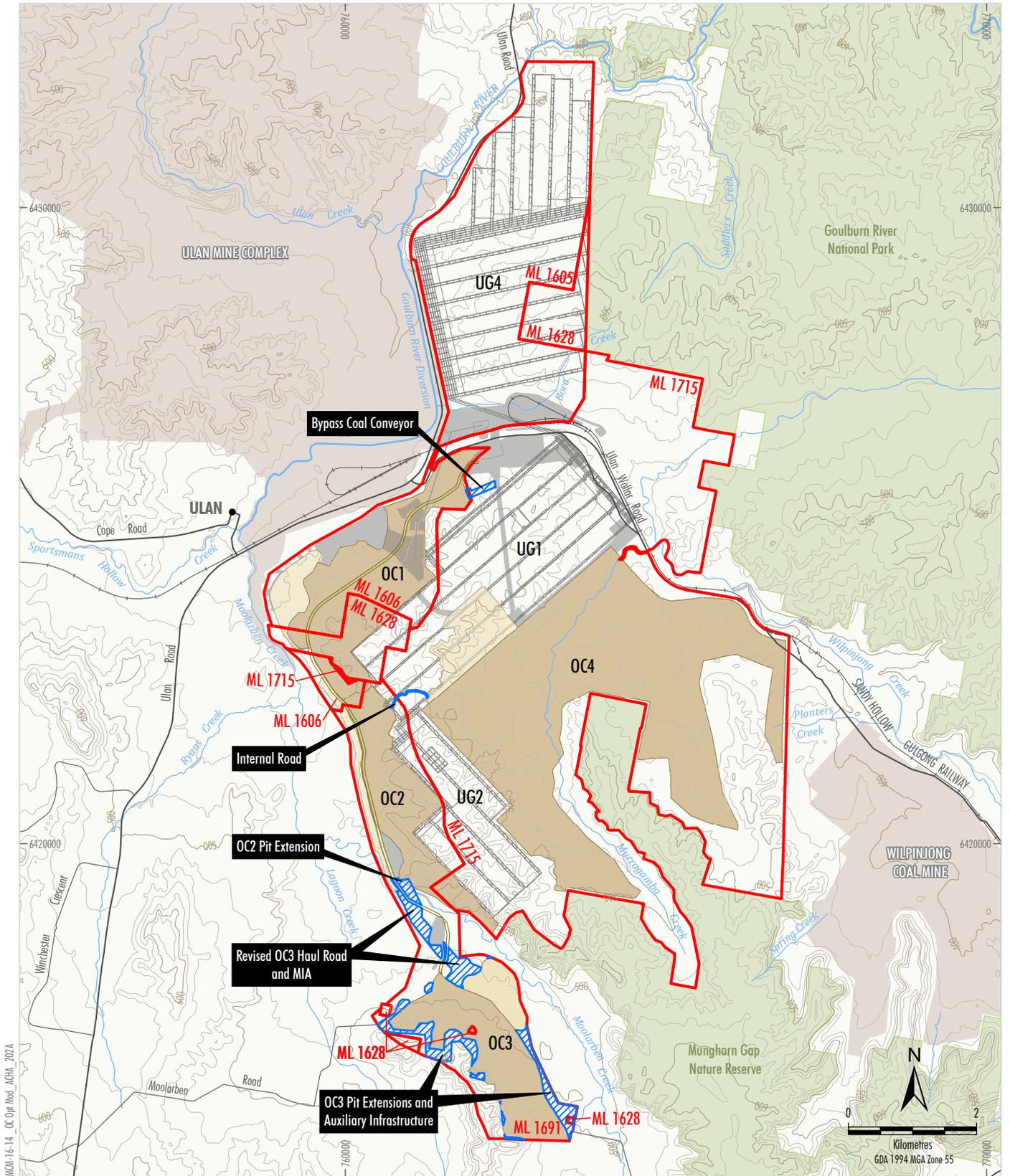


- LEGEND**
- State Forest
 - NSW National Parks and Wildlife Service
 - Local Government Boundary
 - Exploration Licence Boundary
 - Mining Lease Boundary
 - Mining Operation

Source: NSW Land & Property Information (2015); NSW Department of Industry (2016); Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
 Regional Location

Figure 1



MOL-16-14_OC Opt Mod_ACHA_2024

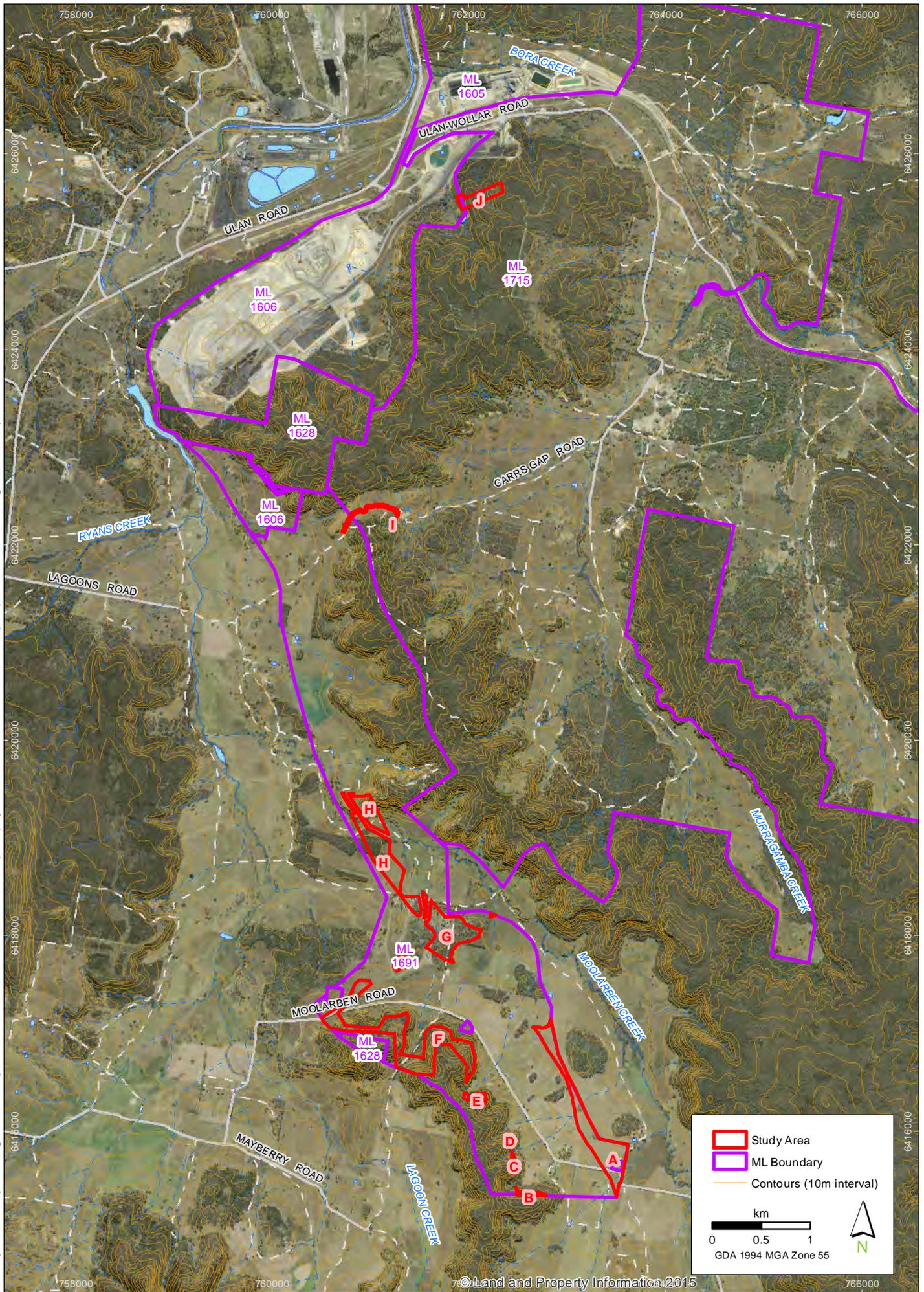
- LEGEND**
- NSW National Parks and Wildlife Service
 - Mining Lease Boundary
 - Existing/Approved Development
 - Open Cut Mining Area
 - Out-of-pit Emplacement
 - Surface Infrastructure Area
 - Underground Longwall Layout
 - Approved Road Realignment (not yet constructed)
 - Approved Haul Road
 - Open Cut Optimisation Modification
 - Approximate Extent of Additional Surface Development

Source: MCO (June 2017); NSW Dept of Industry (2016);
 NSW Land & Property Information (2016);
 Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
Open Cut Optimisation Modification
General Arrangement

Figure 2

Drawn by: RJ Project Manager: BH Project Number: 3394 Date: 02/08/2017 T:\spatial\projects\3394\3394_MCO_OC2_Maps\report_20170802\3394_Figure_3_SiteMap.mxd



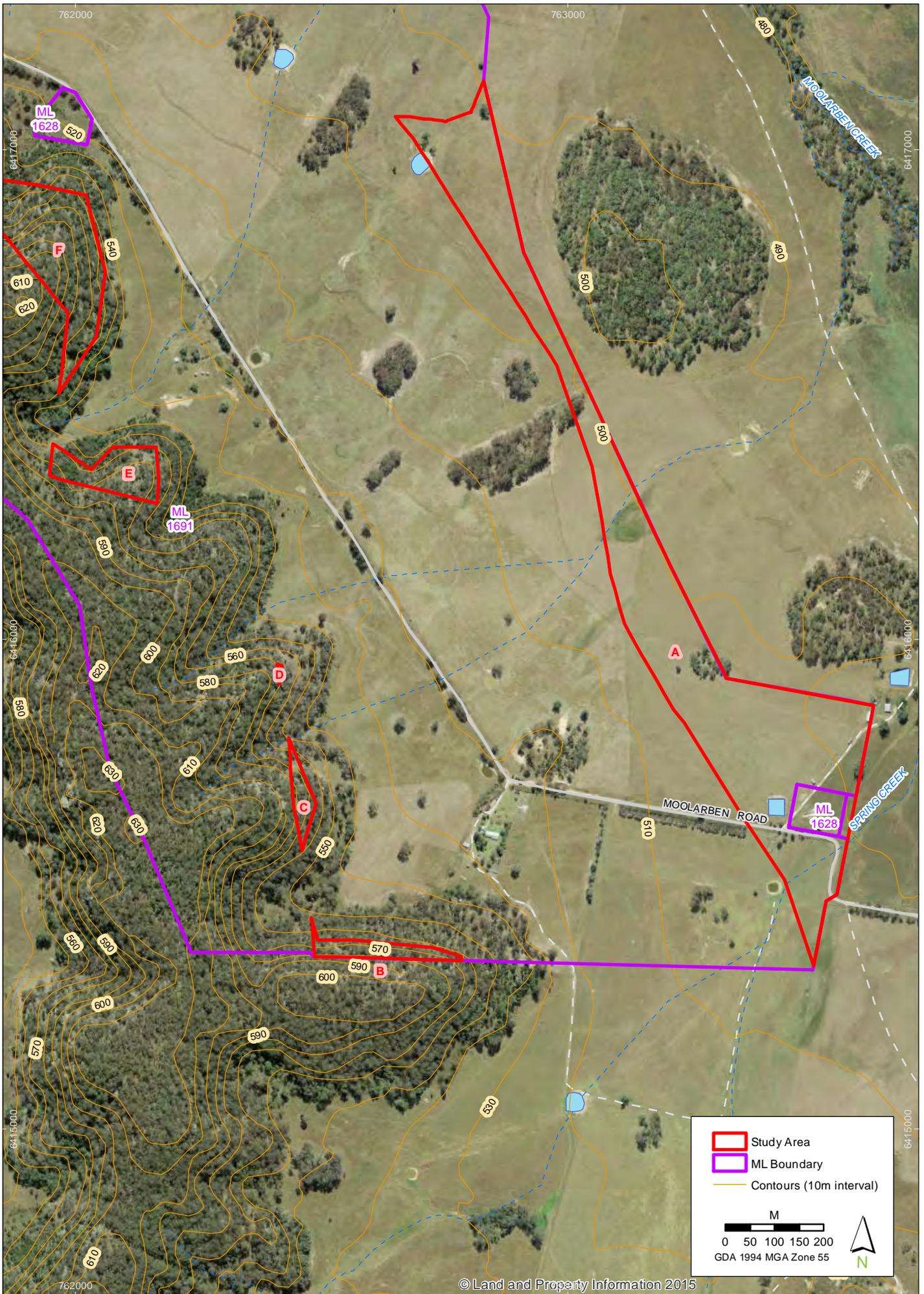
Site Map

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 3

Imagery: (c) LPI 2011-04-23

Drawn by: RJ Project Manager: BH Project Number: 3394 Date: 02/08/2017 T:\spatial\projects\3300\3394_MCO_OC2_Maps\report_20170802\3394_Figure_3_1_SiteMap.mxd



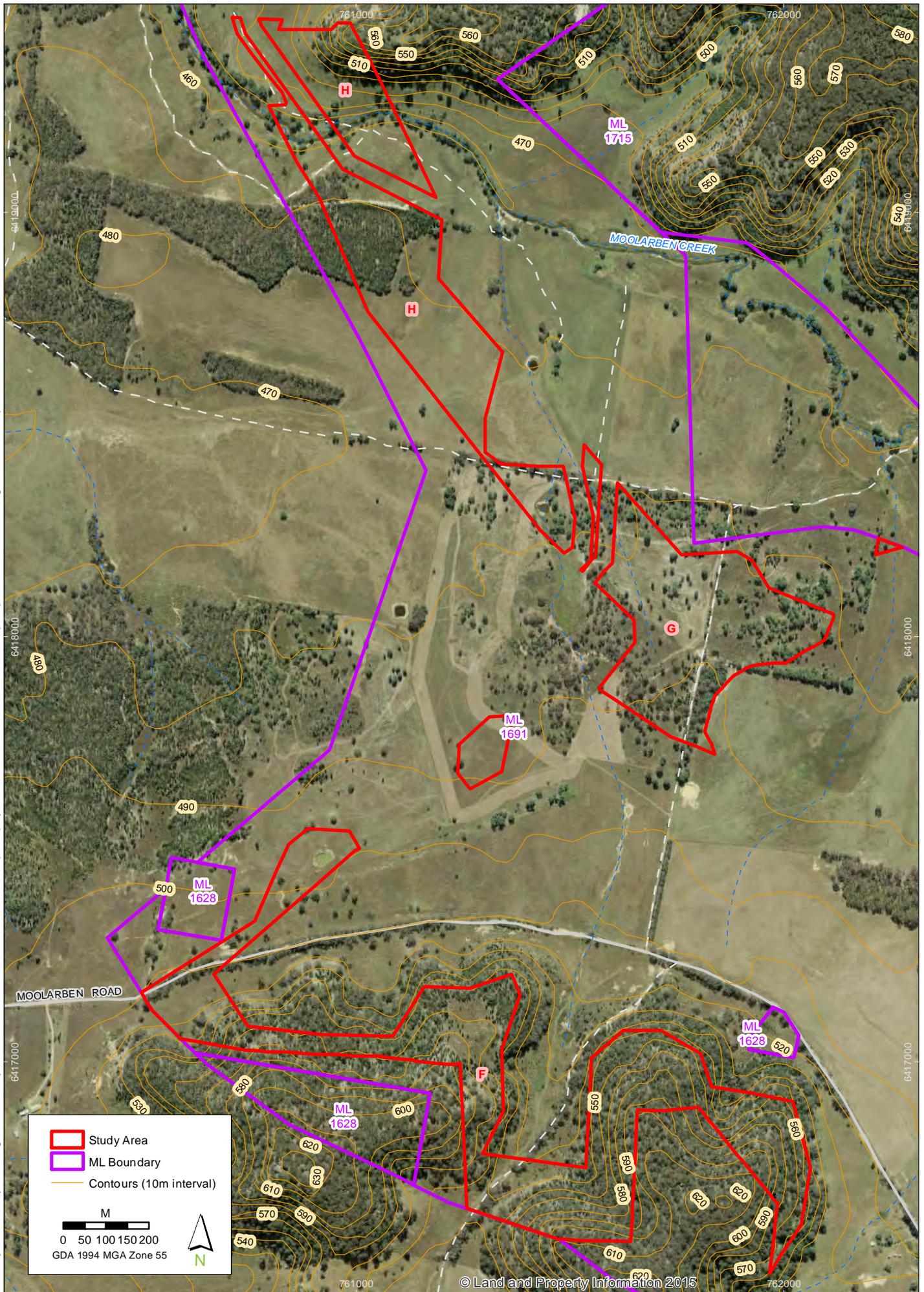
Site Map - A, B, C, D, E

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 3.1

Imagery: (c) LPI 2011-04-23

Drawn by: RJ Project Manager: BH Project Number: 3394 Date: 02/08/2017 T:\spatial\projects\3300\3394_MCO_OC2_OC3\Maps\report_20170802\3394_Figure_3_2_SiteMap.mxd



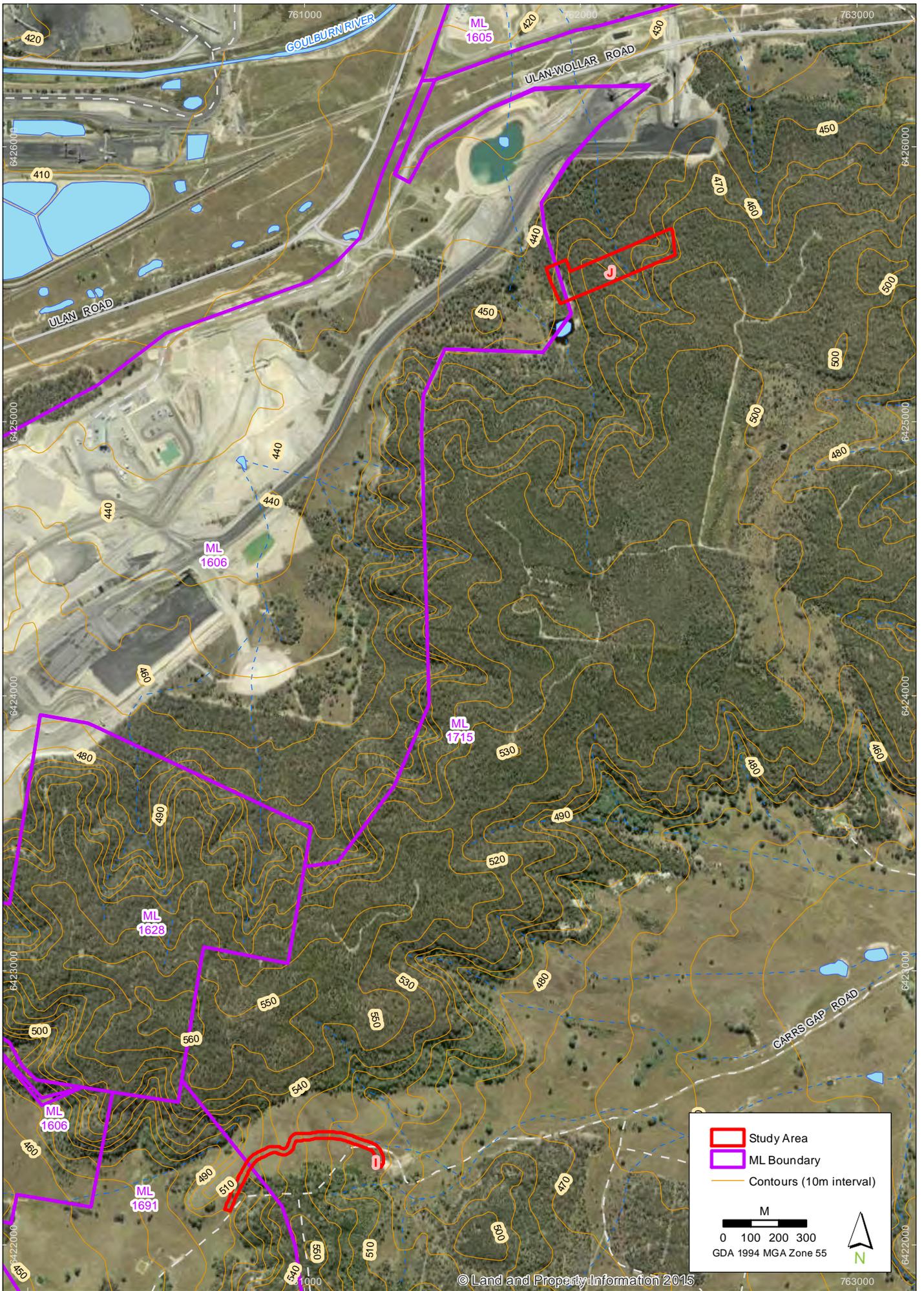
Site Map - F, G, H

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 3.2

Imagery: (c) LPI 2011-04-23

Drawn by: RJ Project Manager: BH Project Number: 3394 Date: 02/08/2017 T:\spatial\projects\3394\3394_MCO_OC2_Maps\report_20170802\3394_Figure_3_3_SiteMap.mxd



Site Map - I, J

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 3.3

Imagery: (c) LPI 2011-04-23

The ACHA has been prepared in accordance with (but not limited to) the following regulations and guidelines:

- *Aboriginal cultural heritage consultation requirements for proponents 2010 (ACHCRs)* (NSW Department of Environment, Climate Change and Water [DECCW], 2010a);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b);
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c);
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council, 2010);
- *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (NSW Office of Environment and Heritage [OEH], 2011);
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS, 2013); and
- *NSW National Parks and Wildlife Regulation, 2009* (NPW Regulation).

2. Description of the Study Area

The Study Area is situated within the Central Tablelands region of NSW, south-east of Ulan, and comprises 10 separate study areas that altogether cover approximately 105 hectares (ha) (Figure 1 and Figure 2). Details of the separate areas are provided in Table 1 below and shown in Figure 3.

Table 1: Details of separate areas within the overall Study Area.

Area ID	Size (ha)
Area A	22.99
Area B	0.88
Area C	0.53
Area D	0.02
Area E	1.67
Area F	49.67
Area G	16.03
Area H	6.21
Area I	1.81
Area J	4.71
TOTAL	104.52

Major disturbance works associated with the Modification would be limited to the extent of the Study Area.

The Study Area stretches across various landscapes including flat-topped rocky ridges, steep upper slopes and more gently-sloping mid and lower slopes and alluvial flats and undulating country. The slopes are covered by re-growth forest vegetation, while the flats and undulating country has been cleared for pasture and heavily impacted by various agricultural activities (Figure 3). Portions of the Study Area have been previously subject to systematic Aboriginal heritage survey during previous assessments and management activities. A detailed description of this previous work is provided in Section 9. Of relevance, the proposed internal haul road between OC2 and OC4 had been entirely covered by previous surveys and consequently was not the subject of the field survey component.

The area subject to survey for this assessment was larger than the current Study Area. Detailed mine planning and refinement of the final proposed disturbance area has resulted in the avoidance of direct impact to some identified heritage sites.

3. Description of the Development Proposal

As described in Section 1.1, MCO has identified that an opportunity exists to optimise open cut mining operations, to improve mining efficiencies and increase ROM coal production. The Modification would require modifications to both the Stage 1 and Stage 2 Moolarben Coal Project Approvals (05_0117 and 08_0135) under section 75W of the EP&A Act. The main changes to the operations of the approved MCC associated with the Modification include:

- Increased disturbance limits around OC2 and OC3.
- Increased combined Stage 1 and Stage 2 open cut ROM limit from 13 million tonnes per annum (Mtpa) to 16 Mtpa.
- Increased Stage 1 open cut ROM coal production from 8 Mtpa to 10 Mtpa.
- Increased Stage 2 (OC4) ROM coal production from 12 Mtpa to 16 Mtpa.
- Increased Coal Handling Processing Plant (CHPP) washing limit from 13¹ Mtpa to 16 Mtpa.
- Increased total production limit from 18 Mtpa to 22 Mtpa.
- Increased number of laden product trains:
 - 8 per day on average (from 7 per day); and
 - 11 per day at peak (from 9 per day).
- Minor changes to alignment of haul road from OC2 to OC3 and location of OC3 Mine Infrastructure Area, with associated change in disturbance.
- Additional internal road from OC2 to OC4 via Carrs Gap, with associated changes in disturbance.
- Additional rail loading infrastructure (e.g. second load out bin) for increased product coal rate.
- Additional coal bypass conveyor infrastructure, with associated disturbance.
- Change to controlled water release:
 - On-site water treatment facility to allow treatment of water.
 - Increase rate of controlled release.
- Ancillary infrastructure (e.g. access tracks, power, services, communications, explosives reload and pipelines).

The development of the Modification would occur as soon as practicable following all necessary approvals.

¹ The MCC is approved to wash 13 Mtpa ROM coal, except in 2017 when up to 13.5 Mtpa ROM coal can be washed.

4. Investigators and Contributors

This investigation was conducted by Balazs Hansel (MA Arch), Senior Heritage Consultant at Niche who has 17 years of experience as a professional archaeologist and 8 years as a heritage consultant in NSW and overseen by Jamie Reeves, Director at Niche. In addition to the individuals listed in Section 6.2, fieldwork was conducted by Balazs Hansel (MA Arch) and Caitlin Marsh (BA Hons), Archaeologist at Niche who has 2 years' experience as a professional archaeologist and heritage consultant. All GIS, mapping and cartography for the ACHA was undertaken by Dr. Ross Jenkins who has more than 25 years' experience in GIS, remote sensing and the geosciences.

Consultation with the Registered Aboriginal Parties (RAPs) for the ACHA is being managed by MCO. All of the RAPs are invited to provide advice on Aboriginal cultural heritage values during this assessment, regardless of participation in the archaeological survey work.

5. Statutory Framework and Other Approvals

The NSW *National Parks and Wildlife Act, 1974* (NPW Act), administered by the OEH, provides statutory protection for Aboriginal objects and the management of Aboriginal Heritage in NSW. The NPW Act defines Aboriginal objects and Aboriginal places:

Aboriginal object means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Aboriginal place means any place declared to be an Aboriginal place under section 84.

The OEH is responsible for the implementation of the Aboriginal heritage provisions of the NPW Act. The rationale behind the NPW Act is to prevent the unnecessary or unwanted destruction of Aboriginal objects and to protect and conserve objects where such action is considered not warranted (Kuskie 2013b).

Where Approval or Development Consent is granted for a project or modification, section 89J of the EP&A Act provides that an AHIP under the NPW Act may not be required. In these circumstances, Aboriginal heritage would be managed in accordance with the Conditions of Consent stipulated by the modified Project Approval or Development Consent.

6. Consultation with the Aboriginal Community

In administering its statutory functions under Part 6 of the NPW Act, the OEH requires that proponents consult with Aboriginal people about the Aboriginal cultural heritage values (cultural significance) of Aboriginal objects and/or places within any given development area in accordance with clause 80C of the NPW Regulation.

The OEH 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 by (DECCW 2010a):

- providing relevant information about the cultural significance and values of Aboriginal objects and/or places;
- influencing the design of the method to assess cultural and scientific significance of Aboriginal objects and/or places;
- actively contributing to the development of cultural heritage management options and recommendations for any Aboriginal objects and/or places within the proposed subject area; and
- commenting on draft assessment reports before they are submitted by the proponent to the OEH.

Consultation in the form outlined in the ACHCRs is a formal requirement where a proponent is aware that the development activity has the potential to impact Aboriginal objects or places. The OEH also recommends that these requirements be used when the certainty of impact 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 impact their proposal may have on Aboriginal objects and places.

Consultation for the Modification has been undertaken generally in accordance with the ACHCRs as these meet the fundamental tenants of the 2004 policy *Interim Community Consultation Requirements for Applicants* (NSW Department of Environment and Conservation [DEC] 2004), while meeting current industry standards for community consultation.

The ACHCRs outline a four stage consultation process that includes detailed step-wise guidance as to the aim of the stage, how it is to proceed and what actions are necessary for it to be 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.
- Stage 4 – Review of draft cultural heritage assessment report.

The ACHCRs also outlines the roles and responsibilities of the OEH, Aboriginal parties including Local and State Aboriginal Land Councils, and proponents throughout the consultation process.

To meet the requirements of consultation it is expected that proponents will (DECCW 2010a):

- 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 in assessing cultural significance and developing any heritage management outcomes for Aboriginal objects(s) and/or places(s);
- provide evidence to the OEH 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; and
- provide copies of their cultural heritage assessment report to the RAPs who have been consulted.

The consultation process undertaken to seek active involvement from relevant Indigenous people followed the current NSW statutory guideline, namely, the ACHCRs. Section 1.3 of the ACHCRs describes the guiding principles of the document. The principles 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 free prior informed 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 Study Area.

6.1 Stage 1 – Project Notifications

This stage of the consultation process is used to identify any Aboriginal people or groups who may have a cultural interest in and/or possess cultural knowledge in relation to the Study Area. Aboriginal stakeholder groups with an interest in the MCC have previously been identified (in compliance with the ACHCRs) and MCO has maintained ongoing consultation and engagement with these groups since the time of their initial registration.

For the Modification, the existing Aboriginal stakeholder groups at the MCC were contacted and consulted with. These parties are considered to be the RAPs for the Modification and include the following:

- Aleisha Lonsdale;
- Craig McConnell;
- Mudgee Local Aboriginal Land Council (MLALC);
- Murong Gialinga Aboriginal and Torres Strait Islanders Corporation (MGATSIC);
- North-East Wiradjuri Company Ltd (NEWCO);
- Warrabinga Native Title Claimants Aboriginal Corporation (WNTCAC);
- Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC); and
- Warranha Ngumbaay.

A consultation log detailing all Aboriginal community consultation undertaken for the Modification is provided in Appendix 1. The Proposed Methodology for the assessment and a copy of relevant written correspondence sent to and received from the RAPs are provided in Appendix 4, Appendix 2 and Appendix 3, respectively.

6.2 Stages 2 and 3 – Presentation of Project Information and Gathering Information about cultural significance

Proposed Methodology

On 4 January 2017 all of the RAPs were provided with a copy of the Proposed Methodology for the ACHA for their review and comment in accordance with the ACHCRs (DECCW 2010a), with a minimum of 28 days allowed for RAPs to:

- suggest any protocols to be adopted into the information gathering process and assessment methodology; and
- highlight any other matters such as issues or areas of cultural significance that might affect, inform or refine the methodology.

In addition, all RAPs were invited to provide advice on Aboriginal cultural heritage values at all stages during the preparation of the assessment.

Comments on the Proposed Methodology were received from MGATSIC on 2 February 2017 and from Warrabinga NTCAC on 8 February 2017. A copy of the submissions are included in this report in Appendix 3. Responses to the submissions are provided in Table 2 below.

Proposed Methodology Addendum

During the review of the Proposed Methodology, and as a result of future detailed mining planning, an addendum to the Proposed Methodology was prepared to describe an additional portion of the Study Area. This addendum was distributed to all RAPs on 10 March 2017. A copy of this Proposed Methodology Addendum is provided in Appendix 4.

Table 2: Responses to Comments Received on Proposed Methodology.

Date, Registered Aboriginal Party	Comment on the Proposed Methodology	MCO Response
2 February 2017, MGATSIC	<i>...we would like all areas to be thoroughly [sic] surveyed not just some areas.</i>	<p>As outlined in Section 11 of this report, the survey methodology undertaken for this ACHA allowed for all previously unsurveyed areas to be surveyed in their entirety. All areas subject to previous systematic survey were not re-inspected, however were originally subject to survey with representatives of the RAPs.</p> <p>The survey coverage and results achieved a robust understanding of the Study Area, and the results were consistent with expectations and the findings of previous assessments.</p>
2 February 2017, MGATSIC	<i>The Archaeologist & Environment staff to listen to the Aboriginal Groups concerns and -connecting to country also their Cultural knowledge.</i>	<p>MCO acknowledges that Aboriginal heritage is of primary interest to the Aboriginal community, and that Aboriginal people have the right to be consulted and involved in relation to the management of their heritage. MCO recognises that the Aboriginal community has a paramount role in identifying cultural significance and cultural heritage values. As outlined in the Proposed Methodology, in the event that a RAP has sensitive or restricted public access information, MCO would manage this information (if provided by the Aboriginal community) in accordance with a sensitive cultural information management protocol.</p>
8 February 2017, Warrabinga NTCAC	<i>Warrabinga has registered and been determined for upwards of 10 claims within the extent of our country. There is no reason to suggest that a determination on our whole of country claim will not be made in the near future.</i>	<p>Noted. As described in Section 6.1 of the ACHA, Warrabinga NTCAC has been consulted as a Registered Aboriginal Party for the Modification.</p> <p>As described in the approved <i>Moolarben Coal Complex Heritage Management Plan</i>, MCO is committed to</p>

		maintaining ongoing consultation with Aboriginal stakeholders throughout the life of the MCC, including with Warrabinga NTCAC.
8 February 2017, Warrabinga NTCAC	<i>Moolarben Coal Operations Pty Ltd has provided no details in regards to who the Archaeologist will be for the project. Please provide details.</i>	MCO has engaged Niche to undertake the ACHA for the Modification. The specific investigators and contributors are described in detail in Section 4, including relevant qualifications and experience.
8 February 2017, Warrabinga NTCAC	<i>Warrabinga has experienced how Aboriginal archaeological consultants will treat our heritage differently. We would like to ensure that the Aboriginal archaeological consultant for the project will both consider our heritage appropriately, and will consider our concerns and comments appropriately."</i>	<p>MCO acknowledges that Aboriginal heritage is of primary interest to the Aboriginal community, and that Aboriginal people have the right to be consulted and involved in relation to the management of their heritage. MCO recognises that the Aboriginal community has a paramount role in identifying cultural significance and cultural heritage values.</p> <p>As outlined in the Proposed Methodology, in the event that a RAP has sensitive or restricted public access information, MCO would manage this information (if provided by the Aboriginal community) in accordance with a sensitive cultural information management protocol.</p>
8 February 2017, Warrabinga NTCAC	<i>"In point two on page 1 of the proposed methodology, it is stated that "minor increase in disturbance limits at OC2"; please clarify what you mean by minor increase. That is an arbitrary statement, and everyone has a different idea as to what constitutes at minor increase."</i>	As described in Sections 2 and 3 of the ACHA, the Modification would include increased disturbance in the order of approximately 105 ha. This includes areas of disturbance associated with the increased limits around OC2 and OC3. Area calculations for each component of the Study Area are provided in Table 1 of the ACHA, and presented on Figures 3, 3.1, 3.2 and 3.3.

8 February 2017, Warrabinga NTCAC	<i>As a result of this “minor increase in disturbance limits at OC2” will the Aboriginal Cultural Heritage Management Plan be updated to reflect this increase?</i>	Section 15 of the ACHA includes a recommendation that the HMP would be updated to include the extent of the Modification and the management of Aboriginal heritage values within it.
8 February 2017, Warrabinga NTCAC	<p><i>In point three on page 1 of the proposed methodology, it is stated that “changes to alignment of the haul road from OC2 to OC3 and the location of the OC3 Mine Infrastructure Area”; please provide a map which addresses this point.</i></p> <p><i>In point four on page 1 of the proposed methodology, it is stated that “changes to the pit limits of OC3 and associated out of pit waste dump”; please provide a map which addresses this point.</i></p> <p><i>In point five on page 1 of the proposed methodology, “new internal haul from OC2 to OC4”; please provide a map which addresses this point.</i></p> <p><i>In point six on page 1 of the proposed methodology, “new site access to OC3 via Moolarben Road, and associated widening of the existing Moolarben Road”; please provide a map which addresses this point.</i></p>	<p>Figure 2 in the ACHA includes a map showing the general arrangement for the Modification. This map indicates the location of the proposed alignments of the haul road from OC2 to OC3, the location of the OC3 mine infrastructure area, the location of the extensions to the OC3 pit limits and associated out of pit waste dump, proposed OC2 to OC4 haul road, new site access to OC3 via Moolarben Road (excluded from the modification), and the indicative location of the coal handling infrastructure refinements.</p> <p>It is also noted that the indicative Study Area (including the above-described components) was presented on Figure 2 in the Proposed Methodology which was provided to the RAPs for review and comment. However, for clarity the labelling on this figure has been updated in the draft ACHA to more specifically identify the individual modification components.</p>
8 February 2017, Warrabinga NTCAC	<i>It is always appropriate when discussing changes to any infrastructure, haul roads, Aboriginal heritage, etc., to include a map of the specific area, especially when the Registered Aboriginal Parties are being requested to provide comment on the proposed methodology.</i>	Noted. The Proposed Methodology included two separate figures, one providing the regional location/context for the Modification, and the other providing the indicative Study Area (along with the location of known Aboriginal heritage sites).
8 February 2017, Warrabinga NTCAC	<i>In point seven on page 1 of the proposed methodology, “other minor ancillary infrastructure”; please provide a map which addresses this point.</i>	As described in Section 3 of the draft ACHA, the Modification may also include the development of other minor ancillary infrastructure. Ancillary infrastructure includes, for example, the construction

and/or maintenance of access tracks (e.g. for the installation and/or maintenance of surface infrastructure), internal power infrastructure, minor water infrastructure such as pipelines and other associated minor infrastructure, plant, equipment and activities.

The location of the ancillary infrastructure would be determined as required over the life of the Modification, and hence this cannot be shown on figures or maps. Notwithstanding, the location and design of ancillary infrastructure would be flexible and would be located in an attempt to avoid known Aboriginal heritage sites and areas of cultural sensitivity as far as practicable.

In this regard, it is noted that Section 15 of the draft ACHA includes a recommendation for salvage in relation to any Aboriginal heritage sites that may be subject to impacts from ancillary infrastructure over the life of the Modification.

8 February 2017, Warrabinga NTCAC

At this point Warrabinga is of the opinion that an insufficient degree of information has been provided in order for us to make any comment on the proposed methodology; a high level map with an “indicative Study Area” is not appropriate. If you have a proposed location for specific infrastructure, you need to supply Warrabinga with this information.

Warrabinga requires that the maps as requested above, and that an amended proposed methodology for the project be issued.

Noted. Please refer to the responses above in relation to the provision of relevant mapping and figures in the ACHA.

8 February 2017, Warrabinga NTCAC

If the provided proposed methodology has been prepared to comply with the Section 4.2 and 4.3 of the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010), then the document needs to include the following details in order to be in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010):

- *Environmental context;*
- *Archaeological context;*
- *Identify and list which Aboriginal sites will be potentially impacted by the proposed works; and,*
- *Previous disturbance to Aboriginal sites within the Study area.*

The information above is all necessary in order for Warrabinga to provide a comment in regards to the proposed methodology being put forward by Moolarben Coal Operations Pty Ltd.

Please do not point Warrabinga to review the Aboriginal Cultural Heritage Management Plan in order to gather this information. It is the responsibility of the party who prepared the document to address Section 4.2 and 4.3 of the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010) to provide this information in a single document in order for us to provide a response; it is not the responsibility of the Registered Aboriginal Parties to gather this information.

As described in Section 1 of the ACHA, the proposed methodology has been prepared in accordance with (but not limited to) the following regulations and guidelines:

- the ACHCRs (DECCW, 2010a);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b);
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c);
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council, 2010);
- *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (NSW Office of Environment and Heritage [OEH], 2011);
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS, 2013); and
- the NPW Regulation.

Sections 4.2 and 4.3 outline key requirements in relation to the presentation of project information and community consultation in relation to cultural significance. These requirements are in relation to project-specific detail and proposed assessment methodology, and it is noted that these sections do not

		<p>require the requested information to be provided in the Proposed Methodology.</p> <p>MCO notes that the requested information is provided in the ACHA in Section 8 (landscape/environmental context), Section 9 (Aboriginal archaeological context), Section 12 (survey results and discussions), and Section 14 (impact assessment).</p> <p>Further information is provided in the Moolarben Coal Complex Heritage Management Plan, available on the MCO website: http://www.moolarbencoal.com.au/</p>
<p>8 February 2017, Warrabinga NTCAC</p>	<p><i>It should be noted that this may not be Warrabinga's last response in regards to the documentation provided to-date by Moolarben Coal Operations Pty Ltd; Warrabinga will provide additional responses until such time as we feel that our concerns have been satisfactorily addressed.</i></p> <p><i>Warrabinga would like to remind Moolarben Coal Operations Pty Ltd that the project should not proceed any further until all comments and concerns raised by the RAPs have been addressed.</i></p>	<p>MCO has provided responses (in Section 6 and this table) to all of the comments received to date.</p> <p>A copy of the final ACHA report will be made available to all RAPs during the public exhibition period for the Environmental Assessment. During this exhibition period all RAPs will have the opportunity to review and provide additional comment on the final ACHA report.</p>

Field Surveys

The field surveys for the Modification were undertaken in two campaigns. The first campaign was from 21 February to 24 February 2017, with the second campaign on 14 March and 15 March 2017. Table 3 provides a list of the representatives from the RAPs that attended the field survey for the assessment. Engagement for the field surveys was undertaken consistent with the requirements of the *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).

Table 3: List of representatives from the RAPs that participated in the field component.

Aboriginal Stakeholder	Representative	Day(s) of attendance
NEWCO	Kelli Menzies	21-24.2.2017
	Shaen Morgan	14-15.3.2017
MLALC	Debbie Foley	24.2.2017
	Larry Foley	23.2.2017,14-15.3.2017
	Tammy Peterson	21-22.2.2017
MGATSIC	Steven Flick	21-22.2.2017, 14-15.3.2017
	Debbie Foley	23.2.2017
	Shannon Foley	24.2.2017
WNTCAC	Shaen Morgan	21-24.2.2017
	Coral Williams	15.3.2017
WVWAC	Invited, but not in attendance	-

During the Aboriginal heritage survey the following comments were made by the RAPs attending the surveys:

- The entire Study Area needs to be surveyed not just sections of the recent Modification proposal.
- The Study Area is important and culturally significant to the local Aboriginal people.

The above comments are acknowledged by MCO, and have been addressed in the above responses to the comments received on the Proposed Methodology.

6.3 Stage 4 – Review of Draft Report

In accordance with the ACHCRs, a draft of this ACHA was provided to all RAPs listed in Section 6.1 for review and comment on 15 May 2017. A minimum of 28 days were provided to each of the RAPs, with feedback requested by 13 June 2017. A copy of the final ACHA report will be made available to all RAPs during the public exhibition period for the Environmental Assessment. During this exhibition period all RAPs will have the opportunity to review and provide additional comment on the final ACHA report.

As at 16 June 2017, written submissions on the draft ACHA had been received from the following RAPs in accordance with the ACHCRs:

- Warrabinga NTCAC – 13 June 2017.
- MGATSIC – 14 June 2017.

Copies of the submissions are included in this report in Appendix 3. Responses to each submission are provided in Table 4 below.

Table 4: Responses to Comments Received on Draft ACHA

Date, Registered Aboriginal Party	Comment on the Draft ACHA	MCO Response
13 June 2017, Warrabinga NTCAC	<p><i>First off, we would like to make it clear that Niche should not finalise the DRAFT Aboriginal Cultural Heritage Assessment Report for the Moolarben Coal Complex Open Cut Optimisation Modification, May 2017 until they have received confirmation from Warrabinga that we are of the opinion that all out concerns have been addressed. We would also like to clarify that all our concerns must be addressed in the Aboriginal Cultural Heritage Assessment Report.</i></p>	<p>The comments provided by Warrabinga NTCAC have been included in full in Appendix 3 and considered in detail in this table.</p> <p>Detailed consideration of the comments provided by all RAPs has been undertaken, including updates and/or clarification in the report where required. A copy of the final ACHA report will be made available to all RAPs during the public exhibition period for the Environmental Assessment. During this exhibition period all RAPs will have the opportunity to review and provide additional comment on the final ACHA report.</p>
13 June 2017, Warrabinga NTCAC	<p><i>Upon review of the DRAFT ACHAR, Warrabinga notes that the comments we provided on the 7th February 2017 for the Proposed Methodology are not included in the ACHAR. The comments issued by Warrabinga to Moolarben (as directed) were within the 28 day comment period, and as such must be addressed within the DRAFT ACHAR. Can Moolarben please confirm that they are in receipt of the comments issued by Warrabinga?</i></p> <p><i>Attached to this letter is a copy of the comments issued by Warrabinga on the 7th February 2017. Warrabinga expects that our comments and/or queries raised in response to the Proposed Methodology are addressed in an amended DRAFT ACHAR.</i></p>	<p>Comments received during the review period for the Proposed Methodology are considered and documented in Section 6.2 of the ACHA. Note that a copy of the submissions are also provided in Appendix 3.</p>
13 June 2017, Warrabinga NTCAC	<p><i>Upon review of the DRAFT ACHAR, Warrabinga notes that not all the extents of the Study Areas are visible in</i></p>	<p>Figure 3 has been updated to include contour lines and zoomed- in copies are provided as Figure 3.1, Figure 3.2</p>

	<p><i>Figure 3 (i.e. K, I, E, C, E, D and B). Please provide “zoomed-in” maps of Study Areas K, I, E, C, E D and B for Figure 3. Please ensure that the “zoomed-in” maps are replicated for all the other maps in the DRAFT ACHAR. This is not an unreasonable request, especially when Warrabinga and the other Registered Aboriginal Parties (RAPs) for the project do not have access to the spatial data for the project, and we are being asked to provide commentary on the cultural significance within the Study Area.</i></p>	<p>and Figure 3.3 on the different components of the Study Area.</p> <p>Updated, zoomed-in copies of Figure 6 (AHIMS sites) are provided as Figure 6.1, Figure 6.2 and Figure 6.3.</p> <p>Updated, zoomed-in copies of Figure 7 (Survey Results) are provided as Figure 7.1, Figure 7.2 and Figure 7.3</p> <p>Given the intent of the remaining figures (1 and 4), similar insets have not been applied. This is on the basis that these figures were prepared to be viewed at an appropriate scale to determine the relationships between the Study Area, the boarder location and the hydrology and soils of the Study Area.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>On page ii of the Executive Summary, it is stated that a total of 10 Aboriginal sites have been identified; however upon review of Figure 6, Warrabinga noted that the colour used to demarcate “Isolated Finds” blended in with the colour used to identify the “Current Survey Coverage”. Please clarify why the exact same colour was chosen to demarcate to item that where overlaid on each other.</i></p>	<p>Figures 6 and 7 (and associated sub-figures) have been amended so that all items on the legends include unique colouring.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>Upon review of Figure 6, Warrabinga noted that the current survey coverage is larger than the Study Area. Please explain why this is the case. Please clarify whether the entire current survey coverage area is discussed and assessed within this ACHAR, or whether the ACHAR is limited to the current Study Area.</i></p>	<p>As described in Section 14.1 of the ACHA, the Study Area was larger than the final proposed disturbance area (particularly in the north [i.e. in the areas associated with the coal handling infrastructure requirements]). Detailed mine planning and refinement of the final proposed disturbance area has resulted in the avoidance of direct impact to some identified heritage sites.</p>

		<p>The survey coverage has been shown on Figure 7 for completeness, to show an accurate representation of survey coverage at the MCC to date. However, we note that the assessment provided in this ACHA report considers only those portions of the Study Area (i.e. those portions bounded by the red polygons on Figure 7).</p>
13 June 2017, Warrabinga NTCAC	<p><i>Please clarify whether the nine (9) newly identified Aboriginal sites have been registered with AHIMS. Please provide copies of the AHIMS numbers and site cards for each of the identified Aboriginal sites in the ACHAR.</i></p>	<p>All newly recorded Aboriginal sites have been registered with AHIMS and relevant AHIMS numbers have been updated in the report.</p> <p>Copies of site cards are available via the AHIMS register website, to which Warrabinga NTCAC (and all RAPs) has access.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In Table 11 and 12, Niche provides an estimated extent of each Aboriginal site; however, no map is provided detailing the extent of the Aboriginal sites. Please provide a map detailing the estimated extent of each of the Aboriginal sites. If Niche is unable to provide a map of each of the estimated extents, please provide details on the estimated extent (i.e. square, circle, rectangle buffer).</i></p>	<p>Table 13 provides details of the identified Aboriginal heritage sites within the Modification area, including an estimate of the extent of each site (e.g. 5 m by 10 m etc). Updated, zoomed-in copies of Figure 7 (Survey Results) are provided as Figure 7.1, Figure 7.2 and Figure 7.3 to show the mapped extents of the sites identified within the Study Area.</p>
13 June 2017, Warrabinga NTCAC	<p><i>Upon review of the DRAFT ACHAR, Niche does not include a map that details the location of the construction footprint in relation to the identified Aboriginal sites. This is necessary in order for Warrabinga to understand how the proposed construction works will impact identified Aboriginal sites. Please provide a map that details the estimated extent of each of the sites, overlaid with the proposed construction footprint. Please ensure that close-up</i></p>	<p>As described in Section 2, the Study Area for the Modification is comprised of 10 separate areas comprising approximately 105 ha. As detailed in Section 14.1, for the purposes of this assessment, the two (2) Aboriginal heritage sites that occur within the proposed disturbance area are considered to have the potential to be directly impacted by the proposed mining activities, which will involve the excavation of soil profiles and will result in the complete removal of</p>

	<p><i>maps focused on the identified Aboriginal sites are included in the DRAFT ACHAR.</i></p>	<p>potential archaeological resources. Other sites have the potential to be impacted by indirect impact due to their proximal location to the disturbance boundary.</p> <p>For clarity, text has been added to Section 2 of the ACHA as follows: <i>“Major disturbance works associated with the Modification would be limited to the extent of the Study Area”.</i></p>
13 June 2017, Warrabinga NTCAC	<p><i>Upon review of the DRAFT ACHAR, Niche provides no comment on whether areas of Potential Archaeological Deposit (PAD) (that are not identified in relation to recorded Aboriginal sites) are within the current Study Area. Please clarify whether areas of PAD are present within the current Study Area, and if so, whether the PAD will be impacted by the proposed construction works.</i></p>	<p>No areas of PAD (not associated with recorded Aboriginal heritage sites) were identified within the Study Area.</p> <p>As described in Section 15, should any previously unrecorded Aboriginal heritage sites be identified during the Modification they should be managed consistent with the requirements of the <i>Moolarben Coal Complex Heritage Management Plan</i>.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In Section 12.3, the nine (9) newly identified Aboriginal sites have been identified or assessed as having ‘low scientific significance’; what is Niche using as the definition of scientific significance? Please clarify how scientific significance differs to archaeological significance. It is best to keep language and phraseology consistent and fluid throughout a document to save any confusion or misunderstanding.</i></p>	<p>A detailed description of the significance assessment is provided in Section 13.1, including a detailed discussion in Section 13.1.2 of the differentiation between low, moderate and high significance. In this assessment, archaeological and scientific significance represent the same characterisation and hence the term ‘scientific significance’ has been used throughout the report.</p>
13 June 2017, Warrabinga NTCAC	<p><i>There is a similar confusion on page 40, paragraph two (2) which states that a recorded site was assessed as having low significance. Please clarify if this significance refers to the cultural heritage significance, the archaeological significance, or the overall significance of</i></p>	<p>The text in Section 9.4 has been updated to clarify that this statement is referring to ‘scientific’ significance.</p>

	<i>the site. Please update the DRAFT ACHAR to reflect the significance type.</i>	
13 June 2017, Warrabinga NTCAC	<i>In regards to point 1 on page 16, it is stated that “increased disturbance limits around OC2 and OC3”; please clarify what you mean by increased disturbance limits. Niche has provided no details about what this statement refers to.</i>	As described in Sections 2 and 3 of the ACHA, the Modification would include increased disturbance in the order of approximately 105 ha. This includes areas of disturbance associated with the increased limits around OC2 and OC3. Area calculations for each component of the Study Area are provided in Table 1 of the ACHA, and presented on Figure 3.
13 June 2017, Warrabinga NTCAC	<i>Please clarify whether the Aboriginal Cultural Heritage Management Plan be updated to reflect the increased disturbance limits around OC2 and OC3.</i>	Section 15 includes a recommendation that the HMP would be updated to include the extent of the additional disturbance for the Modification and the management of Aboriginal heritage values within it.
13 June 2017, Warrabinga NTCAC	<i>In regards to point 2 on page 16, it is stated that “OC2 final landforms to retain highwalls/lowwalls and additional dams in the final landform”; please clarify what Niche means by this.</i>	MCO is no longer seeking approval for this change as part of the Modification. This description has been removed from Section 3.
13 June 2017, Warrabinga NTCAC	<i>In regards to point 9 on page 16, it is stated that “minor changes to alignment of haul road from OC2 to OC3 and location of OC3 Mine Infrastructure Area, with associated change in disturbance”; please provide a map which addresses this point. Please provide a map to show how the changes to the alignment of the haul road will differ from the original alignment of the haul road. Please clarify whether the minor changes to the alignment of haul road was surveyed as part of the current assessment.</i>	<p>Figure 2 in the draft ACHA includes a map showing the general arrangement for the Modification. This map indicates the location of the proposed alignments of the haul road from OC2 to OC3 and the location of the OC3 mine infrastructure area.</p> <p>The location of the approved haul road from OC2 to OC3 is also shown on Figure 2. The new alignment is proposed to be constructed within the extent of the study area. The study area has been subject to systematic survey and assessment, which is described in detail in Sections 11 and 12.</p>

13 June 2017, Warrabinga NTCAC	<i>It is always appropriate when discussing changes to any infrastructure, haul roads, Aboriginal heritage, etc., to include a map of the specific area, especially when the RAPs are being requested to provide comment on the proposed methodology.</i>	Noted. The ACHA includes six separate figures including one providing the regional location/context for the Modification, and others providing the indicative Study Area (along with the location of known Aboriginal heritage sites, survey coverage, AHIMS sites, landforms etc).
13 June 2017, Warrabinga NTCAC	<i>In regards to point 10 on page 16, it is stated that “additional internal road from OC2 to OC4 via Carrs Gap”; please provide a map which addresses this point. Please clarify whether the proposed alignment for the additional internal road was surveyed as part of the current assessment.</i>	The location of the OC2 to OC4 haul road is labelled and presented on Figure 2. This area, and forms area “I” of the Study Area. The Study Area has been subject to systematic survey and assessment, which is described in detail in Sections 9, 11 and 12.
13 June 2017, Warrabinga NTCAC	<i>In regards to point 11 on page 16, it is stated that “additional rail loading infrastructure (e.g. second load out bin) for increased product coal rate”</i>	Noted. Any additional rail loading infrastructure will be located within previously disturbed or approval disturbance areas.
13 June 2017, Warrabinga NTCAC	<i>In the proposed methodology issued in January 2017, it was stated in point 6 on page 1 that “new site access to OC3 via Moolarben Road, and associated widening of the existing Moolarben Road”; please clarify whether this new site access will still be constructed.</i>	MCO is no longer seeking approval for this change as part of the Modification.
13 June 2017, Warrabinga NTCAC	<p><i>The response by Niche to Murong Gialinga Aboriginal & Torres Strait Islander Corporation under section 6.2, page 21, needs more information.</i></p> <p><i>The statement is as follows “... the level of survey undertaken was considered sufficient to achieve the goals of the assessment”, please address who considered it sufficient, and by what means?</i></p> <p><i>It should not be necessary for Warrabinga to point out to Niche that predictive models are ever evolving, and</i></p>	<p>As described in Section 9.4, approximately 10% of the Study Area had been subject to previous systematic survey prior to commencement of the surveys for this assessment.</p> <p>Due to the relatively small and accessible size of the Study Area, and due to the fact that some areas had been subject to previous survey, a detailed landscape or landform sampling methodology was not applied. Rather, as discussed in Section 11.1, the approach taken was to use a high intensity transect survey across the</p>

	<p><i>that just because the predictive model indicates that an area does not need additional survey, does not mean that additional survey isn't required.</i></p> <p><i>It should also be noted, that unless Niche has surveyed 100% of the entire Study Area, then it is always appropriate to resurvey an area, especially when there have been long periods (i.e. 6 to 12 months) between surveys; because Aboriginal sites that were previously unidentified may have become exposed and in suitable environs to be identified.</i></p>	<p>Study Area including all landforms. This allows for an inspection of ridge slopes and tops for closed sites such as rock shelters and overhangs, as well as a broad inspection for open sites. On this basis, the survey undertaken is considered by Niche to be sufficient for the purposes of this assessment.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In regards to paragraph 2 of Section 7.2.2, Warrabinga acknowledges that according to the Mid-Western Regional Local Environmental Plan, 2012 that there are no Aboriginal heritage items located "specifically within the study area"; however, Warrabinga requires clarity as to whether the LEP identifies Aboriginal sites outside the Study Area, but within close proximity to the Study Area. Please provide articulated information in regards to this.</i></p>	<p>As described in Section 7.2.2, a search of the <i>Mid-Western Regional Local Environmental Plan, 2012</i> was undertaken for this assessment. No Aboriginal heritage items listed in the <i>Mid-Western Regional Local Environmental Plan, 2012</i> were located within the Study Area or immediate surrounds. For clarity, the text in Section 7.2.2 has been updated to state this.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In regards to Section 8.2, Niche makes general high-level references to topography and landforms within the Study Area; however, no maps are provided in order to support Niche's statements; if Niche intends to discuss the topography and landforms of the Study Area then it is appropriate that a map be included in order for the RAPs to understand Please include a map of the topography and landforms.</i></p>	<p>Topography within the Study Area and surrounds is presented on Figures 6 and 7, while aerial bases have been presented on 3, 4, 6 and 7 to allow differentiation between cleared and vegetated land. Soils and hydrology mapping has also been presented on Figure 4.</p> <p>For clarity, Figure 3 has been updated to also include contours. In addition, all new copies of Figure 3, 6 and 7 include contour lines.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In regards to Section 8.3, Niche does not provide any references for the geology. Please provide references.</i></p>	<p>Reference has been provided in Section 8.3 in relation to geological information of the Study Area. Geology</p>

	<p><i>Niche does not provide a geology map for the Study Area; if Niche intends to discuss the geology of the Study Area then it is appropriate that a map be included in order for the RAPs to understand. Please include a map of the geology.</i></p>	<p>mapping relevant to the Study Area has been provided in Figure 5.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In regards to Section 8.6, Niche is extremely scant on providing information about the ecology/resource exploitation of the Study Area; Warrabinga would expect that based on the number of assessments (both archaeological and ecological) that have been undertaken within the extent of Moolarben Coal, that more information would be available in order for Niche to provide a more detailed assessment of the ecology. Please provide additional information in regards to the ecology/resource exploitation.</i></p>	<p>Additional detail has been added to Section 8.6 regarding the flora and fauna within the Study Area.</p> <p>It is noted that further detail in relation to the ecology of the Study Area are provided in the Biodiversity Assessment Review, which forms part of the Environmental Assessment. A copy of the Biodiversity Assessment Review will be made available to all RAPs during the public exhibition period for the Environmental Assessment. During this exhibition period all RAPs will have the opportunity to review and provide comment on the full EA, including the Biodiversity Assessment Review, as well as the final ACHA.</p>
13 June 2017, Warrabinga NTCAC	<p><i>In regards to Section 8.7, Niche makes general high-level references to past land use and disturbance within the Study Area; however, no maps are provided in order to support Niche's statements; if Niche intends to discuss the past land use and disturbance of the Study Area then it is appropriate that a map be included in order for the RAPs to understand. Niche references Figure 3 and Figure 4 in Section 8.7; however, neither map is relevant, nor provides any information to support Niche's argument. Please include a map of the land disturbance.</i></p>	<p>References to Figures 3 and 4 have been included as they contain aerial imagery to allow differentiation between cleared and vegetated land and includes an indication of existing roads and tracks (i.e. past land disturbances). Figure 4 also includes hydrology and topography, to further assist in clarifying the land characteristics within the Study Area.</p>

<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>In regards to paragraph 1 on page 29, Niche states that “the Study Area most likely lies within...”; Warrabinga does not agree with the use of ambiguous terminology. Please be clear about where the Study Area lies; Niche has reviewed Pearson (1981) as part of preparing the DRAFT ACHAR, so there is no reason to be ambiguous.</i></p>	<p>Reference in Section 9.1 to the “Study Area most likely lies within the Mudgee-Rylstone group’s area” refers to ambiguity within Pearson’s study (i.e. it was his hypothesis, rather than a statement of fact).</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>In regards to Section 9.2, Warrabinga requires clarity as to whether Niche undertook a search of the AHIMS database, or whether they relied purely on the Moolarben Coal Aboriginal Heritage Database. As Niche is aware AHIMS is managed by the OEH, and a requirement of the National Parks and Wildlife Act, 1974 that all recorded Aboriginal sites must be registered with AHIMS; however, there is no legislation that requires Moolarben to register all recorded Aboriginal sites on their Aboriginal Heritage Database, and as such is not appropriate to solely rely on a search of the Moolarben Coal Aboriginal Heritage Database. Please provide evidence that an AHIMS search was undertaken for the Study Area.</i></p>	<p>As described in Section 7.2.3 and in Section 9.2, an extensive search of the Aboriginal Heritage Information Management System (AHIMS) register was conducted on 15 May 2017 (AHIMS ID #281205 and #281212) for the Study Area and surrounds. A copy of this search is provided in Appendix 5.</p> <p>This data was reviewed as part of the preparation of this assessment, along with a review of the MCC Aboriginal Heritage Sites Database.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>In regards to paragraph 2 on page 30, Niche states that “most of the sites are within 200 m of ephemeral drainage lines, which is probably a result of the sporadic presence of water”; please clarify what Niche means by ephemeral. Warrabinga understands ephemeral to mean 1st and/or 2nd order of streams, as identified under the Strahler system of stream orders, and/or seasonal watercourses. Please clarify what Niche means.</i></p>	<p>In this assessment, the term ephemeral has been used to describe those water courses which do not retain water for prolonged periods and generally only flow following prolonged rainfall. The text in Section 9.2 has been updated to include this clarification.</p>

<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>Can Niche clarify what they by “most of the sites are within 200 m of ephemeral drainage lines”, does this mean that the majority of identified Aboriginal sites are within 200m. Please clarify whether this statement is limited to the Aboriginal sites present within the Study Area, or within the entire Moolarben Coal complex. Please provide a percentage of Aboriginal sites within 200m of ephemeral drainage lines.</i></p>	<p>The percentage of the previously recorded Aboriginal heritage sites within 200 m of ephemeral drainage lines has been updated.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>In regards to the last paragraph of Section 9.3, Niche states that the predictive model proposed by Pearson has been revised and refined; however, Niche does not provide expand and/or provide details on how the predictive model has been revised and refined. It should be pointed out that Warrabinga does not have the appropriate background information to understand what parts of Pearson’s predictive model have been revised. Please clarify whether the results from the current assessment are compared against the revised predictive model.</i></p> <p><i>Please clarify whether the revision of Pearson’s predictive model differs from the predictive model proposed by Kuskie? Please provide details of the data used to support the revision of Pearson’s model?</i></p>	<p>Section 9.3 includes a description of the original predictive model collated by Pearson (1981). Further to this, Section 10 outlines the revised predictive model relevant to the Study Area, based on existing archaeological assessments, landforms and topography, records of known Aboriginal heritage sites in the Study Area and surrounds.</p> <p>Following completion of the field surveys, a comparison of the results was made against the revised predictive model (refer to Section 12.1). In this regard, Niche has advised that the survey confirmed the general pattern of Aboriginal objects in the wider area and also confirmed the predictive model developed for the Study Area.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>On page 41, Niche provides a high-level discussion of the previous assessments within Moolarben; however, no details are provided in regards to how the investigation areas discussed relate to the Study Area.</i></p> <p><i>Please provide a map detailing the extent of the previous investigation areas within Moolarben in relation to the Study Area; an understanding of how</i></p>	<p>The studies, assessments and investigations described in Section 9 relate to the sites within the Study Area and immediate surrounds, the wider MCC area and the broader surrounds including the adjacent mines (e.g. Wilpinjong Coal Mine). This broad review provides background to the Aboriginal heritage record of the region and informs the predictive model prepared for the Study Area.</p>

	<i>each investigation area relates spatially to one another will build context.</i>	Figure 7 presents the survey results, including the extent of previous survey coverage (shown as pink shading) and the extent of the field survey for this Modification (shown as orange shading). The extents of the individual Study Area components are also shown on this figure.
13 June 2017, Warrabinga NTCAC	<i>In regards to the landscape photographs, no details are provided in regards to direction that the photograph was taken. Please detail the direction of the photographs provided in the DRAFT ACHAR.</i>	Section 8 has been updated to provide the bearings of landscape photos.
13 June 2017, Warrabinga NTCAC	<i>The measuring tapes used in Plates 4, 5, 8, 12, 14, 16, 18 and 20 do not provide any indication of the length or distance that is being measured or shown in the photograph. This being the case, measurements should be provided. The use of a tape measure in these photos is pointless, a range pole or a mini rod would be far more appropriate. The increments marked on the measuring tape are not visible and cannot be read. We would expect going forward in the future, a range pole or a mini rod would be used to reduce this issue.</i>	All site recordings and photographs have been undertaken consistent with the requirements for the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (DECCW, 2010b). In this regard it is noted that a range pole, surveying staff or tape measure are suitable for recording, depending on the angle, zoom and context of the photographs.
13 June 2017, Warrabinga NTCAC	<i>In regards to Plate 9, Warrabinga has several of issues with the label of this particular plate:</i> <ol style="list-style-type: none"> 1. <i>Does not state whether the artefact was recorded at one of the 10 Aboriginal sites within the Study Area;</i> 2. <i>Example of detailed-photo of located archaeological object. This suggests that Warrabinga, as an Aboriginal organisation, is unable to identify an artefact; and,</i> 3. <i>Insensitive statement.</i> 	The caption for Plate 9 has been updated.

	<i>Warrabinga expects that Niche resolve this issue before redistributing the DRAFT ACHAR.</i>	
13 June 2017, Warrabinga NTCAC	<i>In regards to S1MC140, Warrabinga requests that Niche provide photographs of all artefacts recorded at S1MC140 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 3 artefacts were identified. Please update.</i>	Section 12.3 has been updated to include an additional photo showing two of the three artefacts at S1MC140.
13 June 2017, Warrabinga NTCAC	<i>In regards to S2MC400, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC400 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 2 artefacts were identified. Please update.</i>	Section 12.3 has been updated to include an additional photo showing the second artefact at S2MC400.
13 June 2017, Warrabinga NTCAC	<i>In regards to S2MC401, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC401 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 10 artefacts were identified. Please update.</i>	Section 12.3 has been updated to include an additional photo of two more artefacts. Niche took only photos of these artefacts as it was deemed as a representative sample of the artefact scatter. This approach was discussed with RAPs on-site at the time of the site recording.
13 June 2017, Warrabinga NTCAC	<i>In regards to S2MC404, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC404 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 11 artefacts were identified. Please update.</i>	Section 12.3 has been updated to include an additional photo of the same artefact. Best practice as per the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> does not require photographic recording for each individual artefacts.
13 June 2017, Warrabinga NTCAC	<i>In regards to S2MC405, Warrabinga questions whether Niche took photographs of the artefacts identified at the Aboriginal site, considering there is an absence of artefact photographs for S2MC405. Please clarify whether Niche took photographs of the artefacts from</i>	Unfortunately photos of three of the artefacts from this site have been lost due to a technical issue. Notwithstanding, best practice as per the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> does not require photographic recording for each individual artefacts.

	<i>S2MC405; this is not an unreasonable request, especially when only 5 artefacts were identified.</i>	Further, no impacts to this site are proposed as a result of the Modification.
13 June 2017, Warrabinga NTCAC	<i>In regards to S2MC407, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC407 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 2 artefacts were identified. Please update.</i>	Section 12.3 has been updated to include an additional photo showing the second artefact at S2MC407.
13 June 2017, Warrabinga NTCAC	<i>In regards to the photographs of the artefacts in the DRAFT ACHAR, Niche has provided no details as to whether the photograph was of the ventral or dorsal surface, and the artefact type. Please update photographs.</i>	Photo captions have been updated throughout the report.
13 June 2017, Warrabinga NTCAC	<i>Section 12.1 provides information on the survey undertaken as part of the current assessment; however, no information was provided on what the distances between participants was adjusted too when they moved to areas with higher ground visibility. Please provide maps of transects covered.</i>	<p>As described in Sections 11.2 and 12.1, all surveys were conducted on foot with survey participants generally spaced between 5 m and 10 m apart. Features and exposures of interest were opportunistically investigated in more detail and the spacing between field participants was adjusted according to surface visibility and exposure frequency.</p> <p>It is not possible to quantify the adjusted distances as it varied between and within the various components of the Study Area. However the text in Section 12.1 has been updated to clarify that spacing was reduced to generally below 5 m between participants in areas of higher visibility.</p> <p>Figure 7 presents the survey results, including the extent of previous survey coverage (shown as pink shading) and the extent of the field survey for this Modification (shown as orange shading).</p>

<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>Paragraph 1 of Section 14.1, mentions that the Study Area was significantly larger, than the proposed disturbance area; please provide details and a map to show what Niche means.</i></p>	<p>As described in Section 14.1 of the ACHA, the Study Area was larger than the final proposed disturbance area (particularly in the north [i.e. in the areas associated with the coal handling infrastructure requirements]). Detailed mine planning and refinement of the final proposed disturbance area has resulted in the avoidance of direct impact to some identified heritage sites.</p> <p>The survey coverage has been shown on Figure 7 for completeness, to show an accurate representation of survey coverage at the MCC to date. However, the impact assessment provided in this ACHA considers only those portions of the Study Area (i.e. those portions bounded by the red polygons on Figure 7).</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>Paragraph 2 of Section 14.2, states that “other sites have the potential to be impacted by indirect impact due to their proximal location to the disturbance boundary”; please clarify what Niche means by this. Please clarify which Aboriginal sites will be indirectly impacted by the works. Please clarify whether indirect impacts are limited to the Aboriginal sites within the Study Area, or will Aboriginal sites outside the Study Area be indirectly impacted. Please provide a map to show the Aboriginal sites that are likely to be indirectly impacted.</i></p>	<p>As described in Section 14, indirect impact refers to potential impacts stemming from secondary consequences on an activity which may affect sites or objects as an indirect consequence of the activity (e.g. increased visitors to a site, increased erosion etc).</p> <p>As indicated in Section 14.1, all sites located within the Study Area are conservatively considered to be directly impacted by the Modification, with all other sites located outside this area potentially being subject to indirect impacts.</p> <p>The locations of all sites (subject to potential direct and indirect impacts) are presented on Figure 7.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>All Aboriginal sites that will be directly and/or indirectly impacted by the proposed construction works must be</i></p>	<p>All sites recorded within the Study Area (and all sites identified in the immediate surrounds which may be subject to indirect impacts) have been subject to</p>

	<p><i>subject to archival/baseline recording, prior to impacts occurring.</i></p>	<p>detailed recording. AHIMS site cards have been lodged with the OEH for these sites.</p> <p>On this basis, further detailed recorded is not considered warranted prior to salvage (for relevant sites). It is noted the approved <i>Moolarben Coal Complex Heritage Management Plan</i> includes detailed procedures for site recording prior to salvage, which will be followed for the Modification.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p><i>The last few points that Warrabinga would like to draw your attention to are as follows:</i></p> <ul style="list-style-type: none"> <i>The NSW DECCW Aboriginal Cultural Heritage: Standards and guidelines kit (National Parks and Wildlife Service 1997) is now outdated, please update your documents accordingly.</i> 	<p>Although this document is outdated by more recent guidelines (which are also referred to in Section 1), Niche notes that this guideline is still considered relevant.</p>
<p>13 June 2017, Warrabinga NTCAC</p>	<p>.....</p> <ul style="list-style-type: none"> <i>Warrabinga would like confirmation on who, in reference to page 57, Section 13.2, concluded that there were no further areas of Aboriginal cultural heritage value identified.</i> 	<p>Section 13.2 provides statements of significance for the Study Area and notes that 10 sites were identified within and in immediate proximity to the Study Area and that no further areas of Aboriginal cultural heritage value were identified. This is on the basis of the survey outcomes.</p> <p>It is noted in Section 6.2 that during the surveys the attending RAPs made several comments including that the Study Area is important and culturally significant to the local Aboriginal people. This is acknowledged in the ACHA.</p> <p>As described in the approved <i>Moolarben Coal Complex Heritage Management Plan</i>, MCO is committed to maintaining ongoing consultation with Aboriginal stakeholders throughout the life of the MCC. Should any Aboriginal stakeholders identify any additional sites or</p>

		areas of particular cultural significance (including within Study Area) MCO would review and update (where necessary) the management of these areas/sites.
13 June 2017, Warrabinga NTCAC	<p>...</p> <ul style="list-style-type: none"> • <i>Under section 15 on page 61, please provide information on how the new sites are addressed in the management plan? Also, please include relevant sections on the management plan.</i> 	As described in Section 15, the HMP would be updated to include the extent of the Modification and the management of Aboriginal heritage values in it. This includes the salvage of sites S1MC140, S2MC402, S2MC403 and S2MC404, consistent with the requirements of the approved <i>Moolarben Coal Complex Heritage Management Plan</i> .
13 June 2017, Warrabinga NTCAC	<i>As all Aboriginal heritage is considered sensitive by Warrabinga, we are of the opinion that two (2) versions of the ACHAR should be prepared: one for public exhibition (if necessary), which has all references to the location of Aboriginal cultural heritage and comments provided by the Aboriginal community redacted, and one version of the report for assessment by the Consent Authority.</i>	Noted. An ACHA is required to be included in support of the EA. This ACHA is required to be compliant with relevant guidelines and the NPW Regulation, and hence need to include a minimum amount of information (including the location of the sites). It is also noted the locations of the sites are publicly available via the AHIMS Register, in previous assessments and the approved <i>Moolarben Coal Complex Heritage Management Plan</i> .
13 June 2017, Warrabinga NTCAC	<p><i>Warrabinga is of the opinion that insufficient information has been presented in order for us to provide comment on the proposed development in relation to Aboriginal heritage, as well as the fact that Moolarben Coal has not confirmed the likely nature and extent of the Aboriginal sites present within the Project Area. Once the requested information has been provided in an updated ACHAR, we will be able to provide a comment on the proposed development.</i></p> <p><i>It should be noted that this may not be Warrabinga's last response in regards to the documentation provided</i></p>	<p>MCO has provided responses (in Section 6 and this table) to all of the comments received to date.</p> <p>A copy of the final ACHA report will be made available to all RAPs during the public exhibition period for the Environmental Assessment. During this exhibition period all RAPs will have the opportunity to review and provide additional comment on the final ACHA report.</p>

	<p><i>to-date by Moolarben Coal; Warrabinga will provide additional responses until such time as we feel that our concerns have been satisfactorily addressed.</i></p> <p><i>Warrabinga would like to remind Moolarben Coal that the DRAFT Aboriginal Cultural Heritage Assessment should not be finalised until all comments and concerns raised by the RAPs have been addressed.</i></p> <p><i>Warrabinga would like to remind Moolarben Coal that the project should not proceed any further until all comments and concerns raised by the RAPs have been addressed, including previous correspondence that has not yet been addressed.</i></p>	
<p>14 June 2017, MGATSIC</p>	<p><i>...after discussing this with our community our reply is that our comments are not heard or dealt with.</i></p>	

7. Heritage Register Searches

7.1 Commonwealth Registers

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*, two mechanisms have been created for the protection of heritage places of National or Commonwealth significance (<http://www.environment.gov.au/heritage/places/national/index.html>) – the National Heritage List (NHL) and 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. There are no management constraints associated with listing on the Register of the National Estate (RNE) unless the listed place is owned by a Commonwealth agency.

A search of the online Australian Heritage Database, which includes items from the CHL and RNE was conducted on 23 March 2017. Search terms used were: Mid-Western Regional, Ulan and Wollar. No heritage items were identified within or in close proximity to the Study Area.

7.2 State Registers

7.2.1 State Heritage Register

The *State Heritage Register* (SHR) holds items that have been assessed as being of State Significance to NSW. The *State Heritage Inventory* (SHI) contains items that are listed on Local Environmental Plans and/or on a State Government Agency's section 170 register (OEH website – www.heritage.nsw.gov.au/index.html). An assessment of heritage significance is required for items greater than 50 years in age. Items appearing on either the SHR or SHI have been granted a defined level of statutory protection under NSW legislation.

Searches of the SHR and SHI were completed on 23 March 2017. No heritage items were listed in the Study Area.

7.2.2 Environmental Planning and Assessment Act Registers (EP&A Act)

Each Local Government Area is required to create and maintain a Local Environmental Plan that identifies and conserves Aboriginal and Historic heritage items. These items are protected under the EP&A Act and the NSW *Heritage Act, 1977*.

A search of the *Mid-Western Regional Local Environmental Plan, 2012* was undertaken on 23 March 2017. There are no Aboriginal heritage items listed in the *Mid-Western Regional Local Environmental Plan, 2012* that are located specifically within the Study Area or immediate surrounds.

7.2.3 National Parks and Wildlife Act Registers (AHIMS)

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 15 May 2017 (AHIMS ID #281205 and #281212; Appendix 5) for the area surrounding the Study Area. The search identified a total of 167 Aboriginal sites, including one (1) site located within the subject area. The Aboriginal sites were recorded during the numerous environmental assessments of the Moolarben, Ulan and Wilpinjong Coal Mines, indicating intensive levels of previous archaeological assessment. Each of the three mines maintain databases of the number and nature of Aboriginal sites in their project boundaries and the extent of previous archaeological survey.

8. Landscape Context

8.1 Overview

Consideration of the landscape is essential to the definition and interpretation of past Aboriginal land use across a landscape, and is a requirement of any Aboriginal archaeological and cultural heritage investigation (DECCW 2010a: 8). The landscape may provide clues as to those areas of land that may have been more intensively used by Aboriginal people in the past due to the presence of resources such as water, stone, plants and animals and other raw materials or landscape features associated with sustenance, shelter, tool manufacture and cultural activities. The landscape provides the context within which the material remains of past Aboriginal occupation may be preserved and detected due to the movement of soil through geomorphic processes such as erosion or its removal from the landscape through past land use and disturbance (DECCW 2010a: 8). By considering these factors, an Aboriginal cultural heritage investigation may develop a sampling strategy for identifying any tangible Aboriginal heritage values within the Study Area. However, this assessment aimed to achieve 100% coverage of the Study Area and consequently no sampling strategy was needed for the survey component.

8.2 Topography

The Study Area is situated within the Central Tablelands region of NSW, south-east of Ulan, and comprises 10 separate sections that altogether cover approximately 105 ha (Figure 1 and Figure 2). The Study Area is generally comprised of flat-topped rocky ridges, steep upper slopes and more gently-sloping mid and lower slopes, alluvial flats and undulating country. The slopes are covered by re-growth forest vegetation, while the flats and undulating landforms have been historically cleared for pasture and heavily impacted by various agricultural activities (Figure 3) (Plate 1 to Plate 4). The highest elevation within the Study Area is approximately at 590 metres (m) above sea level, while the lowest point is approximately 430 m above sea level.

8.3 Geology

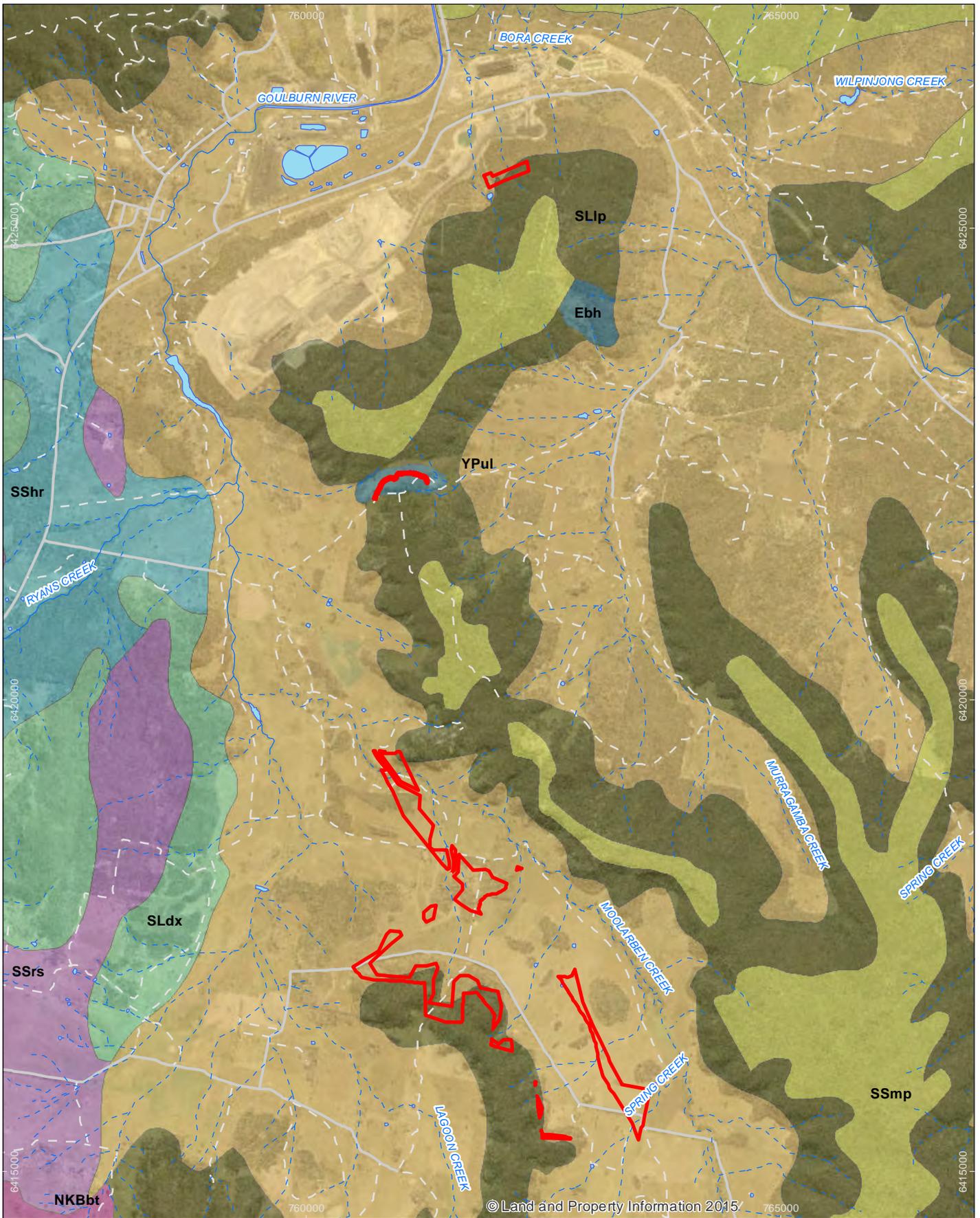
The Study Area is situated in the north-western part of the Sydney Basin and is characterised by Late Permian age Illawarra Coal Measures (mudstone, claystone, coal (including the Ulan Seam mined by MCO), torbanite and rhyolitic tuff) which is overlain by the Narrabeen Group (sandstone, conglomeratic sandstone, chert, shale coal and torbanite) (Dubbo 1:250k Geological Series Sheet SI 55-4).

There are no known raw material sources for the manufacture of stone artefacts in the Study Area, though the geological formations of Illawarra Coal Measures and Narrabeen Group sandstones are known to have provided exploitable quartz conglomerates across the region. Outcrops and exposed veins of tuff and cherts within the Illawarra Coal Measures and Narrabeen Group sandstone may also have provided raw materials for the manufacture of stone artefacts. Geology mapping for the MCO (including the Study Area) is provided in Figure 5.

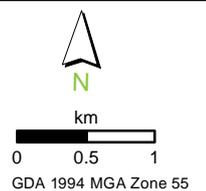
8.4 Soils

There are three soil landscapes within the Study Area: the Ulan, Lees Pinch and Bald Hill Soil Landscapes (Murphy and Lawrie 1998) (Figure 4). The summaries below are derived from the Soil Landscape descriptions provided by Murphy and Lawrie (1998).

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 Project Number: 3394
 Date: 02/08/2017
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 Drawn by: RJ



- | | |
|--|---|
| Study Area | SShr, HOME RULE, SILICEOUS SANDS |
| Ebh, BALD HILL, EUCHROZEMS | SSmp, MUNGHORN PLATEAU, SILICEOUS SANDS |
| NKBbt, BOTOBOLAR, NON-CALCIC BROWN SOILS | SSrs, ROUSE, SILICEOUS SANDS |
| SLdx, DEXTER, SHALLOW SOILS | YPul, ULAN, YELLOW PODZOLIC SOILS |
| SLip, LEES PINCH, SHALLOW SOILS | |

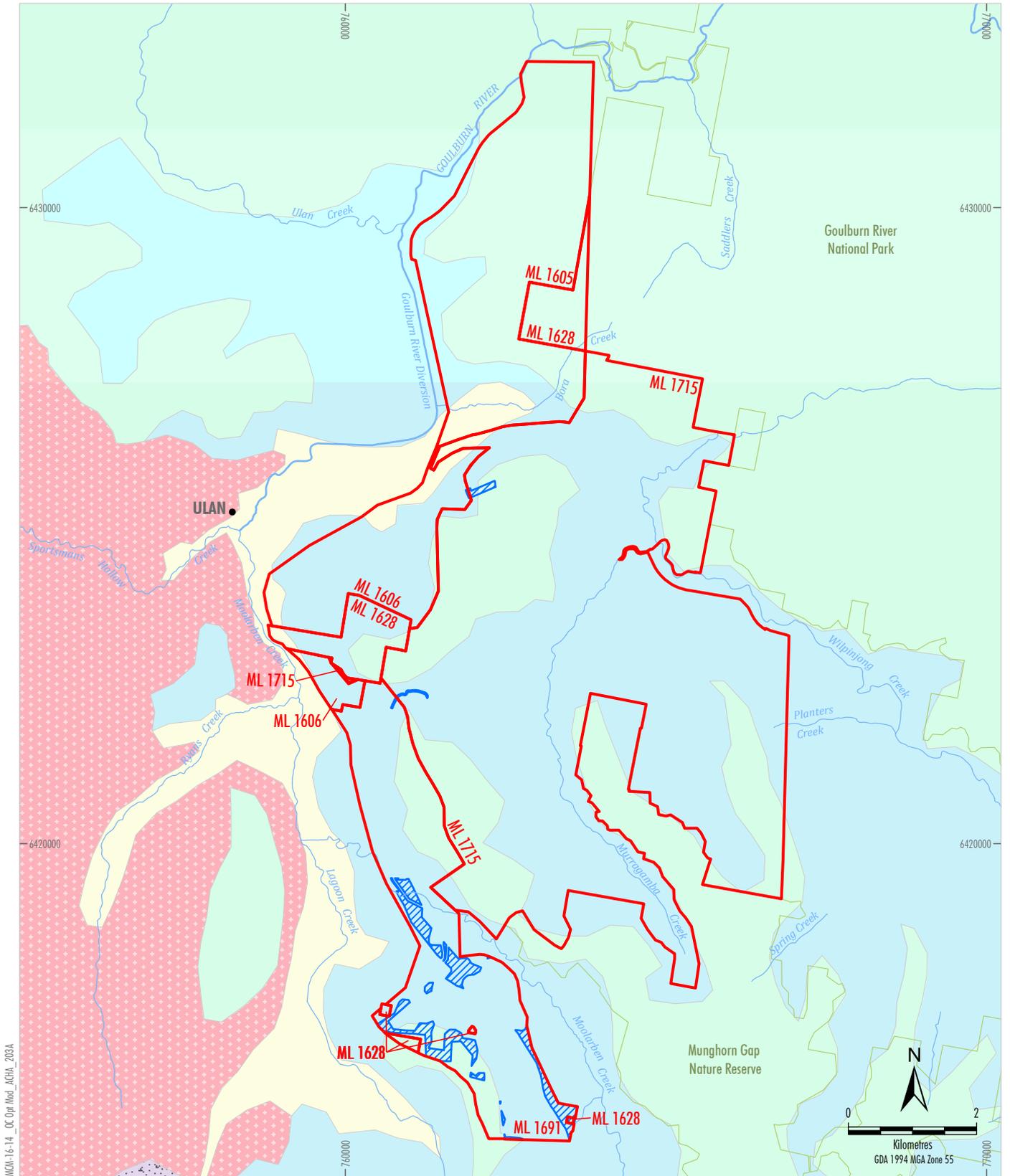


Hydrology and Soils

Moolarben Coal Complex Open Cut Optimisation Modification
 Aboriginal Cultural Heritage Assessment

FIGURE 4

Imagery: (c) LPI 2011-04-23



MOL-16-14_OC Opr Mod_ACHA_2024

- LEGEND**
- NSW National Parks and Wildlife Service
 - Mining Lease Boundary
 - Open Cut Optimisation Modification
 - Approximate Extent of Additional Surface Development
- Geology Mapping**
- Quaternary alluvial deposits
 - Triassic sedimentary rocks
 - Permian sedimentary rocks
 - Silurian sedimentary and volcanic rocks
 - Carboniferous I-type granites

Source: MCO (2017); NSW Dept of Industry (2016);
Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
 Geology Mapping

Figure 5

The lower elevations of the Study Area are situated within the Ulan Soil Landscape, which is typically found in association with low undulating rises and creek flats on slopes between 2% and 10% gradient (Plate 5). Yellow podzolic soils are present on the lower slopes and drainage lines with yellow and brown earths on footslopes, minor areas of earthy sands and occasional occurrences of yellow solodic soils. The Ulan Soil Landscape had moderate to high levels of erosion. Approximately 80% of the Study Area is situated on the Ulan Soil Landscape.

The Lees Pinch Soil Landscape, situated on the lower to mid-slopes and occasionally on ridges, covers approximately 15% of the Study Area (Plate 6). This soil landscape is typically found in association with sandstone plateau and hillslopes with boulder debris and rock outcrops, and slopes between 15% and 40%. Soils in the landscape are shallow siliceous sands with yellow earths and yellow podzolic soils on the lower slopes. The Lees Pinch Soil Landscape is subject to high levels of downslope erosion. Large sections of the Study Area were found only retaining skeletal heavily eroded soils.

The ridgeline around the proposed new haul road between OC2 and OC4 is dominated by the Bald Hill Soil Landscape which is typically characterised by low hillocks with moderately steep slopes between 10% and 35%. The Bald Hill Soil Landscape includes euchrozems on crests, euchrozems-chocolate soils intergrades on mid slopes with brown clays on lower slopes. Rock outcrops are often present.



Plate 1: Example of flat rocky ridge-top, facing N



Plate 2: Example of rocky-steep slope, facing SE



Plate 3: Example of alluvial flat, facing SW



Plate 4: Example of creek terrace, facing E



Plate 5: Exposed soil profile within the Ulan Yellow Podzoic Soils Soil Landscape, facing S



Plate 6 : Exposed soil within the Lees Pinch Shallow Soils Soil Landscape, facing NE

8.5 Hydrology

Water is considered one of the primary factors in the prediction of the location of Aboriginal sites in the landscape. The Study Area falls within the Moolarben Creek and Bora Creek catchments. The majority of the Study Area is located various distances from permanent water sources, ranging from 10 m up to 2 km (Figure 3 and Figure 4). First and second order drainage depressions are located within Area A, F, G, H, J and K of the Study Area and are likely to act as temporary sources of potable water (i.e. after rain, water may have temporarily collected in depressions and lower lying areas) (Figure 4). At the time of the survey these areas had various amounts of water following a very high winter seasonal rainfall.

8.6 Ecology

A number of ecological resources are known to have been exploited by the Wiradjuri (the traditional Aboriginal people of the area) including possums, kangaroos, wallabies, wombats, kangaroo rats, lizards, snakes, goannas, birds, insects and a range of plant species (Pearson 1981: 335). Many of these resources would have been available in the local landscape of the Study Area.

The Study Area is largely comprised of two distinct vegetation types, open woodland and exotic/native grassland/pasture. Due to the historical clearing which has taken place within exotic/native grassland/pasture areas, the fauna habitat features are generally quite limited. In contrast, open woodland areas within the survey area contain a broad suite of habitat features (Eco Logical Australia, 2017). The vegetation within the Study Area is in poor to moderate condition owing to the presence of existing roads and evidence of agricultural activities such as historic clearing and cultivation disturbance. The original environment has been the subject to various levels of disturbance particularly since the colonisation of the area by white settlers.

8.7 Past land use and disturbance

The Study Area has largely been used for grazing and various small scale agricultural activities. Property modifications in the Study Area have included large scale vegetation clearance, construction of rural infrastructure such as vehicle access tracks, fences, stockyards, dwellings, various sizes of dams and some modification to select drainage lines (Figure 3 and Figure 4). The flat and slightly sloping sections of the Study Area have been almost entirely cleared of native vegetation and impacted by various intensity of ploughing (Plate 3). Heavy erosion and sheet wash has resulted in a high percentage of soil loss on slopes and elevated part of the Study Area. The periphery of the Study Area, including the mid to upper slopes and more elevated parts are more revegetated and have had less impact from agricultural activities. The wider environment of the Study Area has been impacted by various mining activities due to the operation of the MCC and a number of other mines in the surrounding areas including the Ulan Coal Mine and the Wilpinjong Coal Mine.

8.8 Summary

The above landscape context demonstrates that the Study Area contains some resources capable of supporting a range of past Aboriginal land use. There are permanent and temporary water sources in the Study Area and also some potential for outcrops of stone resources in the western section of the area. There is also some potential for the preservation of surface and sub-surface Aboriginal objects across the surface of the Study Area, particularly in association with lower slopes, drainage depressions, flats and terraces. Moreover, there is a moderate to high possibility for rock shelters located on steep slopes and ridges covered by the Lees Pinch Soil Landscape, which could have been used by Aboriginal people in the past.

Archaeological visibility and exposure within the Study area is variable due to the cover of grasslands and re-growth woodland. Visibility and exposure occur as a result of recent ploughing, grazing practices, associated with rural structures, erosion and surface wash around drainage lines and on slopes.

9. Aboriginal Archaeological Context

9.1 Ethnography and History

At the time of first contact, the Study Area lay within the land occupied by Wiradjuri speaking people (Tindale 1974, Horton 1994), close to boundaries with the Kamilaroi, Gweagal and Wonnarua speaking peoples. Pearson (1981: 81) hypothesises three possible Wiradjuri speaking clans living at Bathurst, Wellington and Mudgee – Rylstone. The Study Area most likely lies within the Mudgee - Rylstone group's area. Based on his review of historical sources, Pearson (1981: 75) suggested that most day to day activities were undertaken by groups of up to 20 individuals who came together into larger groups at certain times of the year to utilise a resource or undertake law or ceremonial activities.

During the 1820s, increasing European settlement along the Cudgegong River and from Mudgee to Wellington would have resulted in increasing upheaval to traditional Aboriginal practices. Hostilities between the local Aboriginal population and non-indigenous settlers peaked between 1824 and 1826 with the advent of martial law by Governor Brisbane and resistance from Windradyne, a Wiradjuri man (Haglund 1999). Settlement increased with the gold rush between the 1850s and 1870s, causing further displacement of the local Aboriginal population.

Today, Wiradjuri people continue to live in the district and maintain an interest in their cultural heritage. The revitalisation of the Wiradjuri language has been taking place over the last 10 years with the publication of *A First Wiradjuri Dictionary* and Wiradjuri being taught at schools and TAFE in Parkes and Forbes (Senior and Rudder 2005).

9.2 Previous Archaeological Works at the Moolarben Coal Complex

MCO has developed the Moolarben Coal Aboriginal Heritage Database which includes all previously recorded Aboriginal objects and holds all information on Aboriginal archaeological resources relevant for the entire MCC. The Moolarben Coal Aboriginal Heritage Database includes data regarding 871 Aboriginal sites that have been located through various surveys including 454 of those which are located in the MCC. The considerably large number of sites comprise various site types and features often in context with one-another and display a high intensity of past Aboriginal occupation of the wider environment. Of these Aboriginal heritage sites, approximately 326 have been managed (i.e. salvaged) and require no further management, and 91 are located outside the boundary of the MCC. The details of the recorded sites at the MCC are summarised in Table 5.

Table 5: Summary of known Aboriginal sites at the Moolarben Coal Complex

Aboriginal Object Features	Number of Aboriginal Objects
Potential Archaeological Deposit (PAD)	7
Artefact Scatter (with or without PAD)	211
Grinding Grooves ¹	5
Isolated Finds (with or without PAD)	203
Rock Shelters ²	28
Total	454

¹ Including grinding grooves with or without artefact scatters or isolated finds.

² Including rock shelters with or without art and/or artefact scatters and/or isolated finds and/or grinding grooves and/or PAD.

A search of the Moolarben Coal Aboriginal Heritage Database indicated that there is one previously recorded Aboriginal site within the footprint of the Study Area, namely site S1MC140 (AHIMS ID #36-3-0949) which comprises an artefact scatter and is located within Area F of the Study Area.

The sites located within 1 km of the Study Area are all open sites are predicted to be stone artefact sites containing one or more artefacts. Approximately 80 percent of sites are located within 200 m of ephemeral drainage lines (i.e. those drainage lines which do not retain water for prolonged periods and generally only flow following prolonged rainfall), which is probably a result of the sporadic presence of water, increased ground exposures near the drainage lines and also the methodological framework used by previous archaeological surveys. In the wider context of the Study Area, landscapes similar to those that exist in the Study Area had several different site types recorded. On alluvial plains and creek terraces, isolated finds and artefact scatters are dominant, while on lower to upper slopes there are numerous rock shelters recorded including sites with art, PADs) and artefact(s).

9.3 Regional Archaeological Studies

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

The earliest evidence of Aboriginal occupation in the region was found at Granites 2 Shelter, located approximately 150 km south-west of the subject area, and dates to 7,000 years before present (BP) (Pearson 1981). A number of other archaeological excavations have been undertaken in the nearby area and resulted in dates of occupation in the last 5,000 years (Kuskie 2009).

A number of archaeological models for the distribution of material evidence of Aboriginal use of the landscape have been developed for the region. The purpose of archaeological models is to assist in the prediction of what Aboriginal sites may be present in the landscape and where they might be located.

The first archaeological model of the region was developed by Pearson (1981) through the analysis of sites in the Upper Macquarie. He identified a range of site types typical to the region including open camp sites, scarred trees and grinding grooves, as well as the presence of ceremonial sites and burial sites.

From his data Pearson (1981) proposed that:

- Most sites would occur between 10 m and 500 m from water, with the largest sites occurring nearest to water.
- Good soil drainage, views over watercourses, level ground with shelter from winds and elevation above cold air were important factors in site location.
- The majority of sites were in places that would originally have been open woodlands with an adequate source of fuel.
- Burials and grinding grooves would be located as close to habitation as possible.
- Grinding grooves required the presence of suitable stone, such as sandstone.
- Burials were most likely to occur where soils were deep enough for internment.
- Ceremonial sites such as earth rings and stone arrangements would be situated away from campsites, potentially in isolated places, on small hills or knolls but also on flat land.
- There was no obvious patterning to the location of scarred and carved trees beyond proximity to water and occupation sites.
- Quarries may occur where suitable sources of stone were present and accessible.
- Camp sites were rarely used by Aboriginal people in the past for longer than three nights and that sites with extensive archaeological deposits represented accumulation of material over multiple visits.

This model has since been revised and refined as part of the many archaeological assessments that have been conducted as part of the environmental assessment and approval process for the three mines located within 10 km of the subject area: Ulan Coal Mine, Wilpinjong Coal Mine and the MCC.

Ulan Coal Mine

The Ulan Coal Mine is an open cut and underground coal mine located adjacent to and north-west of the MCC, near the village of Ulan. The Ulan Coal Mine has been operational since the 1920s. In 2009, the Ulan Coal Mine sought a consolidated Part 3A Approval. Archaeological assessment of the Ulan Coal Mine commenced in the 1980s (Haglund 1980) with 29 assessments occurring over subsequent years (Table 5).

An Aboriginal sites database was developed for the Ulan Coal Mine as part of the environmental assessment process for the Part 3A Approval (Kuskie 2009). Revision 10 of the Ulan Coal Mine Aboriginal Sites Database included 1,274 Aboriginal sites within the Ulan Coal Mine, including 322 rock shelters with PADs (Table 7). The most frequent Aboriginal site features known within the Ulan Coal Mine were artefact scatters and open sites, rock shelters with PADs and isolated artefacts.

Open camp sites range in size at the Ulan Coal Mine from one stone artefact to 990 stone artefacts (Kuskie 2009: 109). The bulk of open camp sites contain less than 10 artefacts and most sites occur within a 50 square metre (m²) area or less (Kuskie 2009: 109).

Table 6: Summary of Assessments at the Ulan Coal Mine (Source: Kuskie 2013a: 15)

Author	Date	Title
Haglund	1980	Preliminary Archaeological Survey of the Coal mining Area at Ulan, NSW
Haglund	1981a	Archaeological Survey and Sampling at the Site of the Ulan Coal Mine, Ulan, NSW
Haglund	1981b	Ulan Coal Mine: Archaeological Investigation in Connection with Proposed Changes in Development Plans

Corkill	1991	Survey for Aboriginal Archaeological Sites at Ulan Colliery, New South Wales: proposed Overland Conveyor and Creek Site Development
Haglund	1992	Sample Surveys in Relation to Proposed Mine Extension in the Ulan Area, NSW
Haglund	1996a	Salvage Excavation Completed for Ulan Coal Mines Ltd: NPWS Site 36-3-177
Haglund	1996b	Archaeological Inspection and Monitoring of Track and Drill Site East of Ulan Creek
Edgar	1997	Ulan Open Cut Mine: Trench Through Proposed Highwall Zone 3: Aboriginal Heritage Aspects
Haglund	1999a	Addendum to Ulan Coal Mines Second Longwall Project Environmental Statement
Haglund	1999b	Ulan Coal Mines Second Longwall Project Environment Statement: Preliminary Survey for Aboriginal Sites
Haglund	1999c	Ulan Coal Mines Pty Ltd: Archaeological Review and Inspection in Relation to Potential High Wall Mining – Areas West and North-west of Trench A
Haglund	1999d	Report on Aboriginal heritage Studies Relating to SEPP No. 34 Application by Ulan Coal Mine
Therin	2000	Spring Gully 5 Salvage Excavation Usewear and Residue Report
Kuskie	2000	An Assessment of Two Aboriginal Grinding Grooves Sites at Ulan Coal Mine, Central Tablelands, New South Wales
Haglund	2001a	Salvage Excavation Completed for Ulan Coal Mines Ltd: Site SG5 Aboriginal Rock Shelter Site Vol I
Haglund	2001b	Salvage Excavation Completed for Ulan Coal Mines Ltd: Site SG5 Aboriginal Rock Shelter Site Vol III
White	2001a	Salvage Excavation Completed for Ulan Coal Mines Ltd Site SG4 Aboriginal Rock Shelter Vol II
White	2001b	A Comment on the stone artefact assemblage from squares E 7 and E8 at Site SG6, Ulan, NS
Kuskie and Webster	2001	Archaeological Survey of Aboriginal Heritage within Longwall Panels 18-22, Mining Lease 1468 and 1341, Ulan Coal Mine, Central Tablelands, New South Wales, Volumes 1 and 2
Kuskie	2002	An Archaeological Assessment of a Proposed Basalt Quarry within Mining lease 1468, Ulan Coal Mine, Central Tablelands New South Wales
Kuskie and Clarke	2003	Proposed Open Cut Mine extension, Additional Infrastructure and Consolidation Consents at Ulan Coal mine New South Wales: Aboriginal heritage Assessment (Vol. 1)
Kuskie	2004	Proposed Open Cut Mine Extension, Additional Infrastructure and Consolidation Consents at Ulan Coal mine New South Wales: Aboriginal heritage Assessment (Vol. 2)
Kuskie and Clarke	2005a	Proposed Open Cut Mine Extension, Additional Infrastructure at Ulan Coal Mine: Aboriginal heritage Assessment
Kuskie and Clarke	2005b	Archaeological Survey of Aboriginal heritage within SMP Application Area (Longwall Panels 23-25 and W1) of Mining Lease 1468, Ulan Coal Mine, Central Tablelands. Vol A and Vol B
Kuskie and Clarke	2007	Archaeological Survey of Aboriginal Heritage within SMP Application Area (Longwall Panels W2 and W3) of Mining Lease 1468, Ulan Coal Mine, Central Tablelands, New South Wales: Volume A and Volume B
Kuskie	2008	Ulan Coal Mines Limited: Project Waratah: Preliminary Aboriginal Heritage Assessment
Kuskie	2009	Ulan Coal Continued Operations Aboriginal Heritage Impact Assessment
Kuskie	2010a	Ulan Coal Continued Operations Aboriginal Heritage Impact Assessment – Supplementary Report for North 1 panels Project Modification
Kuskie	2012a	Ulan Coal Continued Operations Project: Test excavations of Aboriginal Rock Shelter Sites within the North 1 Panels - Interim Report

Table 7: Summary of Aboriginal Sites at the Ulan Coal Mine as of 2009 (Source: Kuskie 2009: 108)

Aboriginal Site Features	Number of Aboriginal Sites
Artefact scatters and Open Sites	521
Isolated Artefacts	291
Grinding Groove	13
Grinding Grooves and Artefact Scatters	4
Ochre Quarry	3
Scarred Trees	8
Scarred Tree with Artefact Scatters	2
Stone Arrangements	6
Waterhole/Well	1
Rock shelter with Artefacts	87
Rock shelter with Grinding Grooves	3
Rock shelter with Grinding Grooves and Artefacts	1
Rock shelter with Art	8
Rock shelter with Art and Artefacts	4
Rock shelter with PADs	322
Total	1,274

The stone artefact assemblage at the Ulan Coal Mine as of 2009 consisted of over 9,000 items (Kuskie 2009: 118). Most artefacts were made from quartz, with tuff and chert being the next most common raw material type. Acidic volcanics, basalt, bone, breccia, chalcedony, flint, granite, ironstone, lithic sandstone, quartzite, rhyolite, sandstone, shell, silcrete, siltstone and petrified wood stone artefacts were also present in small quantities. The bulk of the artefact assemblage comprised complete and broken flakes, angular fragments, cores and core fragments. Retouched and utilised flakes, backed artefacts, hammer stones, anvils and axes were also present.

An analysis of the spatial distribution of Aboriginal sites and artefacts was completed for the archaeological resources at the Ulan Coal Mine. This involved the separation of the landscape into distinct landform and slope classes (Kuskie 2009: 131). Approximately 62% of the Ulan Coal Mine consisted of comparable landforms to the subject area – that is simple slopes and ridge crests with first order drainage paths (Kuskie 2009: 21).

It was noted that overall, artefacts occurred at a very low mean density across the analysis area (Kuskie 2009: 133) and indicated a background discard. Level to gently inclined terraces had some of the highest densities of artefacts as did level to very gently inclined spur crests, while moderately inclined simple slopes had marginally higher densities of artefacts than gentle simple slopes and valley flats. This may be the result of the presence of assemblages within rock shelters.

Rock shelters were found to occur on scarps, simple slopes, spur crests and drainage depressions with sandstone rock formation. Artefact densities were found not to increase in density with proximity to water (Kuskie 2009: 135).

As a result of the previous archaeological assessment of the Ulan Coal Mine (Table 6), including spatial analysis of the distribution of sites and a review of the historical sources, an archaeological model was developed and has been refined (Kuskie and Clarke 2005b, 2007, Kuskie 2009). This model has subsequently been applied to the Wilpinjong Coal Mine and the MCC.

The model states that most evidence of occupation will date within the last 5,000 years though may have extended 30,000 – 40,000 years BP. 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 (Kuskie 2009: 22).

Primary resource zones: areas of more abundant and diverse resource rich zones in north-east Wiradjuri territory including the junction of the higher order watercourses such as Goulburn and Talbragar Rivers would most likely be a focus of occupation. These zones may have supported nuclear and extended family base camps, community base camps and congregations of larger groups. This zone may have been subject to longer stays and more frequent occupation than other areas, such as secondary resource zones. The model states that these zones would contain substantially higher counts and densities of artefacts, a greater range of stone materials and artefact types and a higher number of activity areas would be present.

Secondary resource zones: these are areas where resources such as watercourses, swamps and wetlands occur in close proximity of higher order watercourses and associated flats and terraces. Examples of secondary resource zones in the Ulan area include higher order parts of Moolarben Creek. In the model these zones were utilised for regular but sporadic seasonal encampments of small parties, but occupations of the encampments would typically have been for short periods. Compared to the surrounding areas this resource zone will host moderately higher counts and densities of artefacts, a number of activity areas, and a relatively broad range of raw materials and artefact types (but much lesser range than sites in primary resource zones).

Outside primary and secondary zones: occupation is anticipated to be hunter gatherer activities with small parties of men, women or children. Movement across the landscape would be transitory between resource locations and may include special purpose journeys for ceremonial purpose or the procurement of stone. Utilisation of landforms such as simple slopes, ridge crests, spur crests and lower order watercourses would be far less intense than that found in primary and secondary resource zones.

The evidence of this occupation would be low to very low artefact counts and densities, little range in the number of activity areas, and dates of sporadic occupation rather than continuous occupation. Evidence of stone quarries at sources may also be present.

In this model, activities that may have occurred in the landscape include food procurement and processing, food consumption, maintenance and production of tools, the building of shelter, children's play, ceremonial activity, spiritual activity, burials and social and political activity by Aboriginal people.

The bulk of these activities would be supported through the presence of material evidence; in particular through the stone artefact assemblage. For instance, food procurement and processing might be evident through the presence of usewear residue on stone tools. Ceremonial activities may be evident by the presence of carved trees, bora grounds and stone arrangements.

The archaeological model predicts that most stone artefacts will be made of quartz due to its ease of access and availability in the local landscape. The model hypothesises that the relative intensity of use of each of the materials will be dependent on the proximity of the original source of the stone. Most stone procurement is hypothesised to have occurred during normal daily and seasonal movement without the need for special purpose visits. As a result of the abundance of available local stone, the stone is less likely to exhibit intensive reduction as evidence of conservation of material.

Most stone technology will be basic and non-specific (e.g. complete and broken flakes) with low frequencies of microblade or microlithic technologies, bipolar knapping, backing and usewear.

Grinding grooves for the sharpening of ground edge axes may occur on exposed sandstone bedrock but are unlikely to occur in high numbers and most likely represent occasional activity and short term activities rather than special purpose visits.

Wilpinjong Coal Mine

The Wilpinjong Coal Mine is an open cut mine located adjacent to and east of the MCC. The Wilpinjong Coal Mine was approved under Part 3A of the EP&A Act and has been operational since 2006. During this time, 18 Aboriginal archaeological assessments are known to have occurred (Table 8).

In 2005 Navin Officer Heritage Consultants Pty Ltd (Navin Officer) undertook the primary environmental assessment, identifying 224 Aboriginal sites and PADs at the Wilpinjong Coal Mine, and subsequently completed a series of salvage excavations, and surface collections and rock art recording of some shelter sites (Navin Officer 2005, 2006a, 2006b). An Aboriginal and Cultural Heritage Management Plan was developed for the Wilpinjong Coal Mine (WCPL 2008). Between 2006 and 2009, Kayandel Archaeological Services (2006a, 2006b, 2006c, 2006d, 2007a, 2007b, 2007c, 2008a, 2008b, 2009a, 2009b; Boer-Mah 2006) completed a number of surface collections and test excavations. Many of these reports were not available for review at the time of this assessment.

Table 8: Summary of Assessments at the Wilpinjong Coal Mine (Source: Kuskie 2013b)

Author	Date	Title
Navin Officer Heritage Consultants Pty Ltd	2005	Wilpinjong Coal Project Appendix F Aboriginal Cultural Heritage Assessment
Boer-Mah	2006	Lithics Report for Surface Salvage and Salvage Excavation at Wilpinjong Mine, N.S.W: June 2006. Prepared for Kayandel Archaeological Services
Navin Officer Heritage Consultants Pty Ltd	2006a	Wilpinjong Coal Project: Archaeological Salvage and Post EIS Investigations
Navin Officer Heritage Consultants Pty Ltd	2006b	Baseline Recording of Three Aboriginal Rock Arts Sites WCP 72, 152 and 163 at Wilpinjong, NSW
Kayandel Archaeological Services	2006a	Aboriginal Heritage Rapid Survey
Kayandel Archaeological Services	2006b	Wilpinjong Coal Project: Aboriginal Heritage Surface Salvage Summary Report. September 2006
Kayandel Archaeological Services	2006c	Proposed Electricity Transmission Line: Ulan Substation to Wilpinjong Coal Project: Aboriginal Cultural Heritage Assessment. March 2006
Kayandel Archaeological Services	2006d	Wilpinjong Coal Project: Aboriginal Cultural Heritage Survey: Supplemental Survey of Escarpment Areas and Report of Findings. November 2006

Author	Date	Title
Kayandel Archaeological Services	2007a	Kayandel Archaeological Services. 2007. Archaeological Survey Report and Mapping for Proposed Borehole Locations: Aboriginal Pedestrian Survey. May 2007. Prepared for Wilpinjong Coal Pty Ltd
Kayandel Archaeological Services	2007b	Wilpinjong Coal Project: Aboriginal Heritage: Surface Salvage of Sites. August 2007. Prepared for Wilpinjong Coal Pty Ltd
Kayandel Archaeological Services	2007c	Wilpinjong Coal Project. Aboriginal Heritage Surface Salvage Summary. Report. September 2007
Kayandel Archaeological Services	2008a	Surface Salvage Report: Wilpinjong Coal Mine, Mudgee: December 2008. Prepared for Wilpinjong Coal Ltd Pty
Kayandel Archaeological Services	2008b	Slate Gully Drillhole Assessments. Report not available for review
Kayandel Archaeological Services	2009a	Test excavations of the Pit 5 Extension. Report not available for review
Kayandel Archaeological Services	2009b	Wintersun Hill / Bald Knobb Test Excavations. Report not available for review
Kuskie	2013b	Wilpinjong Coal Mine, Central Tablelands of New South Wales - Modification: Aboriginal Cultural Heritage Assessment
Brennan	2013	Wilpinjong Coal Mine, Rock Art Conservation and Monitoring Project: Field Inspection Report and Recommendations. Unpublished report to Wilpinjong Pty Ltd
Kuskie	2015a	Wilpinjong Coal Mine, Central Tablelands of New South Wales – Extension Project: Aboriginal Cultural Heritage Assessment.

Subsequently, South East Archaeology undertook a review of archaeological assessments at the Wilpinjong Coal Mine as part of a proposed modification to the Wilpinjong Coal Mine, and provided an updated Aboriginal sites database, an analysis of some stone artefacts recorded during an archaeological survey for the proposed modification and an updated distribution and occupation model (Kuskie 2013a, 2013b).

As of April 2013, the Wilpinjong Coal Mine Aboriginal Sites Database contained 463 Aboriginal sites (Kuskie 2013a, Table 9). Aboriginal site types known to occur at the Wilpinjong Coal Mine include individual stone artefacts, stone artefact scatters, scarred and carved trees, a stone quarry, a ceremonial site, grinding grooves, resources sites such as waterholes and rock shelters with art, stone artefacts, archaeological deposit or PADs. A number of areas of contemporary cultural significance have been identified including Castle Rock and the high density archaeological deposits at Cumbo Creek.

Table 9: Summary of Aboriginal Sites at the Wilpinjong Coal Mine (Source: Kuskie 2013b: 11)

Aboriginal Site Features	Number of Aboriginal Sites
Bora/ceremonial site and carved tree	1
Grinding grooves	2
Grinding Grooves and open artefact site	1
Lithic quarry	1
Non-Aboriginal mounds	1
Open Artefact site	271
PAD	2
Possible cultural value and association	2

Rock shelter with art	4
Rock shelter with art and PAD	2
Rock shelter with artefacts	25
Rock shelter with artefacts and art	1
Rock shelter with artefacts and waterhole/well	1
Rock shelter with PAD	80
Scarred Tree	8
Scarred tree (possible – Aboriginal)	45
Scarred tree (possible – European)	4
Uncertain ¹	2
Waterhole possible	3
Waterhole/well	7
Total	463

¹ This feature description is used in the original source with no further explanation.

The stone artefact assemblage at the Wilpinjong Coal Mine was found to be waterworn and terrestrial quartz dominant. The dominance of quartz is thought to relate to the accessibility of quartz conglomerates in the local geological landscape. Tuff and chert were also present in the stone artefact assemblage and very small frequencies of acidic volcanic stone, jasper, petrified wood, porphyritic rhyolite and quartzite (Kuskie 2013b: 56).

The types of artefacts in the assemblage were also found to be consistent with the Ulan Coal Mine stone artefact assemblage (Kuskie 2013a, 2013b: 58). Complete and broken flakes were the most common artefact types followed by angular fragments, cores and core fragments. Retouched or utilised flakes were also present while backed artefacts such as bondi points and geometric microliths made up a less than 2% of the overall assemblage. A tula slug and hammerstone were also present (Kuskie 2013a, 2013b: 58-59).

The revised archaeological model presented by Kuskie (2013a, 2013b) is consistent with the current models for the archaeological resources at the Ulan Coal Mine.

The most recent comprehensive field survey at the Wilpinjong Coal Mine was undertaken by South East Archaeology between March and June 2014 as part of the Wilpinjong Extension Project (Kuskie 2015a). This survey identified 137 additional sites within the Wilpinjong Extension Project open cut extension and infrastructure areas, comprising:

- 73 rock shelters with PADs;
- 60 open artefact sites;
- two (2) waterholes/wells;
- one (1) rock shelter with artefacts and art; and
- one (1) rock shelter with artefacts and ochre quarry.

9.4 Local archaeological studies

Table 10 provides a summary of the archaeological assessments that have been undertaken to date at the MCC.

Table 10: Summary of past Aboriginal archaeological assessments at the Moolarben Coal Complex

Author	Date	Title
Hamm	2006a	Moolarben Coal Project – Aboriginal Cultural Heritage Assessment Report
Hamm	2006b	Responses to Issues Raised in Respect of the Moolarben Coal Project Aboriginal Cultural Heritage Assessment Report
Hamm	2008a	Moolarben Coal Project – Aboriginal Cultural Heritage Assessment Report Stage 2
Hamm	2008b	Aboriginal Heritage Plan for MCP Stage 1 Development Areas: Open Cut 1 and Main Infrastructure Area
Urban Tree Management Australia	2008	Report: Aboriginal Cultural Assessment of Scarred Tree (ref. 36-3-0798: SIMC1) at Ulan, New South Wales for Moolarben Coal Project Stage 1
Hamm	2009a	Aboriginal Cultural Heritage & Archaeological Assessment for Moolarben Coal Project Stage 1 Infrastructure Area & Proposed Water Sharing Pipeline Modification Project in Support of a section 75w (2) Approval
Hamm	2009b	Aboriginal Cultural Heritage & Archaeological Assessment for Moolarben Coal Project Stage 1 Northern Borefield Area
Hamm	2009c	Moolarben Coal Project Executive Summary Report
Coffey Natural Systems	2009	Response to Submissions Report – Part A Moolarben Coal Project – Stage 2
Hamm	2010	Disturbance Report for Moolarben Coal Project Stage 2
Hamm and Foley	2010	Cultural Heritage Management Report on Moolarben Coal Project Stage 1: Open Cut & Main Infrastructure Area
Kuskie	2010	Moolarben Coal Project Stage 2: Aboriginal Heritage Advice on Potential Impact to Aboriginal Sites
AECOM	2011a	Moolarben Preferred Project Report: Aboriginal Archaeological and Cultural Heritage Addendum
AECOM	2011b	Archaeological Collection & Excavation: Northern Borefield, Moolarben Coal Operations, Ulan, NSW
AECOM	2011c	Due Diligence Assessment of Proposed Exploration Drill Sites EL 6288
AECOM	2012	Due Diligence Assessment of Proposed Exploration Drill Sites EL 6288
Hansen Bailey	2012	Moolarben Coal Project Stage 2 Preferred Project Report Response to Submissions
Kuskie	2012a	Moolarben Coal Project Stage 2 – Preliminary Report on Aboriginal Heritage Survey of Geotechnical Investigation Areas
Kuskie	2012b	Moolarben Coal Project Stage 2 – Preliminary Report on Aboriginal Heritage Survey of Proposed Ulan- Wollar Road and Country Energy 66kv Powerline Realignment
Kuskie	2012c	Moolarben Coal Project: Preliminary Aboriginal Heritage Assessment of Proposed Temporary Workers Accommodation Near Ulan, Central Tablelands of New South Wales
Kuskie	2013a	Moolarben Coal Project Stage 1 – Preliminary Report on Aboriginal Heritage Survey of Open Cut 2 Drilling Areas
Kuskie	2013b	Moolarben Coal Project – Stage 1 Optimisation Modification, Near Ulan, Central Tablelands of New South Wales: Aboriginal Cultural Heritage Assessment
Kuskie	2013c	Moolarben Coal Project Stage 2: Aboriginal Heritage Assessment of Proposed Ulan – Wollar Road and Essential Energy Powerline Realignment, Near Ulan Central Tablelands of New South Wales

Niche	2014a	Moolarben Coal Mine OC4 South-West Modification Aboriginal Cultural Heritage Assessment
Niche	2014b	Moolarben Coal Complex UG1 Optimisation Modification Aboriginal Cultural Heritage Assessment
Kuskie	2014a	Moolarben Coal Project, Central Tablelands of New South Wales: Stage 1 – Report on Additional Aboriginal Heritage Survey and Salvage of Proposed Core Shed
Kuskie	2014b	Moolarben Coal Project – Preliminary Report on Aboriginal Heritage Survey of EL7073 Exploration Drilling in September 2014
Kuskie	2014c	Moolarben Coal Project Stage 2 – Preliminary Report on Aboriginal Heritage Survey of Underground 1 Drilling Areas in October 2014
AECOM	2014	Aboriginal archaeological due diligence assessment for Underground 4 (UG4) south drilling works
Kuskie	2015b	Moolarben Coal Project Stage 2 – Preliminary Report on Aboriginal Heritage Survey of Proposed Murrumbidgee Road Realignment February 2015
Kuskie	2015c	Stage 1 Open Cut 2 – Report on additional Aboriginal heritage survey and salvage
AECOM	2015a	Aboriginal archaeological due diligence assessment for six boreholes and associated access tracks in Open Cut 4 (OC4) March 2015
AECOM	2015b	Aboriginal archaeological due diligence assessment for the Southern RIM Area drilling program March 2015
AECOM	2015c	Aboriginal archaeological due diligence assessment for the Northern RIM Area drilling program March 2015
AECOM	2015d	Aboriginal archaeological due diligence assessment for Moolarben Coal Project Stage 1 Modification 9 Project Approval May 2015
AECOM	2015e	Aboriginal archaeological due diligence assessment for the proposed Stage 2 coal conveyor May 2015
AECOM	2015f	Aboriginal archaeological due diligence assessment for Moolarben Coal Project Stage 2 Project Approval May 2015
AECOM	2015g	Assessment of potential Aboriginal rockshelter sites S1MC345 and S1MC352 June 2015
Niche	2015a	Aboriginal Cultural Heritage Assessment - Moolarben Coal Complex UG1 Optimisation Modification June 2015
Niche	2015b	Paleo A, Paleo B, Paleo C, NW01 and NW02 Exploration Boreholes Aboriginal Objects Due Diligence Assessment December 2015
Niche	2016a	Aboriginal Cultural Heritage Conservation Fence Aboriginal Heritage Survey and Assessment March 2016
Niche	2016b	Dun Dun East Biodiversity Offset Area, Hargraves, NSW Aboriginal Cultural Heritage Values Assessment.
Niche	2016c	Moolarben Coal Complex- Relocation of Telstra Services Aboriginal heritage pre-surface disturbance survey April 2016
Niche	2016d	Moolarben Coal Complex Longwalls 101 – 103 Aboriginal Heritage Survey Report June 2016
Niche	2016e	Moolarben Coal Complex – Fire Trail Aboriginal objects due diligence assessment June 2016
Niche	2016f	Moolarben Coal Complex – Open Cut 3, Mining Lease Drilling Programme, Aboriginal cultural heritage survey July 2016
Niche	2016g	Moolarben Coal Complex – Open Cut 4 Mining Lease Drilling Programme, Aboriginal cultural heritage survey assessment July 2016

Niche	2016h	Moolarben Coal Complex – Open Cut 3 Exploration Lease Drilling Programme, Aboriginal cultural heritage survey assessment October 2016
Niche	2017a	Moolarben Coal UG1 Longwalls 101-103 Extraction Plan Aboriginal Cultural Heritage Technical Report March 2017
Niche	2017b	OC3 LOX Lines and Access Tracks, Extra Access Lines Aboriginal Heritage Assessment January 2017
Niche	2017c	Moolarben Coal Complex – Underground 3 (UG3), Exploration Drilling Programme, Aboriginal cultural heritage due diligence survey February 2017

Some parts of the Study Area had been already assessed for Aboriginal heritage values by some of the earlier reports. Approximately 10% of the entire Study Area associated with the proposed Modification was the subject to previous systematic surveys. The proposed internal haul road between OC2 and OC4 had been entirely covered by previous surveys and consequently was not subject of the field survey component. Other sections of the Study Area that had been partially previously surveyed are listed in Table 11 below.

Table 11: Sections of the Study Area in context to previous archaeological assessments

ID	Percentage previously surveyed prior to this assessment (%)
Area A	0
Area B	0
Area C	0
Area D	0
Area E	0
Area F	5
Area G	50
Area H	70
Area I	100
Area J	0
Area K	70

In 2006, an ACHA for environmental assessment of Stage 1 of the Moolarben Coal Project (EL6288) was undertaken and included an investigation area of 34.8 square kilometres (km²) (Hamm 2006a). This area was surveyed using a sampling strategy with effective survey coverage of 1.1%. The assessment identified 222 Aboriginal sites including isolated artefacts, artefact scatters, rock shelters with artefacts/art, a possible scarred tree and a grinding groove site (Hamm 2006a: 4). Site S1MC140 (AHIMS ID #36-3-0949) was also recorded during this survey and consequently assessed as having low scientific significance (Hamm 2006a: 86).

In response to submissions on the environmental assessment for Stage 1, three cultural landscapes were identified by the RAPs including the Bora Creek alluvial flats, the Goulbourn River and the Drip.

An area of 37 km² was investigated for Aboriginal heritage values in 2008 as part of the Moolarben Coal Project Stage 2 (Hamm 2008a). This assessment work identified 258 new Aboriginal sites: 102 isolated artefacts, 150 artefact scatters, five (5) rock shelters with artefacts, one (1) grinding groove site, 33 PADs and 4,825 stone artefacts. Aboriginal sites were found to concentrate around the central and southern portion of Murrumbidgee Creek within 100 m of the creek channel, within 100 m of the “Eastern Creek” tributary of Wilpinjong Creek, within 100 m of the headwaters of the Wilpinjong Creek (northern catchment) and the Moolarben Ridge south of Carrs Gap and the Trig station flank of the ridge (Hamm 2008a). Management recommendations included the surface collection of 133 Aboriginal sites, the test excavation and salvage of 34 sites and recording of six (6) sites.

An Aboriginal Heritage Management Plan (AHMP) was developed for the initial Stage 1 works in 2008. In the process of actioning the management and mitigation measures, Hamm and Foley (2010) completed test excavations across the OC1 area and mine infrastructure area. An approximate surface area of 13,700 m² was subject to mechanical exposure (surface scrapes) and 271 m² was excavated by hand/shovel testing, resulting in the recovery of 2,643 artefacts and identification of 35 new open artefact sites (Hamm and Foley 2010).

In 2011, AECOM assessed a revision to the Stage 2 Project. The assessment targeted Stage 2 surface facilities, the southern portion of a proposed modified haul road and the south-eastern boundary of an alternative out of pit emplacement location, two rock shelter sites and the Red Hills and Murrumbidgee Creek Management Areas. No additional sites were identified and an updated impact assessment was completed for the proposed works (AECOM 2011b: 1).

In addition to the above work an additional 16 Aboriginal cultural heritage sites have been documented as the result of various due diligence activities at the MCC.

A revised AHMP was subsequently approved and implemented to include all of the Stage 1 Project areas and replace the earlier AHMP for the OC1 and mine infrastructure area. The revised AHMP contained an updated summary of the Moolarben Coal Mine Aboriginal Sites Database (Kuskie 2013d, 2013a, Table 5), which at that time contained a total of 531 Aboriginal sites.

Subsequent work including the Moolarben Coal Project Stage 1 Optimisation Modification (Kuskie 2013a), Moolarben Coal Project Stage 2 utilities realignments (Kuskie 2013c), gap surveys of the OC2 area and due diligence assessments for drilling activities has resulted in an additional 72 sites being recorded since January 2013. Niche has carried out an assessment for the UG1 Optimisation Modification in 2015 (Niche 2015a) as well as numerous due diligence assessments and pre-clearance surveys resulting in the identification of more than 200 additional sites. Currently there has been 871 Aboriginal sites identified at the MCC. Open artefact sites (including artefact scatters and isolated finds) are the most frequent site type with occasional grinding groove sites, rock shelters with art, artefacts and/or PADs also being present.

10. Synthesis and Predictive Model

As described in Section 9 and Section 11, in some cases there is overlap between the Study Area for the Modification and those areas that were subject to previous systematic survey for earlier development approvals at the MCC.

During previous survey works one Aboriginal heritage site (an artefact scatter) of low scientific significance was identified within the Study Area (Figures 6, 6.1, 6.2, 6.3, 7, 7.1, 7.2 and 7.3).

The Study Area is situated on simple slopes and steep slopes and ridge crests and first order drainage paths with gently to moderately inclined slopes, and foot slopes and undulating plains. The distance from water is varied between 10 m and 3 km. Sandstone formations are present within the steeper hills. It is therefore anticipated that in the steeper areas, any evidence of Aboriginal occupation is likely to take the form of rock shelters with the potential for art, artefacts or PADs.

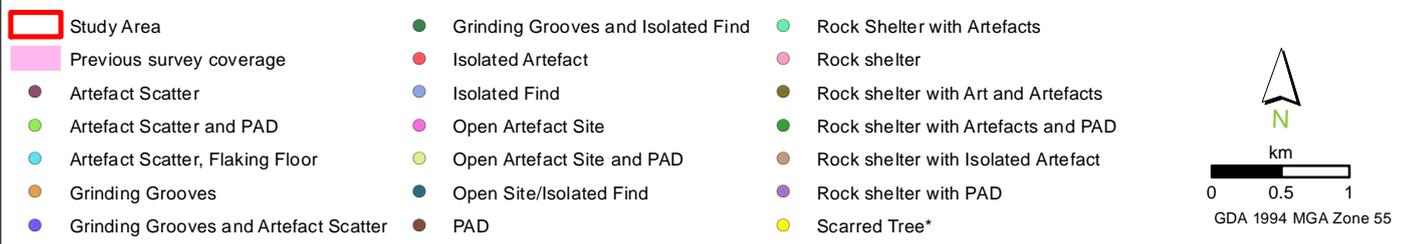
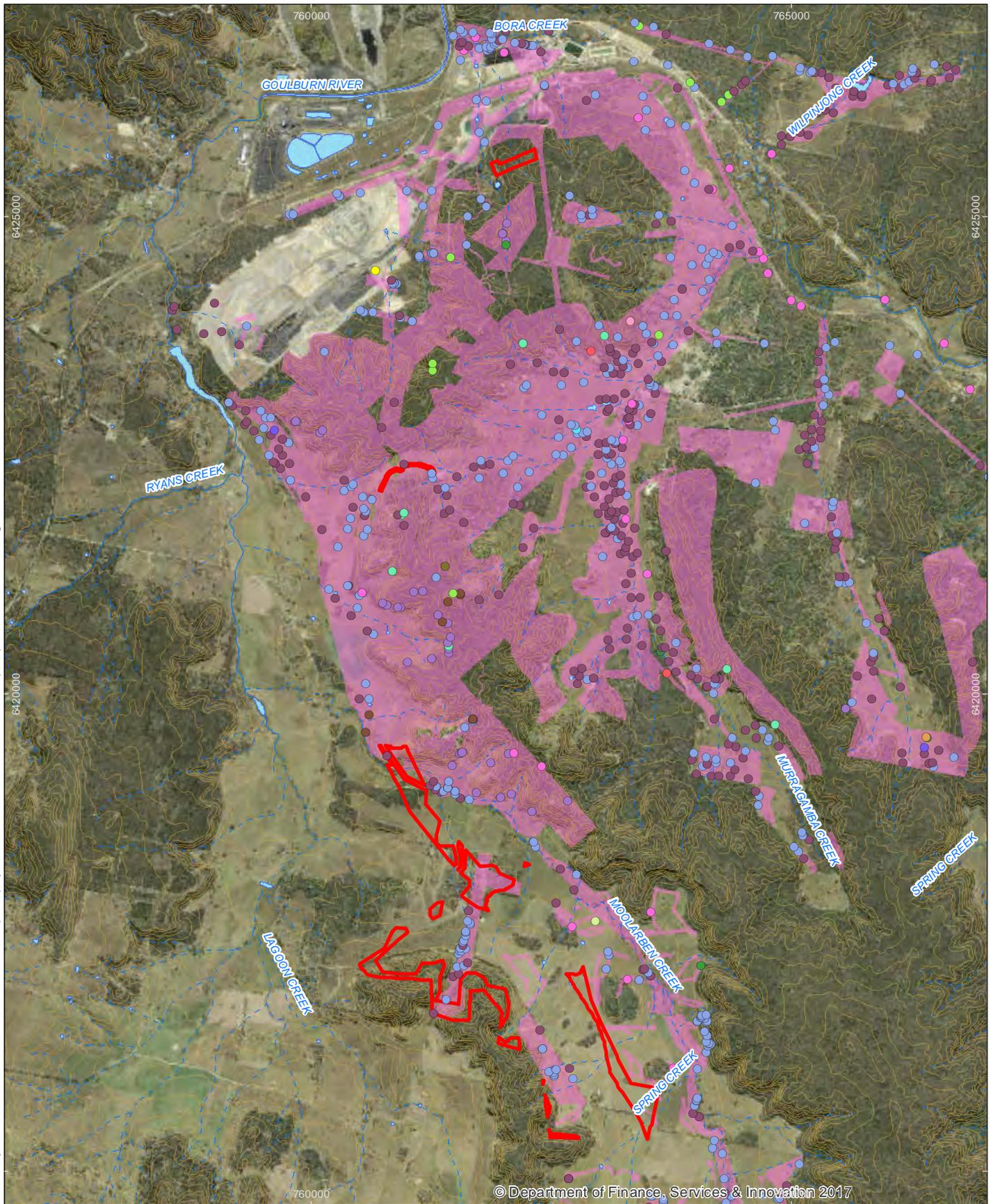
On the foot slopes and undulating plains it is anticipated, as demonstrated by the distribution and site type of known sites, that there will be open sites containing stone artefacts. These sites may generally occur anywhere within this terrain, but may be more frequently encountered in favourable occupation areas which may often be associated with differentiation in the landscape (e.g. hill crests and flats).

In accordance with the current predictive model for the MCC, this landscape would be considered as being outside a primary or secondary resource zone. The occupation will therefore most likely represent transient movement through the landscape for activities such as hunting or gathering, and this would be reflected in low counts and densities of Aboriginal sites and artefacts. Any artefacts contained within the rock shelters will most likely be made of locally obtained quartz with infrequent artefacts of tuff or chert. Types of artefacts will most likely be complete or broken flakes with infrequent occurrences of other technologies such as retouched flakes, backed artefacts and other stone tool technologies.

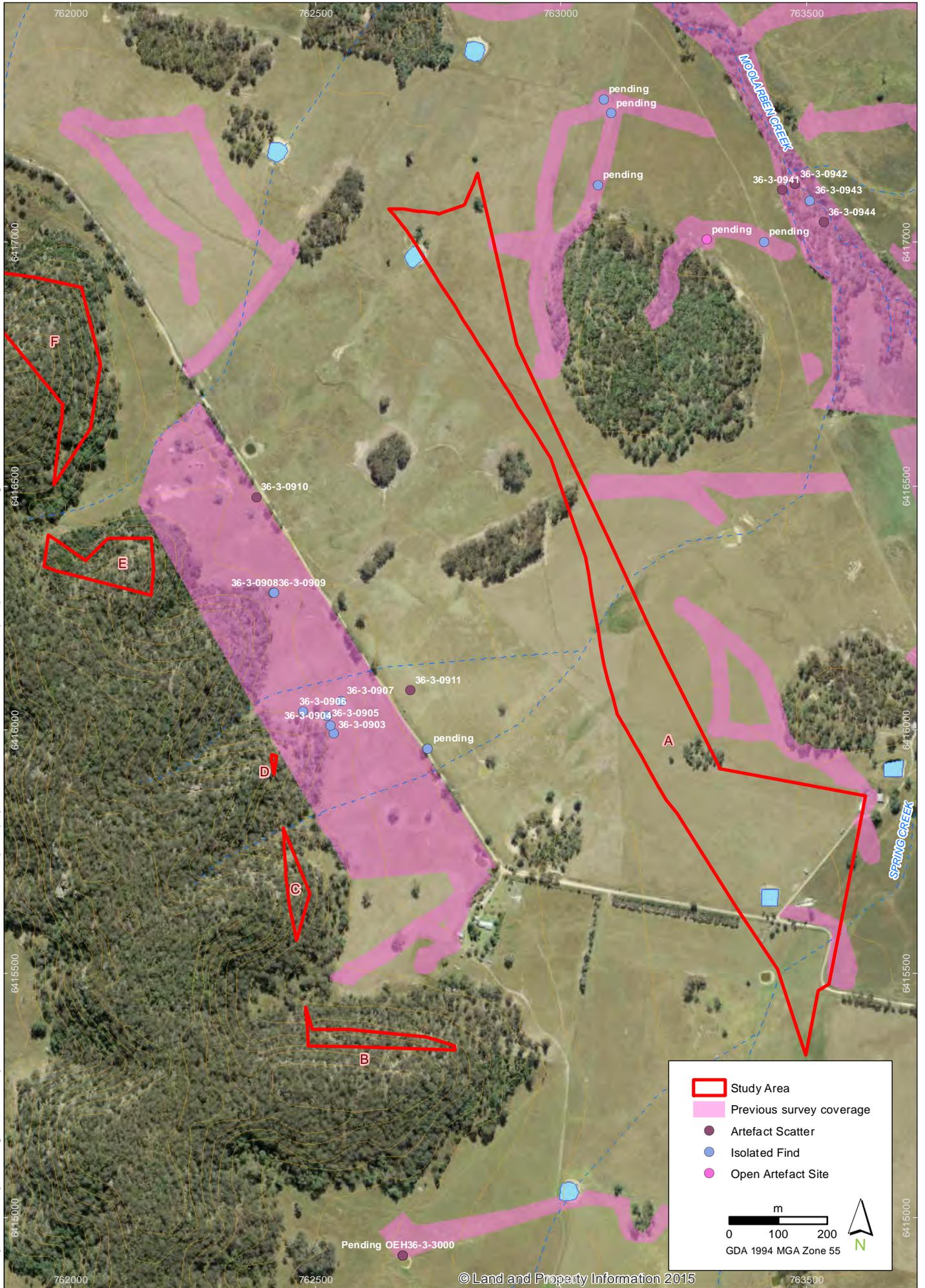
Considering the archaeological context, the following predictive statements for the Study Area are made:

- Closed sites (such as rock shelters with the potential for art, artefacts and/or PADs) have the potential to occur in the Study Area.
- Culturally modified trees may occur where mature age trees are present; but are unlikely to occur in the Study Area due to the levels of past vegetation clearance.
- Grinding grooves are typically found on sedimentary rock surfaces such as sandstone and may occur within the Study Area where suitable rock surfaces exist in context of permanent and/or temporary water.
- Stone arrangements are very rare but do occur in the wider region. There is limited chance of these occurring in the Study Area due to the level of surface disturbance from past land use.
- Burials are rare but do occur in the wider region and are associated with sandy soils and rockshelters. There is potential that burials occur in context with rock shelters but are unlikely to be preserved in the Study Area due to the high level of erosion and surface disturbance.
- There are no known ceremonial sites in the Study Area and they are unlikely to occur as they have not previously been identified during previous Aboriginal community consultation for the MCC. Moreover, it is extremely hard to identify ceremonial sites using only archaeological methods.
- Archaeological visibility and exposure within the Study Area is likely to be low to moderate due to the cover of native and improved grasslands and re-vegetated ridges. Visibility and exposure will most likely occur as a result of grazing practices and erosion and surface wash around drainage lines and on slopes.

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 Project Manager: BH
 Drawn by: RJ
 Date: 25/09/2017
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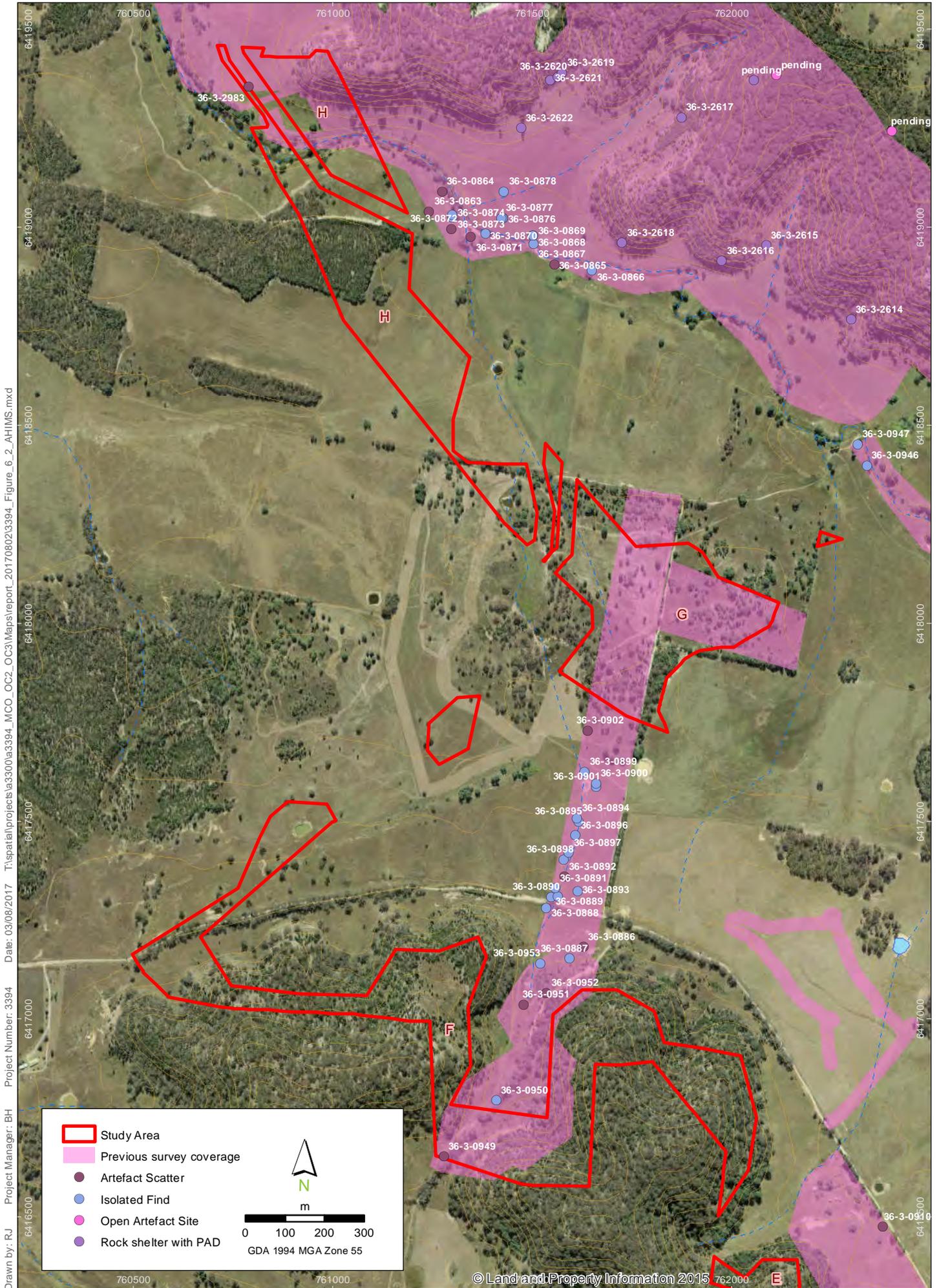
Location of AHIMS sites - A, B, C, D, E

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 6.1

Imagery: (c) LPI 2011-04-23





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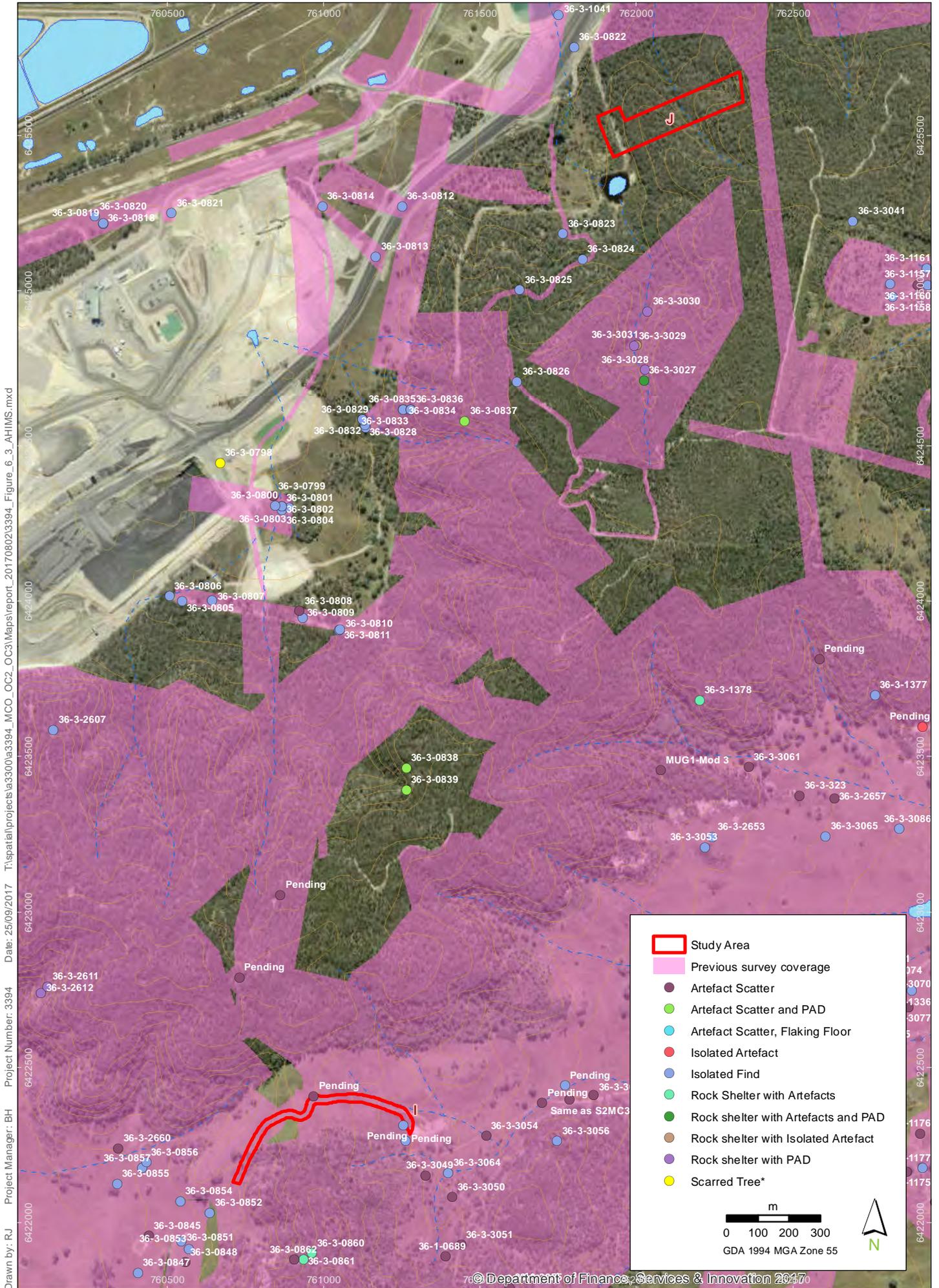
Location of AHIMS sites - F, G, H

Moolarben Coal Complex Open Cut Optimisation Modification
 Aboriginal Cultural Heritage Assessment

FIGURE 6.2

Imagery: (c) LPI 2011-04-23





Location of AHIMS sites - I, J

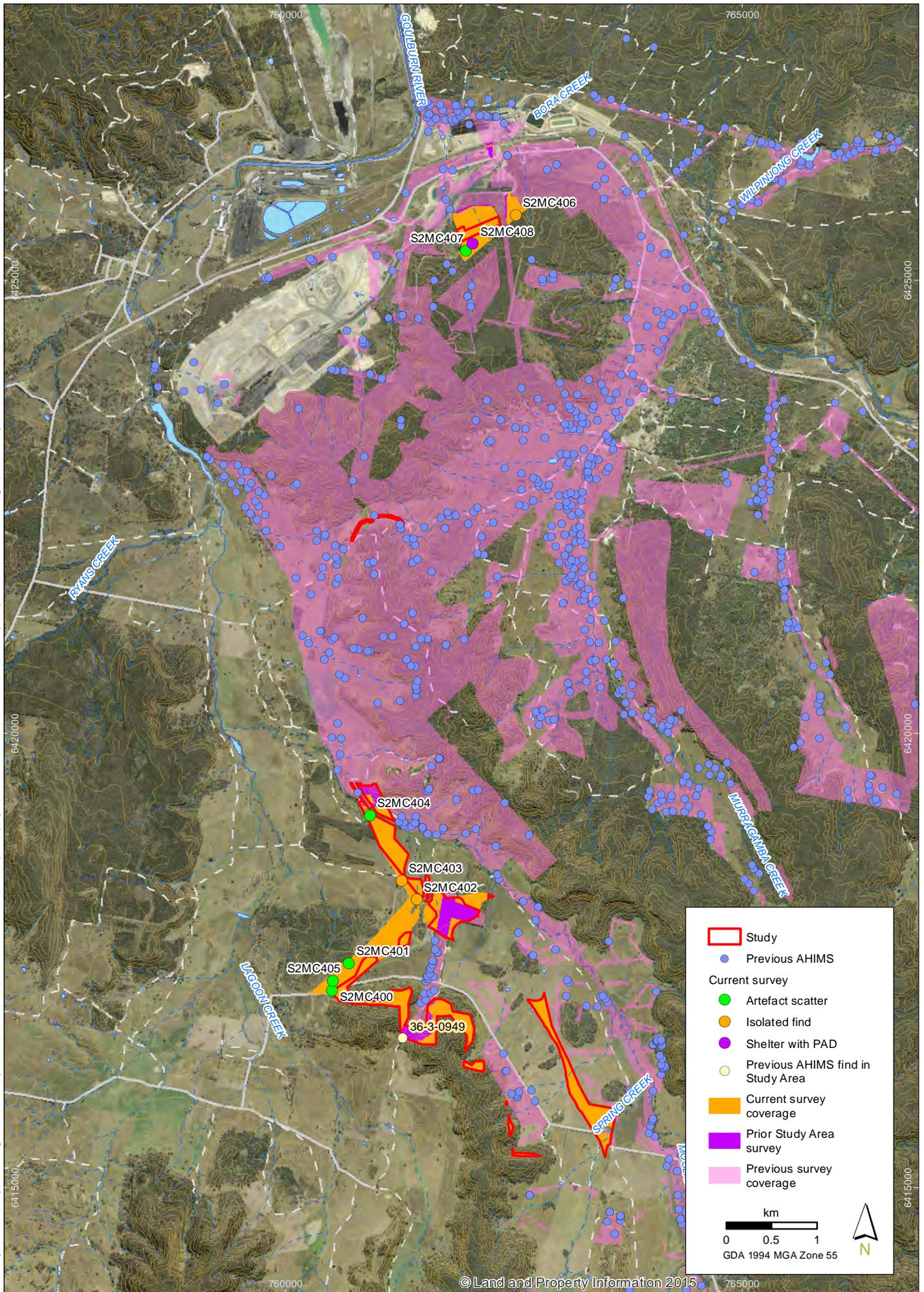
Moolarben Coal Complex Open Cut Optimisation
Modification Aboriginal Cultural Heritage Assessment

FIGURE 6.3

Imagery: (c) LPI 2011-04-23

*Further assessment has been undertaken at this site, and the site is considered not to be of Aboriginal origin

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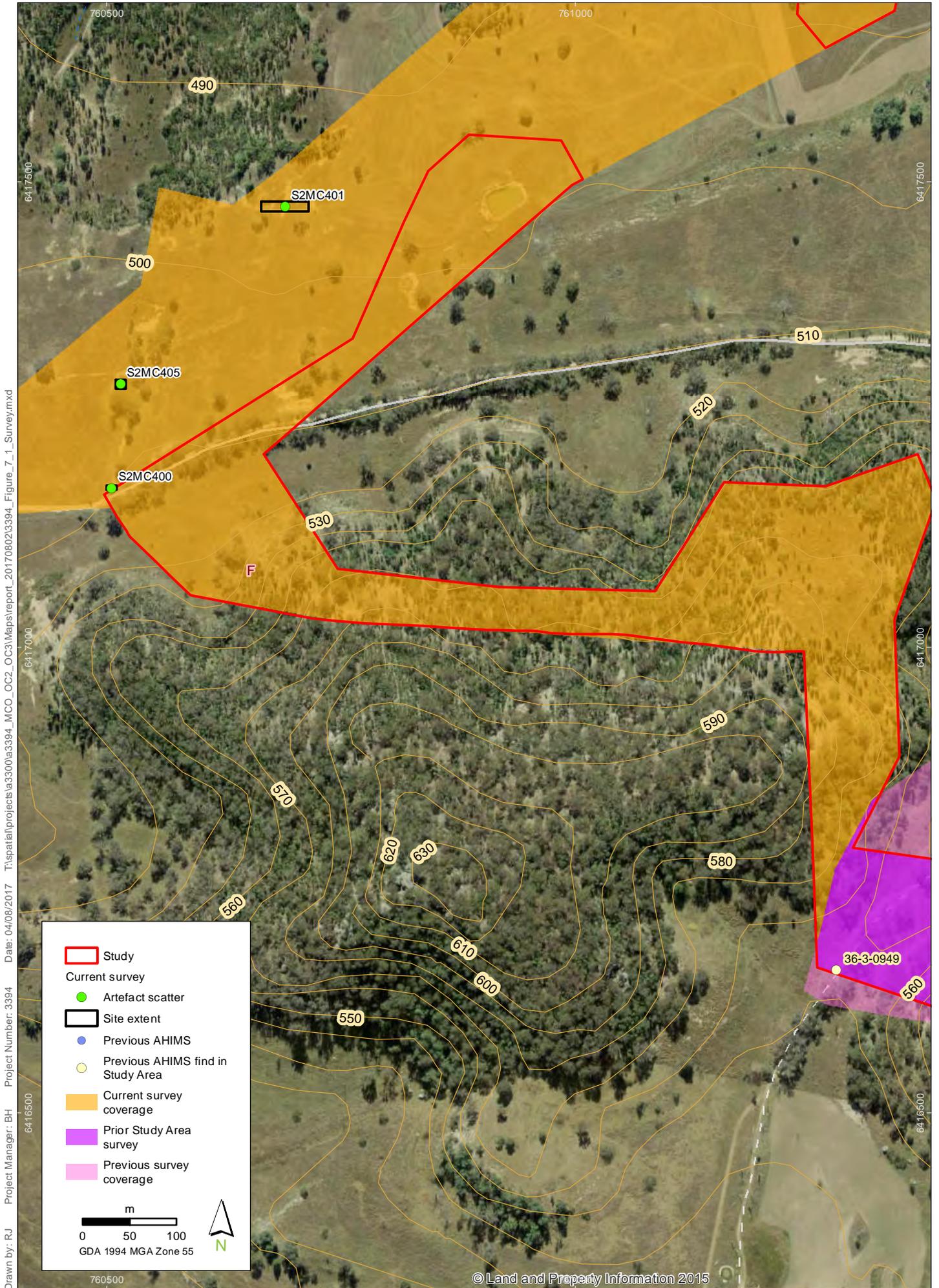


Survey results

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 7

Imagery: (c) LPI 2011-04-23



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 Project Number: 3394
 Project Manager: BH
 Drawn by: RJ

Legend

- Study
- Current survey**
- Artefact scatter
- Site extent
- Previous AHIMS
- Previous AHIMS find in Study Area
- Current survey coverage
- Prior Study Area survey
- Previous survey coverage

Scale

0 50 100 m

GDA 1994 MGA Zone 55

North Arrow

N

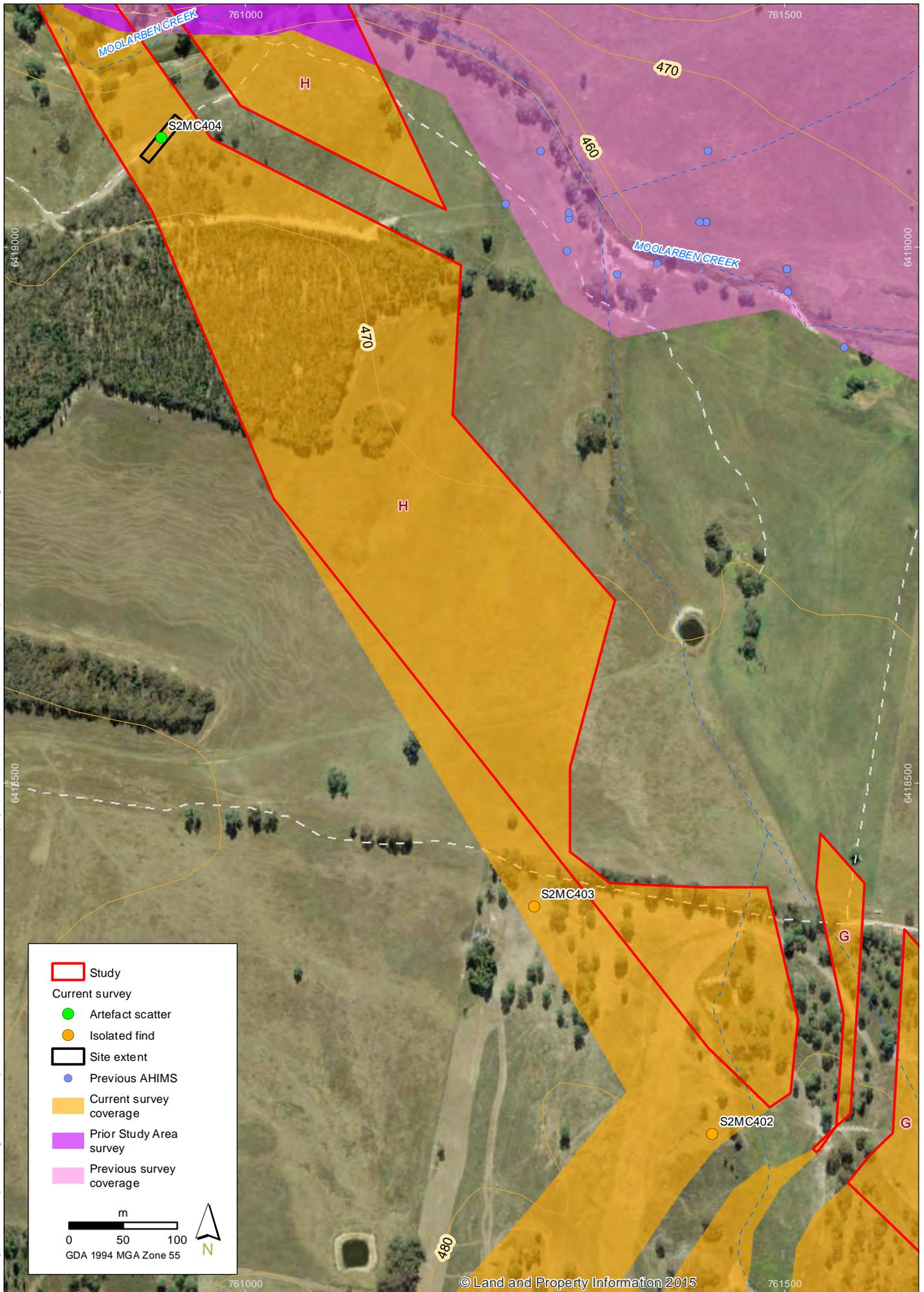
Survey results - S2MC400, S2MC401, S2MC405, 36-3-0949

Moolarben Coal Complex Open Cut Optimisation Modification
 Aboriginal Cultural Heritage Assessment

FIGURE 7.1

Imagery: (c) LPI 2011-04-23

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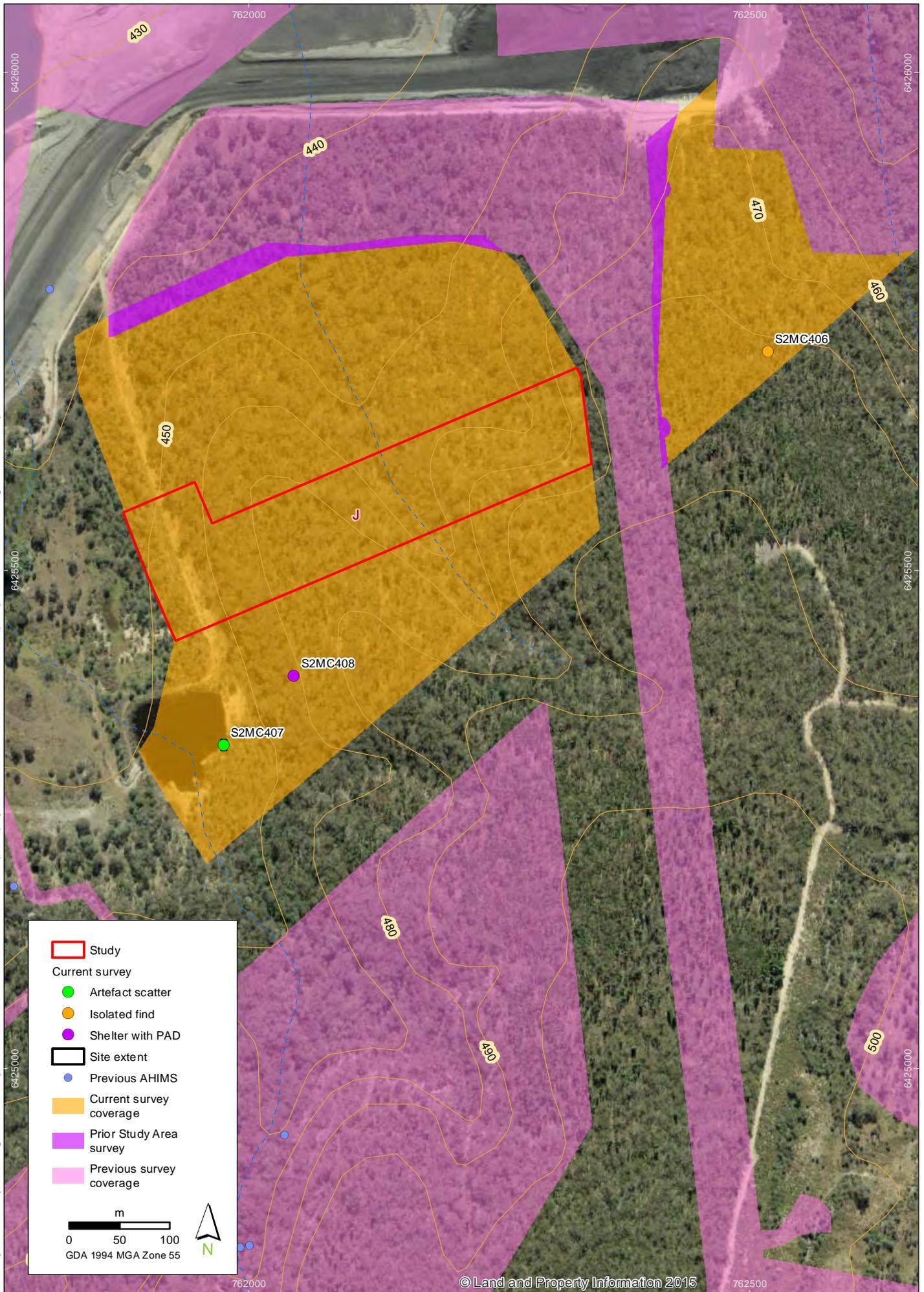
Survey results - S2MC402, S2MC403, S2MC404

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 7.2

Imagery: (c) LPI 2011-04-23

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Survey results - S2MC406, S2MC407, S2MC408

Moolarben Coal Complex Open Cut Optimisation Modification
Aboriginal Cultural Heritage Assessment

FIGURE 7.3

Imagery: (c) LPI 2011-04-23

11. Aboriginal Heritage Survey Methodology

A Proposed Methodology for the assessment was provided to the RAPs on 4 January 2017. A copy of the Proposed Methodology is provided in Appendix 4. Following comments from the RAPs decision was made to cover all unsurveyed parts of the Study Area. The survey methodology was developed in accordance with Section 5.3 of the HMP.

11.1 Survey sampling strategy

The *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) requires a stratified and weighted sample of the landscapes to be assessed based on their occurrence in an impact or disturbance footprint, and the anticipated Aboriginal cultural heritage potential within those landforms.

Due to the relatively small and accessible size of the subject area, and because the Study Area included some areas previously subject to systematic surveys, a detailed landscape or landform sampling strategy was not applied. Rather, the approach taken was to use a high intensity transect survey across the majority of the Study Area, including all those landforms that occur within them. Because the previous survey efforts have provided adequate samples and coverage, those previously surveyed areas were not systematically re-surveyed during the current assessment (although occasionally these areas were traversed to reach current survey areas).

11.2 Survey methods

The Aboriginal heritage survey was conducted in two stages between 21 February and 24 February 2017, and between 14 March and 15 March 2017.

All survey transects were conducted on foot. Survey participants were generally spaced between 5 m and 10 m apart and features or exposures of interest were opportunistically investigated in more detail (Plate 7). Spacing between field participants was adjusted according to the surface visibility and exposure frequency.

Survey transects were recorded on handheld non-differential GPS units with an average accuracy of ± 5 m. Environmental variables such as overall landform, slope, distance from water, visibility, soils and the presence of stone outcrops were recorded, and representative photographs were taken.

Located archaeological sites and Aboriginal objects were recorded in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) using standard archaeological practice and according to requirements of AHIMS recording protocol including:

- Marking the location of every identified archaeological object and/or feature (Plate 8).
- Photo recording of the overall site including scale and markers for objects and/or features (Plate 8).
- Non-differential GPS recording of centre point and extent of every archaeological site.
- Description of features, objects, general environment, landscape unit, soils, disturbance levels and initial significance.
- Photo records of representative number of archaeological objects and/or features (Plate 9).

A comments and suggestion log was also maintained during the survey allowing for the RAPs present to provide any comments regarding cultural values of the survey area or management recommendations to be documented. Comments were received for logistical and safety concerns only. All comments were recorded and provided to MCO representatives.



Plate 7: Example of survey participant spacing



Plate 8: Example of marking located archaeological objects



Plate 9: Example of located archaeological object, S2MC404

12. Survey Results and Discussion

12.1 Overview

All of the previously unsurveyed sections of the Study Area, and all its landforms and soil landscapes have been subject to systematic survey and assessment during the field campaign (Figure 7). The survey team conducted all transects on foot with the average distance of 5 m to 10 m distance between participants. Distance was adjusted (i.e. to less than 5 m apart) on areas with higher ground surface visibility (GSV) and in areas with rock outcrops and slopes covered with large boulders to inspect all possible locations for rock shelters.

Visibility varied across the surveyed areas from poor (less than 5%) up to 70% to 80% on frequently ploughed paddocks and exposed upper slopes and ridge tops. Visibility was restricted by high grass cover with the exception of exposures from vehicles and animal tracks, earthworks, agricultural activities and surface wash and erosion in drainage lines. Effective survey coverage was less than 5% due to the thick grass cover on the open areas and sometimes thick undergrowth in the re-vegetated woodland. Notwithstanding, the survey provided an opportunity to inspect ridge slopes and tops for closed sites such as rock shelters and overhangs, and is considered sufficient for the purposes of this assessment. A summary of survey and landform coverage is provided in Table 12.

Table 12: Summary of survey coverage and landform unit area

Landform / Survey Unit	Survey and Landform Unit Area (m ²)	Visibility (%)	Exposure (%)	Effective Coverage (m ²)	Effective Coverage (%)	Number of Sites	Number of Features
Alluvial Plains / Terraces	840,000	10	10	8,400	1	5	Artefact Scatter (3), Isolated Find (2)
Drainage depression / Moolarben Creek	28,000	10	10	280	1	0	0
Low to Mid slopes	280,000	20	20	11,200	4	2	Artefact Scatter
Upper slopes	210,000	20	20	8,400	4	1	Rock Shelter with PAD
Ridge line / plateaux	42,000	20	20	1,680	4	1	Isolated Find
Total	1,400,000	-	-	29,960	2	9	Artefact Scatter (5), Isolated Find (3), Rock Shelter with PAD (1)

The survey confirmed the degree of past land use and disturbance—vegetation clearing, agricultural activities, grazing, construction of rural infrastructure and consequent heavy erosion that frequently resulted in complete loss of top soil — identified from the desktop assessment. The survey confirmed the general pattern of Aboriginal objects in the wider area and also confirmed the predictive model developed for the Study Area. Open sites comprising artefact(s) were found on the eroding, elevated terrace of Moolarben Creek, on foot slopes and periphery of alluvial flats adjacent to ridge lines and on top of rocky ridge plateaux. One closed site comprising a rock shelter with PAD was located on a steep, rocky slope.

12.2 Survey results

Altogether nine (9) Aboriginal heritage sites were identified during the field survey. Details of the recorded objects are provided in Table 13 below.

Table 13: Details of identified Aboriginal objects

AHIMS ID	Site ID	Coordinates (MGA/GDA)	Description	Scientific Significance	Comment
36-3-3226	S2MC400	55H E 760505 N 6417171	Artefact Scatter (2)	Low	Estimated site extent is 5 m x 10 m
36-3-3225	S2MC401	55H E 760690 N 6417473	Artefact Scatter (10)	Low	Estimated site extent is 50 m x 10 m
36-3-3224	S2MC402	55H E 761432 N 6418173	Isolated Find	Low	Estimated site extent is 2 m x 2 m
36-3-3223	S2MC403	55H E 761267 N 6418384	Isolated Find	Low	Estimated site extent is 2 m x 2 m
36-3-3222	S2MC404	55H E 760929 N 6419108	Artefact Scatter (11)	Moderate	Estimated site extent is 50 m x 10 m
36-3-3221	S2MC405	55H E 760515 N 6417282	Artefact Scatter (5)	Low	Estimated site extent is 10 m x 10 m
36-3-3220	S2MC406	55H E 762518 N 6425721	Isolated Find	Low	Estimated site extent is 2 m x 2 m
36-3-3219	S2MC407	55H E 761975 N 6425325	Artefact Scatter (2)	Low	Estimated site extent is 10 m x 5 m
36-3-3218	S2MC408	55H E 762045 N 6425394	Rock Shelter with PAD	Low	Large shelter: 3.5-4 m wide, 5 m deep, 1.5 m high. Facing W with its entrance is sheltered by a rock overhang. Estimated extent of PAD is 5 m x 3.5 m and depth is 20-50 centimetres (cm)

In addition to the above listed sites, the survey also re-located the previously recorded site S1MC140 (AHIMS ID #36-3-0949). Details of this Aboriginal heritage site provided in Table 14 below.

Table 14: Details of S1MC140

AHIMS ID	Site ID	Coordinates (MGA/GDA)	Description	Scientific Significance	Comment
36-3-0949	S1MC140	E761278 N6416654	Artefact Scatter	Low	Estimated site extent is 240m by 20m

12.3 Description of Individual Sites

During the Modification survey campaign, nine (9) new Aboriginal heritage sites were identified and recorded. These sites are summarised below, along with a description of the previously recorded site also located during the field surveys.

AHIMS #36-3-0949/S1MC140

This is an artefact scatter comprising three (3) stone artefacts located on mid slope and upper slope landforms in a gap between two ridge tops (Plate 10 ,Plate 11 and Plate 12). The artefacts were quartz complete flakes, a quartz core and a chert retouched flake located on an exposure on a heavily eroded vehicle track. There were a few other pieces of quartz noted in the vicinity, however these did not have artefact features or attributes and were possibly the result of the heavy use of the vehicle track and consequent erosion. The scientific significance of S1MC140 was assessed as low.



Plate 10: Location of S1MC140



Plate 11: Example of artefact showing part of dorsal surface and angle of ventral surface, S1MC140



Plate 12: Artefact showing ventral surface, S1MC140

AHIMS #36-3-3226/S2MC400

This is an artefact scatter comprising two (2) stone artefacts located on the lower, foot slopes landform in a heavily grazed paddock (Plate 13, Plate 14 and Plate 15). The artefacts were quartz complete flakes, located on an exposure in the south-western corner of a paddock. There were a few other pieces of quartz noted in the vicinity, however these did not have artefact features or attributes and were possibly the result of the grading of Moolarben Road which is located adjacent to the paddock. The scientific significance of S2MC400 was assessed as low.



Plate 13: Location of S2MC400



Plate 14: Artefact showing ventral surface, S2MC400



Plate 15: Artefact showing ventral surface, S2MC400

AHIMS #36-3-3225/S2MC401

This is an artefact scatter comprising ten (10) stone artefacts located on the alluvial plain landform in a paddock heavily ploughed and used for growing crops (Plate 16, Plate 17 and Plate 18). The artefacts included quartz complete flakes, retouched chert flakes and quartz and chert flaked pieces located on an exposure around a heavily eroded unformed vehicle track. The area has been the subject of significant erosion and in some areas the bedrock was visible. The scientific significance of S2MC401 was assessed as low.



Plate 16: Location of S2MC401

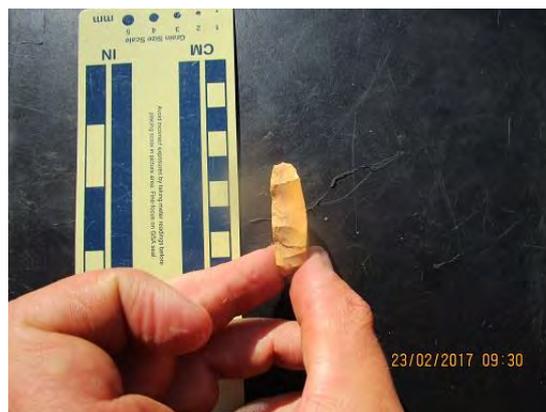


Plate 17: Example of retouch on artefact at S2MC401



Plate 18: Artefacts showing ventral surface, S2MC401

AHIMS #36-3-3224/S2MC402

This is an isolated stone artefact located on the alluvial plain landform in a paddock heavily ploughed and recently used for grazing (Plate 19 and Plate 20). The artefact was a quartz complete flake located on an exposure along a plough mark. The scientific significance of S2MC402 was assessed as low.



Plate 19: Location of S2MC402



Plate 20: Artefact showing ventral surface, S2MC402

AHIMS #36-3-3223/S2MC403

This is an isolated stone artefact located on the alluvial plain landform in a paddock heavily ploughed and recently used for grazing (Plate 21 and Plate 22). The artefact was a quartz proximal flake located on an exposure along a plough mark approximately 10 m south of an unformed vehicle track. The scientific significance of S2MC403 was assessed as low.



Plate 21: Location of S2MC403



Plate 22: Artefact showing ventral surface, S2MC403

AHIMS #36-3-3222/S2MC404

This is an artefact scatter comprising eleven (11) stone artefacts located on the south bank and elevated terrace of Moolarben Creek landform in a paddock (Plate 23, Plate 24 and Plate 25). The artefacts included quartz complete flakes, silcrete retouched flakes, chert complete flakes and flaked pieces from various raw material located on and around a heavily eroded unformed vehicle track. It is likely that the extent of site S2MC404 is significantly larger than the documented area, however visibility in this area was limited during the field surveys. The scientific significance of S2MC404 was assessed as moderate.



Plate 23: Location of S2MC404



Plate 24: Artefact showing ventral surface found at S2MC404



Plate 25: Same artefact showing dorsal surface, S2MC404

AHIMS #36-3-3221/S2MC405

This is an artefact scatter comprising five (5) stone artefacts located on the alluvial plain landform in a paddock heavily ploughed and recently used for grazing (Plate 26). The artefacts included quartz complete flakes, and quartz flaked pieces located on an unformed vehicle track west of a gate connecting two paddocks. High levels of erosion were recorded around S2MC405. The scientific significance of S2MC405 was assessed as low.



Plate 26: Location of S2MC405

AHIMS #36-3-3220/S2MC406

This is an isolated stone artefact located on the ridge top/plateaux landform on a re-vegetated ridge line (Plate 27). The artefact was a silcrete multidirectional core located on an exposure along an animal track. Visibility was restricted by leaf litter and also high percentage of angular rock pieces. The scientific significance of S2MC406 was assessed as low.



Plate 27: Artefact showing ventral surface, S2MC406

AHIMS #36-3-3219/S2MC407

This is an artefact scatter comprising two (2) stone artefacts located on the mid-upper slopes landform in an old quarry adjacent to the pit wall of OC1 (Plate 28, Plate 29 and Plate 30). The artefacts were a quartz complete flake, and a quartz core located on a heavily excavated and eroded part of the old quarry. The scientific significance of S2MC407 was assessed as low.



Plate 28: Location of S2MC407



Plate 29: Artefact showing ventral surface, S2MC407



Plate 30: Artefact showing ventral surface, S2MC407

AHIMS #36-3-3218/S2MC408

This is a rock shelter with PAD located on the western upper slope of a rocky ridge (Plate 31 and Plate 32). The site is a large rock shelter that has the possibility of containing a moderately undisturbed deposit. No artefacts and art were visible at the site. The entrance of the shelter faces west and is sheltered by a substantial overhang. The scientific significance of S2MC408 was assessed as low.



Plate 31: Location of S2MC408



Plate 32: Photo taken inside S2MC408

13. Cultural Heritage Values and Significance Assessment

13.1 Assessment Framework

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 criteria presented in Table 15.

Table 15: Definition of Heritage Values from the Burra Charter (Source: Australia ICOMOS 2013)

Cultural Significance Criteria	Definition
<i>Aesthetic value</i>	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.
<i>Historic value</i>	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, an 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 in situ, or where the settings are 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.
<i>Scientific value</i>	The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality or representativeness, and on the degree to which the place may contribute further substantial information.
<i>Social value</i>	Social value embraces the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group.

13.1.1 Other approaches: scientific significance

The categorisation into aesthetic, historic, scientific and social values is one approach to understanding the concept of cultural significance. However, more precise categories may be developed as understanding of a particular place increases.

The NSW DECCW guidelines for the significance assessment of Aboriginal archaeological sites are contained within the *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (National Parks and Wildlife Service 1997). The Kit identifies two main streams in the overall significance assessment process: the assessment of cultural/social significance to Aboriginal people and the assessment of scientific significance to archaeologists. This approach encapsulates those aspects of the Burra Charter that are relevant to Aboriginal archaeological sites. The guidelines specify the following criteria for scientific significance, as paraphrased in Table 16.

Table 16: Criteria for assessing archaeological / scientific significance

Significance Criteria	Definition
<i>Research Potential</i>	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.
<i>Representativeness</i>	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.
<i>Rarity</i>	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. The criterion of rarity may be assessed at a range of levels: local, regional, state, national, and global.
<i>Educational Potential</i>	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.
<i>Aesthetics</i>	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.

13.1.2 Grading values and significance

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 Study Area, and to provide an overall assessment of the significance of each of the zones used that define the Study area.

Low: 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 Study Area, and in the region.

Moderate: 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.

High: 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 middens. Such sites will be relatively rare, and will be representative of a limited number of similar sites that make up this class; hence they derive high representative and rarity values.

13.2 Statements of Significance for the Study Area

The Study Area (and immediate surrounds) contains ten (10) Aboriginal heritage sites, nine (9) of which were recorded during this assessment. No further areas of Aboriginal cultural heritage value were identified. Nine (9) of the recorded sites were assessed as having low scientific significance, whilst the remaining site (S2MC404) was assessed as having moderate scientific significance.

13.2.3 Social Value

The Study Area and in general, the MCC area, has social value to the Wiradjuri community. It is also noted that Aboriginal people who are not Wiradjuri have identified a social and cultural connection to the place (Kuskie 2013a: 59).

13.2.4 Aesthetic Value

The Study Area has no outstanding values for aesthetic characteristics in the local area and/or region and/or state. No aesthetically significant archaeological site has been identified. There was no art work identified inside the rock shelter at S2MC408 that would provide aesthetic value for the site. The RAPs have not made comment on the aesthetic values of the Study Area.

13.2.5 Historic Value

Consultation with the RAPs, desktop investigations and background literature review identified no direct historical figures, events, phases or activities within the historical or oral history records relevant to the Study Area. The Study Area has not been demonstrated to be important to the cultural or natural history of the local area and/or region and/or state. The RAPs expressed that the Study Area has an important place in the wider cultural values of the area.

13.2.6 Scientific (Archaeological) Value

The Study Area has limited potential to yield information that would contribute to a further understanding of the cultural or natural history of the local area and/or region and/or state. The Study Area contains Aboriginal objects, but these have very limited research or information potential beyond their current recording and incorporation into the AHIMS and Moolarben Coal Aboriginal Heritage Database.

13.2.7 Cultural Value

With the exception of the Aboriginal heritage sites identified during this survey and previous surveys there were no specific areas or places of cultural value identified during the survey for the Modification. However, previous assessments have identified and documented cultural values for the MCC area, including:

- Archaeological sites having contemporary cultural value because they provide a tangible link to the traditional past (Kuskie 2013a: 59).
- The presence of flora and fauna species with known traditional uses (Kuskie 2013a: 59).
- The area of Moolarben Ridge to the south of Carrs Gap having contemporary cultural value to the Wiradjuri community (Hamm 2008b, Kuskie 2013a). The Modification would not affect this area or these values.
- The area along the Goulburn River known as “The Drip” is considered to have high cultural value as the sites represent easily identified material remains and the area is ceremonially important (Hamm 2006a). The Modification would not affect this area or these values.

14. Impact Assessment

The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) requires that both direct and indirect impact to Aboriginal objects and Aboriginal places be considered. Generally, direct impact refers to occasions where an activity physically impacts a site or objects and therefore affects the heritage values of 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 impact is usually taken to mean impact stemming from secondary consequences of the activity, and may affect sites or objects as an indirect consequence of the activity. Examples of such indirect impact are increased visitors to a site, or increased erosion in an area as a result of an activity.

14.1 Potential impacts associated with the Modification

The area subject to survey for this assessment was larger than the current Study Area. Detailed mine planning and refinement of the final proposed disturbance area has resulted in the avoidance of direct impact to some identified heritage sites.

For the purposes of this assessment, the two (2) Aboriginal heritage sites that occur within the proposed disturbance area are considered to have the potential to be directly impacted by the proposed mining activities, which will involve the excavation of soil profiles and will result in the complete removal of potential archaeological resources. Other sites have the potential to be impacted by indirect impact due to their proximal location to the disturbance boundary.

14.2 Summary of potential impacts

As required by the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b), a consideration of the likely impacts (and loss of value) to Aboriginal heritage sites within the Study Area as a result of the Modification is listed in Table 17.

Table 17: Impact assessment table

Site ID	Type of Impact	Degree of Impact	Consequence of Impact
S1MC140 ¹	Direct	Total	Total loss of value
S2MC400	None	None	None
S2MC401	None	None	None
S2MC402	None	None	None
S2MC403	None	None	None
S2MC404	Direct	Total	Total loss of value
S2MC405	None	None	None
S2MC406	None	None	None
S2MC407	None	None	None
S2MC408	None	None	None

Note 1: AHIMS ID #36-3-0949

The Modification is located in an area of low Aboriginal archaeological potential that has been subject to systematic survey, and unanticipated impacts and harm to cultural values are not likely. Taken within the context of the known Aboriginal heritage sites at the Moolarben Coal Complex, the sites discussed in this report are all of low to moderate scientific significance, and harm to some of these sites represents a low level of harm and loss of cultural value. Such low levels of harm are not significant in terms of the principles of ecological sustainable development and inter-generational equity described and recommended in the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

14.3 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. Taken in context with pre-existing development and conservation in the region, it is considered that the Modification would occur within existing approved mining lease areas, adjacent to already approved disturbance footprints.

None of the identified Aboriginal objects within the Study Area are assessed as rare or unique, and they represent a well-documented and researched segment of Aboriginal archaeological resources in the area. The Modification is 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.

15. Management Measures and Recommendations

The *Moolarben Coal Complex Heritage Management Plan* (MCO 2016), which was prepared in consultation with the RAPs, anticipates the type of harm described in this assessment, and as such provides a robust management framework within which to manage both the impacts and avoidance of impact to Aboriginal heritage sites and values.

On this basis, the following recommendations are made:

1. An AHIMS site card should be submitted for the AHIMS register for all newly recorded sites in line with legislative requirements under the NPW Act.
2. The sites S1MC140 (AHIMS#39-3-0949) and S2MC404, which will be subject to direct impact as a result of the Modification, should be salvaged following the protocol described by the *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).
3. Should any of the remaining sites be impacted by any ancillary surface infrastructure that may be required for the Modification, those sites should be salvaged following the protocol described by the *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).
4. For any previously unrecorded Aboriginal heritage sites that may be identified during the Modification, they should be managed consistent with the requirements outlined in the *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).
5. MCO should implement emergency response procedures for any unexpected discovery of Aboriginal objects and/or skeletal remains during construction activities for the Modification, in accordance with the *Moolarben Coal Complex Heritage Management Plan* (MCO 2016).
6. The HMP should be updated to include the extent of the Modification and the management of Aboriginal heritage values within it.
7. MCO should continue to liaise with the RAPs throughout the construction activities for the Modification.

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Appendix 1 – Community Consultation Log

Moolarben Coal - Consultation Log

DATE	ORGANISATION/PERSON CONTACTED	HOW CONTACTED	CONTACTED BY	NATURE OF CONSULTATION
4/01/2017	Registered Aboriginal Parties	Email	Moolarben Coal	Proposed Methodology was distributed for review and comment.
2/02/2017	Moolarben Coal Operations	Email	Debbie Foley, Murong Gialinga Aboriginal & Torres Strait Islander Corporation	Provided comments on the Proposed Methodology.
8/02/2017	Moolarben Coal Operations	Email	Lance Syme, Warrabinga NTCAC	Provided comments on the Proposed Methodology.
21-24/02/2017	Registered Aboriginal Parties	Field Surveys	Moolarben Coal	Field surveys run 21-24 February 2017.
10/03/2017	Registered Aboriginal Parties	Email	Moolarben Coal	Proposed Methodology Addendum was distributed.
14-15/03/2017	Registered Aboriginal Parties	Field Surveys	Moolarben Coal	Additional field surveys run 14-15 March 2017.
15/05/2017	Registered Aboriginal Parties	Email	Moolarben Coal	A copy of the draft ACHA was provided for review and comment.
13/06/2017	Moolarben Coal Operations	Email	Kristen Kerr, Warrabinga NTCAC	Provided comments on the draft ACHA.
14/06/2017	Moolarben Coal Operations	Email	Debbie Foley, Murong Gialinga Aboriginal & Torres Strait Islander Corporation	Provided comments on the draft ACHA.

Appendix 2 – Correspondence to the Aboriginal Community

SITE: 4250 Ulan Road, Ulan NSW 2850
POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

4 January 2017

Mudgee Local Aboriginal Land Council
Tony Lonsdale
PO Box 1098
MUDGEE NSW 2850

Dear Tony

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Moolarben Coal Operations Pty Ltd (MCO) has identified that an opportunity exists to optimise open cut mining operations, to improve mining efficiencies and increase run-of-mine (ROM) coal production. This will require an Aboriginal Cultural Heritage Assessment to be undertaken for additional surface disturbance areas.

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All comments received will be taken into consideration as the Methodology is finalised.

Contact Details

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Trent Cini
Environmental Coordinator
Moolarben Coal Operations Pty Ltd
Locked Bad 2003, Mudgee NSW 2850
Phone: (02) 6376 1436
Email: trent.cini@yancoal.com.au

Please do not hesitate to contact the undersigned should you wish to discuss further.

Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD



Graham Chase

Environmental and Community Manager

SITE: 4250 Ulan Road, Ulan NSW 2850
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FAX: +61 2 6376 1599
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4 January 2017

Warrabinga Native Title Claimants Aboriginal Corporation
Lance Syme
PO Box 282
MUDGEES NSW 2850

Dear Lance

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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ABN: 59 077 939 569

4 January 2017

Murong Gialinga Aboriginal & Torres Strait Islander Corporation
Larry & Debbie Foley
PO Box 1097
MUDGEES NSW 2850

Dear Larry & Debbie

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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Graham Chase

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4 January 2017

North East Wiradjuri Company Ltd
Lyn Syme
PO Box 29
KANDOS NSW 2848

Dear Lyn

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD

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Graham Chase

Environmental and Community Manager

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4 January 2017

Craig McConnell
6 Wanda Crescent
MUDGEES NSW 2850

Dear Craig

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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4 January 2017

Aleisha Lonsdale
PO Box 1098
MUDGEES NSW 2850

Dear Aleisha

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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4 January 2017

Warranha Ngumbaay
C/- Aleisha Lonsdale
PO Box 1098
MUDGEES NSW 2850

Dear Warranha

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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4 January 2017

Wellington Valley Wiradjuri Aboriginal Corporation
Brad Bliss
PO Box 2290
ORANGE NSW 2800

Dear Brad

RE: MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION – ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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12 May 2017

Mudgee Local Aboriginal Land Council
Tony Lonsdale
PO Box 1098
MUDGEE NSW 2850

Attention: Tony Lonsdale

Dear Tony,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

If you wish to provide comment on the draft ACHA and have those comments included and considered in the final report, you are invited to do so (either in writing or verbally) by **5.00 pm on Friday 9 June 2017**. All comments received by that date will be taken into consideration in the finalisation of the ACHA. The final ACHA will be made available to you after completion.

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Graham Chase
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12 May 2017

Craig McConnell
13 Guntawang Road
Galambine NSW 2850

Attention: Craig McConnell

Dear Craig,

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12 May 2017

Murong Gialinga Aboriginal and Torres Strait Islander Corporation
Larry and Debbie Foley
PO Box 1097
MUDGEES NSW 2850

Attention: Larry and Debbie Foley

Dear Larry and Debbie,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

If you wish to provide comment on the draft ACHA and have those comments included and considered in the final report, you are invited to do so (either in writing or verbally) by **5.00 pm on Friday 9 June 2017**. All comments received by that date will be taken into consideration in the finalisation of the ACHA. The final ACHA will be made available to you after completion.

If you have any queries regarding the Modification or to provide any comments on the draft ACHA, could you please direct all correspondence to Moolarben Coal Operations Pty Ltd via the following contact details:

Trent Cini
Senior Environment and Community Coordinator
Locked Bag 2003, Mudgee NSW 2850
Phone: (02) 6376 1436
Email: Trent.Cini@yancoal.com.au

Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD

Graham Chase
Environmental and Community Manager



SITE: 4250 Ulan Road, Ulan NSW 2850
POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

12 May 2017

North East Wiradjuri Company Ltd
Lyn Syme
PO Box 29
KANDOS NSW 2848

Attention: Lyn Syme

Dear Lyn,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

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Yours sincerely

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POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

12 May 2017

Warranha Ngumbaay
C/- Aleisha Lonsdale
PO Box 1098
MUDGEE NSW 2850

Attention: Warranha Ngumbaay

Dear Warranha,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

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SITE: 4250 Ulan Road, Ulan NSW 2850
POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

12 May 2017

Warrabinga Native Title Claimants Aboriginal Corporation
Lance Syme
PO Box 282
MUDGEES NSW 2850

Attention: Lance Syme

Dear Lance,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

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Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD

Graham Chase
Environmental and Community Manager



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POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

12 May 2017

Wellington Valley Wiradjuri Aboriginal Corporation
C/- Bradley Bliss
PO Box 2290
ORANGE NSW 2800

Attention: Bradley Bliss

Dear Brad,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

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Trent Cini
Senior Environment and Community Coordinator
Locked Bag 2003, Mudgee NSW 2850
Phone: (02) 6376 1436
Email: Trent.Cini@yancoal.com.au

Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD

Graham Chase
Environmental and Community Manager



SITE: 4250 Ulan Road, Ulan NSW 2850
POSTAL: Locked Bag 2003 Mudgee NSW 2850
PHONE: +61 2 6376 1500
FAX: +61 2 6376 1599
WEBSITE: www.moolarbencoal.com.au
ABN: 59 077 939 569

12 May 2017

Aleisha Lonsdale
PO BOX 1098
MUDGEE NSW 2850

Attention: Aleisha Lonsdale

Dear Aleisha,

RE: MOOLARBEN COAL COMPLEX – OPEN CUT OPTIMISATION MODIFICATION DRAFT ABORIGINAL CULTURAL HERITAGE ASSESSMENT

In accordance with the *Aboriginal Cultural Heritage Requirements for Proponents 2010* (New South Wales [NSW] Department of Environment, Climate Change and Water, 2010) issued by the NSW Office of Environment and Heritage, please find enclosed for your review and comment, a copy of the draft Aboriginal Cultural Heritage Assessment (ACHA) for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification).

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Email: Trent.Cini@yancoal.com.au

Yours sincerely

MOOLARBEN COAL OPERATIONS PTY LTD

Graham Chase
Environmental and Community Manager

Appendix 3 – Correspondence from the Aboriginal Community

Subject: FW: Moolarben Coal Complex Open Cut Optimisation Modification - Aboriginal Cultural Heritage Assessment

From: Murong Gialinga [<mailto:muronggialinga@hotmail.com>]

Sent: Thursday, 2 February 2017 5:59 PM

To: Trent Cini

Subject: Re: Moolarben Coal Complex Open Cut Optimisation Modification - Aboriginal Cultural Heritage Assessment

To Trent Cini

Environment Coordinator

Moolarben Coal Operations Pty Ltd OPTIMISATION MODIFICATION -ABORIGINAL CULTURAL HERITAGE ASSESSMENT. We are replying gto the open cut OPTIMISATION MODIFICATION _ABORIGINAL CULTURE after reading it we would like all areas to be thoroughly surveyed not just some areas . The Archaeologist & Environment staff to listen to theAboriginal Groups s concerns and -connecting to country also their Cultural knowledge. Kind Regards Debbie Foley

From: Trent Cini <Trent.Cini@yancoal.com.au>

Sent: Wednesday, 4 January 2017 9:43 AM

To: Murong Gialinga

Subject: Moolarben Coal Complex Open Cut Optimisation Modification - Aboriginal Cultural Heritage Assessment

Larry & Debbie,

Please find attached correspondence from Moolarben Coal Pty Ltd regarding the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment.

Please let me know if you require a hard copy of the attached correspondence.

Regards,

Trent Cini | ENVIRONMENTAL COORDINATOR

Moolarben Coal Operations Pty Ltd

SITE: 4250 Ulan Road, Ulan NSW 2850

POSTAL: Locked Bag 2003 Mudgee NSW 2850 Australia

PHONE: +61 2 6376 1436

FAX: +61263761599

MOBILE: 0408312269

EMAIL: Trent.Cini@yancoal.com.au

WEBSITE: www.moolarbencoal.com.au



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WARRABINGA

Native Title Claimants Aboriginal Corporation

PO Box 282
Mudgee NSW 2850
Office: 02 4627 8622
Fax: 02 4605 0815



Trent Cini
Environmental Coordinator
Moolarben Coal Operations Pty Ltd
Locked Bag 2003
Mudgee NSW 2850

7th February 2017

Dear Stephanie,

RE: 1st Round of Comment on the Proposed Methodology for the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment

Below you will find our comments in regards on the Proposed Methodology for the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment prepared by Moolarben Coal Operations Pty Ltd.

Warrabinga has registered and been determined for upwards of 10 claims within the extent of our country. There is no reason to suggest that a determination on our whole of country claim will not be made in the near future.

Moolarben Coal Operations Pty Ltd has provided no details in regards to who the Archaeologist will be for the project. Please provide details.

Warrabinga has experienced how Aboriginal archaeological consultants will treat our heritage differently. We would like to ensure that the Aboriginal archaeological consultant for the project will both consider our heritage appropriately, and will consider our concerns and comments appropriately.

In point two on page 1 of the proposed methodology, it is stated that "minor increase in disturbance limits at OC2"; please clarify what you mean by **minor increase**. That is an arbitrary statement, and everyone has a different idea as to what constitutes at minor increase.

As a result of this "minor increase in disturbance limits at OC2" will the Aboriginal Cultural Heritage Management Plan be updated to reflect this increase?

In point three on page 1 of the proposed methodology, it is stated that "changes to alignment of the haul road from OC2 to OC3 and the location of the OC3 Mine Infrastructure Area"; please provide a map which addresses this point.

It is always appropriate when discussing changes to any infrastructure, haul roads, Aboriginal heritage, etc., to include a map of the specific area, especially when the Registered Aboriginal Parties are being requested to provide comment on the proposed methodology.

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In point four on page 1 of the proposed methodology, it is stated that “changes to the pit limits of OC3 and associated out of pit waste dump”; please provide a map which addresses this point.

In point five on page 1 of the proposed methodology, “new internal haul from OC2 to OC4”; please provide a map which addresses this point.

In point six on page 1 of the proposed methodology, “new site access to OC3 via Moolarben Road, and associated widening of the existing Moolarben Road”; please provide a map which addresses this point.

In point seven on page 1 of the proposed methodology, “other minor ancillary infrastructure”; please provide a map which addresses this point.

At this point Warrabinga is of the opinion that an insufficient degree of information has been provided in order for us to make any comment on the proposed methodology; a high level map with an “indicative Study Area” is not appropriate. If you have a proposed location for specific infrastructure, you need to supply Warrabinga with this information.

Warrabinga requires that the maps as requested above, and that an amended proposed methodology for the project be issued.

If the provided proposed methodology has been prepared to comply with the Section 4.2 and 4.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010), then the document needs to include the following details in order to be in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010):

- Environmental context;
- Archaeological context;
- Identify and list which Aboriginal sites will be potentially impacted by the proposed works; and,
- Previous disturbance to Aboriginal sites within the Study Area.

The information above is all necessary in order for Warrabinga to provide a comment in regards to the proposed methodology being put forward by Moolarben Coal Operations Pty Ltd.

Please do not point Warrabinga to review the Aboriginal Cultural Heritage Management Plan in order to gather this information. It is the responsibility of the party who prepared the document to address Section 4.2 and 4.3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010) to provide this information in a single document in order for us to provide a response; it is not the responsibility of the Registered Aboriginal Parties to gather this information.

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It should be noted that this may not be Warrabinga's last response in regards to the documentation provided to-date by Moolarben Coal Operations Pty Ltd; Warrabinga will provide additional responses until such time as we feel that our concerns have been satisfactorily addressed.

Warrabinga would like to remind Moolarben Coal Operations Pty Ltd that the project should not proceed any further until **all** comments and concerns raised by the RAPs have been **addressed**.

Should you wish to have a meeting to discuss the issues we have raised please coordinate this with our office via email (info@warrabinga.com.au).

Regards,

Virginia Doig

Director

WARRABINGA

Native Title Claimants Aboriginal Corporation

PO Box 282
Mudgee NSW 2850
Office: 02 4627 8622
Fax: 02 4605 0815



Trent Cini
Moolarben Coal Operations Pty Ltd
Senior Environment and Community Coordinator
Locked Bag 2003,
Mudgee NSW 2850

13th June 2017

Dear Trent,

**RE: 1st Round of Comment on the Moolarben Coal
Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage
Assessment**

Below please find our comments in regards to the DRAFT Aboriginal Cultural Heritage Assessment (ACHAR) for the Moolarben Coal Complex Open Cut Optimisation Modification prepared by Niche Environment and Heritage (Niche).

First off, we would like to make it clear that Niche should not finalise the DRAFT Aboriginal Cultural Heritage Assessment Report for Moolarben Coal Complex Open Cut Optimisation Modification, May 2017 until they have received confirmation from Warrabinga that we are of the opinion that all our concerns have been addressed. We would also like to clarify that all our concerns must be addressed in the Aboriginal Cultural Heritage Assessment Report.

Upon review of the DRAFT ACHAR, Warrabinga notes that the comments we provided on the 7th February 2017 for the Proposed Methodology are not included in the ACHAR. The comments issued by Warrabinga to Moolarben (as directed) were within the 28 day comment period, and as such **must** be addressed within the DRAFT ACHAR. Can Moolarben please confirm that they are in receipt of the comments issued by Warrabinga?

Attached to this letter is a copy of the comments issued by Warrabinga on the 7th February 2017. Warrabinga expects that our comments and/or queries raised in response to the Proposed Methodology are addressed in an amended DRAFT ACHAR.

Upon review of the DRAFT ACHAR, Warrabinga notes that not all the extents of the Study Areas are visible in Figure 3 (i.e. K, I, E, C, E, D and B). Please provide "zoomed-in" maps of Study Areas K, I, E, C, E, D and B for Figure 3. Please ensure that the "zoomed-in" maps are replicated for all the other maps in the DRAFT ACHAR. This is not an unreasonable request, especially when Warrabinga and the other Registered Aboriginal Parties (RAPs) for the project do not have access to the spatial data for the

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project, and we are being asked to provide commentary on the cultural significance within the Study Area.

On page ii of the Executive Summary, it is stated that a total of 10 Aboriginal sites have been identified; however upon review of Figure 6, Warrabinga noted that the colour used to demarcate "Isolated Finds" blended in with the colour used to identify the "Current Survey Coverage". Please clarify why the exact same colour was chosen to demarcate to item that where overlaid on each other.

Upon review of Figure 6, Warrabinga noted that the current survey coverage is larger than the Study Area. Please explain why this is the case. Please clarify whether the **entire** current survey coverage area is discussed and assessed within this ACHAR, or whether the ACHAR is limited to the current Study Area.

Please clarify whether the nine (9) newly identified Aboriginal sites have been registered with AHIMS. Please provide copies of the AHIMS numbers and site cards for each of the identified Aboriginal sites in the ACHAR.

In Table 11 and 12, Niche provides an estimated extent of each Aboriginal site; however, no map is provided detailing the extent of the Aboriginal sites. Please provide a map detailing the estimated extent of each of the Aboriginal sites. If Niche is unable to provide a map of each of the estimated extents, please provide details on the estimated extent (i.e. square, circle, rectangle buffer).

Upon review of the DRAFT ACHAR, Niche does not include a map that details the location of the construction footprint in relation to the identified Aboriginal sites. This is necessary in order for Warrabinga to understand how the proposed construction works will impact identified Aboriginal sites. Please provide a map that details the estimated extent of each of the sites, overlaid with the proposed construction footprint. Please ensure that close-up maps focused on the identified Aboriginal sites are included in the DRAFT ACHAR.

Upon review of the DRAFT ACHAR, Niche provides no comment on whether areas of Potential Archaeological Deposit (PAD) (that are not identified in relation to recorded Aboriginal sites) are within the current Study Area. Please clarify whether areas of PAD are present within the current Study Area, and if so, whether the PAD will be impacted by the proposed construction works.

In Section 12.3, the nine (9) newly identified Aboriginal sites have been identified or assessed as having 'low scientific significance'; what is Niche is using as the definition of scientific significance? Please clarify how scientific significance differs to archaeological significance. It is best to keep language and phraseology consistent and fluid throughout a document to save any confusion or misunderstanding. There is a similar confusion on page 40, paragraph two (2) which states that a recorded site

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was assessed as having low significance. Please clarify if this significance refers to the cultural heritage significance, the archaeological significance, or the overall significance of the site. Please update the DRAFT ACHAR to reflect the significance type.

In regards to point 1 on page 16, it is stated that "increased disturbance limits around OC2 and OC3"; please clarify what you mean by **increased disturbance limits**. Niche has provided no details about what this statement refers to.

Please clarify whether the Aboriginal Cultural Heritage Management Plan be updated to reflect the **increased disturbance limits** around OC2 and OC3.

In regards to point 2 on page 16, it is stated that "OC2 final landforms to retain highwalls/lowwalls and additional dams in the final landform"; please clarify what Niche means by this.

In regards to point 9 on page 16, it is stated that "minor changes to alignment of haul road from OC2 to OC3 and location of OC3 Mine Infrastructure Area, with associated change in disturbance"; please provide a map which addresses this point. Please provide a map to show how the changes to the alignment of the haul road will differ from the original alignment of the haul road. Please clarify whether the **minor changes to the alignment of haul road** was surveyed as part of the current assessment.

It is always appropriate when discussing changes to any infrastructure, haul roads, Aboriginal heritage, etc., to include a map of the specific area, especially when the RAPs are being requested to provide comment on the proposed methodology.

In regards to point 10 on page 16, it is stated that "additional internal road from OC2 to OC4 via Carrs Gap"; please provide a map which addresses this point. Please clarify whether the proposed alignment for the **additional internal road** was surveyed as part of the current assessment.

In regards to point 11 on page 16, it is stated that "additional rail loading infrastructure (e.g. second load out bin) for increased product coal rate"

In the proposed methodology issued in January 2017, it was stated in point 6 on page 1 that "new site access to OC3 via Moolarben Road, and associated widening of the existing Moolarben Road"; please clarify whether this **new site access** will still be constructed.

The response by Niche to Murong Gialinga Aboriginal & Torres Strait Islander Corporation under section 6.2, page 21, needs more information. The statement is as

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follows "...the level of survey undertaken was considered sufficient to achieve the goals of the assessment", please address who considered it sufficient, and by what means? It should not be necessary for Warrabinga to point out to Niche that predictive models are ever evolving, and that just because the predictive model indicates that an area does not need additional survey, does not mean that additional survey isn't required.

It should also be noted, that unless Niche has surveyed 100% of the **entire** Study Area, then it is always appropriate to resurvey an area, especially when there have been long periods (i.e. 6 to 12 months) between surveys; because Aboriginal sites that were previously unidentified may have become exposed and in suitable environs to be identified.

In regards to paragraph 2 of Section 7.2.2, Warrabinga acknowledges that according to the *Mid-Western Regional Local Environmental Plan, 2012* that there are no Aboriginal heritage items located "specifically within the study area"; however, Warrabinga requires clarity as to whether the LEP identifies Aboriginal sites outside the Study Area, but within close proximity to the Study Area. Please provide articulated information in regards to this.

In regards to Section 8.2, Niche makes general high-level references to topography and landforms within the Study Area; however, no maps are provided in order to support Niche's statements; if Niche intends to discuss the topography and landforms of the Study Area then it is appropriate that a map be included in order for the RAPs to understand. Please include a map of the topography and landforms.

In regards to Section 8.3, Niche does not provide **any** references for the geology. Please provide references. Niche does not provide a geology map for the Study Area; if Niche intends to discuss the geology of the Study Area then it is appropriate that a map be included in order for the RAPs to understand. Please include a map of the geology.

In regards to Section 8.6, Niche is extremely scant on providing information about the ecology/resource exploitation of the Study Area; Warrabinga would expect that based on the number of assessments (both archaeological and ecological) that have been undertaken within the extent of Moolarben Coal, that more information would be available in order for Niche to provide a more detailed assessment of the ecology. Please provide additional information in regards to the ecology/ resource exploitation.

In regards to Section 8.7, Niche makes general high-level references to past land use and disturbance within the Study Area; however, no maps are provided in order to support Niche's statements; if Niche intends to discuss the past land use and

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disturbance of the Study Area then it is appropriate that a map be included in order for the RAPs to understand. Niche references Figure 3 and Figure 4 in Section 8.7; however, neither map is relevant, nor provides any information to support Niche's argument. Please include a map of the land disturbance.

In regards to paragraph 1 on page 29, Niche states that "the Study Area most likely lies within..."; Warrabinga does not agree with the use of ambiguous terminology. Please be clear about where the Study Area lies; Niche has reviewed Pearson (1981) as part of preparing the DRAFT ACHAR, so there is no reason to be ambiguous.

In regards to Section 9.2, Warrabinga requires clarity as to whether Niche undertook a search of the AHIMS database, or whether they relied purely on the Moolarben Coal Aboriginal Heritage Database. As Niche is aware AHIMS is managed by the OEH, and a requirement of the *National Parks and Wildlife Act, 1974* that all recorded Aboriginal sites must be registered with AHIMS; however, there is no legislation that requires Moolarben to register all recorded Aboriginal sites on their Aboriginal Heritage Database, and as such it is not appropriate to solely rely on a search of the Moolarben Coal Aboriginal Heritage Database. Please provide evidence that an AHIMS search was undertaken for the Study Area.

In regards to paragraph 2 on page 30, Niche states that "most of the sites are within 200 m of ephemeral drainage lines, which is probably a result of the sporadic presence of water"; please clarify what Niche means by ephemeral. Warrabinga understands ephemeral to mean 1st and/or 2nd order of streams, as identified under the Strahler system of stream orders, and/or seasonal watercourses. Please clarify what Niche means.

Can Niche clarify what they by "most of the sites are within 200 m of ephemeral drainage lines", does this mean that the majority of identified Aboriginal sites are within 200m. Please clarify whether this statement is limited to the Aboriginal sites present within the Study Area, or within the entire Moolarben Coal complex. Please provide a percentage of Aboriginal sites within 200m of ephemeral drainage lines.

In regards to the last paragraph of Section 9.3, Niche states that the predictive model proposed by Pearson has been revised and refined; however, Niche does not provide expand and/or provide details on how the predictive model has been revised and refined. It should be pointed out that Warrabinga does not have the appropriate background information to understand what parts of Pearson's predictive model have been revised. Please clarify whether the results from the current assessment are compared against the revised predictive model.

WARRABINGA

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Please clarify whether the revision of Pearson's predictive model differs from the predictive model proposed by Kuskie? Please provide details of the data used to support the revision of Pearson's model?

On page 41, Niche provides a high-level discussion of the previous assessments within Moolarben; however no details are provided in regards to how the investigation areas discussed relate to the Study Area. Please provide a map detailing the extent of the previous investigation areas within Moolarben in relation to the Study Area; an understanding of how each investigation area relates spatially to one another will build context.

In regards to the landscape photographs, no details are provided in regards to direction that the photograph was taken. Please detail the direction of the photographs provided in the DRAFT ACHAR.

The measuring tapes used in Plates 4, 5, 8, 12, 14, 16, 18 and 20 do not provide any indication of the length or distance that is being measured or shown in the photograph. This being the case, measurements should be provided. The use of a tape measure in these photos is pointless, a range pole or a mini rod would be far more appropriate. The increments marked on the measuring tape are not visible and cannot be read. We would expect going forward in the future, a range pole or a mini rod would be used to reduce this issue.

In regards to Plate 9, Warrabinga has several of issues with the label of this particular plate:

1. Does not state whether the artefact was recorded at one of the 10 Aboriginal sites within the Study Area;
2. Example of detailed-photo of located archaeological object. This suggests that Warrabinga, as an Aboriginal organisation, is unable to identify an artefact; and,
3. Insensitive statement.

Warrabinga expects that Niche resolve this issue before redistributing the DRAFT ACHAR.

In regards to S1MC140, Warrabinga requests that Niche provide photographs of all artefacts recorded at S1MC140 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 3 artefacts were identified. Please update.

In regards to S2MC400, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC400 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 2 artefacts were identified. Please update.

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Native Title Claimants Aboriginal Corporation

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Mudgee NSW 2850
Office: 02 4627 8622
Fax: 02 4605 0815



In regards to S2MC401, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC401 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 10 artefacts were identified. Please update.

In regards to S2MC404, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC404 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 11 artefacts were identified. Please update.

In regards to S2MC405, Warrabinga questions whether Niche took photographs of the artefacts identified at the Aboriginal site, considering there is an absence of artefact photographs for S2MC405. Please clarify whether Niche took photographs of the artefacts from S2MC405; this is not an unreasonable request, especially when only 5 artefacts were identified.

In regards to S2MC407, Warrabinga requests that Niche provide photographs of all artefacts recorded at S2MC407 in the DRAFT ACHAR; this is not an unreasonable request, especially when only 2 artefacts were identified. Please update.

In regards to the photographs of the artefacts in the DRAFT ACHAR, Niche has provided no details as to whether the photograph was of the ventral or dorsal surface, and the artefact type. Please update photographs.

Section 12.1 provides information on the survey undertaken as part of the current assessment; however, no information was provided on what the distances between participants was adjusted too when they moved to areas with higher ground visibility. Please provide maps of transects covered.

Paragraph 1 of Section 14.1, mentions that the Study Area was significantly larger, than the proposed disturbance area; please provide details and a map to show what Niche means.

Paragraph 2 of Section 14.2, states that "other sites have the potential to be impacted by indirect impact due to their proximal location to the disturbance boundary"; please clarify what Niche means by this. Please clarify which Aboriginal sites will be indirectly impacted by the works. Please clarify whether indirect impacts are limited to the Aboriginal sites within the Study Area, or will Aboriginal sites outside the Study Area be indirectly impacted. Please provide a map to show the Aboriginal sites that are likely to be indirectly impacted.

All Aboriginal sites that will be directly and/or indirectly impacted by the proposed construction works must be subject to archival/baseline recording, prior to impacts occurring.

The last few points that Warrabinga would like to draw you attention to are as follows:

WARRABINGA

Native Title Claimants Aboriginal Corporation

PO Box 282
Mudgee NSW 2850
Office: 02 4627 8622
Fax: 02 4605 0815



- The NSW DECCW *Aboriginal Cultural Heritage: Standards and guidelines kit* (National Parks and Wildlife Service 1997) is now outdated, please update your documents accordingly.
- Warrabinga would like confirmation on who, in reference to page 57, Section 13.2, concluded that there were no further areas of Aboriginal cultural heritage value identified.
- Under section 15 on page 61, please provide information on how the new sites are addressed in the management plan? Also, please include relevant sections on the management plan.

As all Aboriginal heritage is considered sensitive by Warrabinga, we are of the opinion that two (2) versions of the ACHAR should be prepared: one for public exhibition (if necessary), which has all references to the location of Aboriginal cultural heritage and comments provided by the Aboriginal community redacted, and one version of the report for assessment by the Consent Authority.

Warrabinga is of the opinion that insufficient information has been presented in order for us to provide comment on the proposed development in relation to Aboriginal heritage, as well as the fact that Moolarben Coal has not confirmed the likely nature and extent of the Aboriginal sites present within the Project Area. Once the requested information has been provided in an updated ACHAR, we will be able to provide a comment on the proposed development.

It should be noted that this may not be Warrabinga's last response in regards to the documentation provided to-date by Moolarben Coal; Warrabinga will provide additional responses until such time as we feel that our concerns have been satisfactorily addressed.

Warrabinga would like to remind Moolarben Coal that the DRAFT Aboriginal Cultural Heritage Assessment should not be finalised until **all** comments and concerns raised by the RAPs have been **addressed**.

Warrabinga would like to remind Moolarben Coal that the project should not proceed any further until all comments and concerns raised by the RAPs have been addressed, including previous correspondence that has not yet been addressed.

Should you wish to have a meeting to discuss the issues we have raised please coordinate this with our office via email (info@warrabinga.com.au).

Regards,

WARRABINGA

Native Title Claimants Aboriginal Corporation

PO Box 282

Mudgee NSW 2850

Office: 02 4627 8622

Fax: 02 4605 0815



per *Kento*

Virginia Doig

Director

Subject: FW: Moolarben Coal Complex - Open Cut Optimisation Modification Draft Aboriginal Cultural Heritage Assessment

From: Murong Gialinga [<mailto:muronggialinga@hotmail.com>]
Sent: Wednesday, 14 June 2017 4:35 PM
To: Trent Cini <Trent.Cini@yancoal.com.au>
Subject: Re: Moolarben Coal Complex - Open Cut Optimisation Modification Draft Aboriginal Cultural Heritage Assessment

Good afternoon Trent after discussing this with our community our reply is that our comments are not heard or dealt with Kind Regards Debbie

From: Trent Cini <Trent.Cini@yancoal.com.au>
Sent: Monday, 15 May 2017 2:11 PM
To: muronggialinga@hotmail.com
Subject: Moolarben Coal Complex - Open Cut Optimisation Modification Draft Aboriginal Cultural Heritage Assessment

Larry and Debbie,

Please find attached correspondence from Moolarben Coal Operations Pty Ltd regarding the Moolarben Coal Complex Open Cut Optimisation Modification draft Aboriginal Cultural Heritage Assessment.

Please let me know if you require a hard copy of the attached correspondence.

Regards,

Trent Cini | SENIOR ENVIRONMENT AND COMMUNITY COORDINATOR

Moolarben Coal Operations Pty Ltd

SITE: 4250 Ulan Road, Ulan NSW 2850
POSTAL: Locked Bag 2003 Mudgee NSW 2850 Australia
PHONE: +61 2 6376 1436
FAX: +61 2 6376 1599
MOBILE: 0408 312 269
EMAIL: Trent.Cini@yancoal.com.au
WEBSITE: www.moolarbencoal.com.au



Appendix 4 – Proposed Open Cut Underground Optimisation Modification Methodology

PROPOSED METHODOLOGY FOR THE MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION ABORIGINAL CULTURAL HERITAGE ASSESSMENT

4 January 2017

INTRODUCTION

The Moolarben Coal Complex is located approximately 40 kilometres north of Mudgee in the Western Coalfield of New South Wales (NSW) (Figure 1) in the Mid Western Regional Local Government Area.

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

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

Stage 1 at the Moolarben Coal Complex has been operating for several years and at full development will comprise three open cut mines (OC1, OC2, and OC3), a longwall underground mine (UG4), and mining related infrastructure (including coal processing and transport facilities). Stage 2 at the Moolarben Coal Complex has commenced and at full development will comprise one open cut mine (OC4), two longwall underground mines (UG1 and UG2) and mining related infrastructure (Figure 2).

The management of Aboriginal heritage at the Moolarben Coal Complex is undertaken in accordance with the *Moolarben Coal Complex Heritage Management Plan* (dated December 2015).

Moolarben Coal has identified that an opportunity exists to optimise open cut mining operations, to improve mining efficiencies and increase run-of-mine (ROM) coal production. This will require an Aboriginal Cultural Heritage Assessment to be undertaken in relation to those areas that the Modification applies (Figure 2).

Of relevance to the Aboriginal Cultural Heritage Assessment, the Modification would involve (but is not limited to) the following activities:

- Increase in combined (Stage 1 and Stage 2) open cut ROM coal production.
- Minor increase in disturbance limits at OC2.
- Changes to alignment of the haul road from OC2 to OC3 and the location of the OC3 Mine Infrastructure Area.
- Changes to the pit limits of OC3 and associated out of pit waste dump.
- New internal haul from OC2 to OC4.
- New site access for OC3 via Moolarben Road, and associated widening of the existing Moolarben Road.
- Other minor ancillary infrastructure.

The Modification would require a modification to both the Stage 1 and Stage 2 Moolarben Coal Project Approvals (05-0117 and 08-0135) under Section 75W of the EP&A Act.

Moolarben Coal is seeking to engage with Aboriginal community stakeholders as part of the preparation for lodgement of a modification request under Section 75W of the NSW *Environmental Planning and Assessment Act, 1979*. The Modification request is referred to as the Modification.

The areas of land that the above activities relate to are indicatively shown on Figure 2 (at the back of this document). Of note is that portions of these areas have previously been surveyed for disturbance and the management of Aboriginal heritage in these areas is guided by the approved *Moolarben Coal Complex Heritage Management Plan* (dated December 2015).

An Environmental Assessment would be prepared for the Modification and it is expected to include the following key specialist assessments:

- Aboriginal Cultural Heritage Assessment.
- Biodiversity Assessment.
- Surface Water Assessment.
- Groundwater Assessment.
- Noise Assessment.
- Air Quality Assessment.

The Proposed Methodology for the Aboriginal Cultural Heritage Assessment of the Modification is outlined below. MCO invites Registered Aboriginal Parties (RAPs) to provide comments (either verbally or in writing) on the Proposed Methodology.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Various Aboriginal cultural heritage survey and assessments have previously been undertaken at the Moolarben Coal Complex, including (but not limited to):

- *Moolarben Coal Project Aboriginal Cultural Heritage Assessment Report* (Archaeological Risk Assessment Services Pty Ltd, 2006).
- *Moolarben Coal Project Aboriginal Cultural Heritage Assessment Report Stage 2* (Archaeological Risk Assessment Services Pty Ltd, 2008).
- *Moolarben Coal Project – Stage 1 Optimisation Modification, Near Ulan, Central Tablelands of New South Wales: Aboriginal Cultural Heritage Assessment* (South East Archaeology, 2013).
- *Moolarben Preferred Project Report: Aboriginal Archaeological and Cultural Heritage Addendum* (AECOM, 2011).
- *Moolarben Coal Mine OC4 South-West Modification Aboriginal Cultural Heritage Assessment* (Niche Environment and Heritage, 2014a).
- *Moolarben Coal Complex UG1 Optimisation Modification Aboriginal Cultural Heritage Assessment* (Niche Environment and Heritage, 2014b).
- Various campaigns of pre-clearance salvage.
- Various campaigns of test pit investigations and monitoring.
- Various campaigns of additional survey work.

Based on the results of these previous investigations, Figure 2 presents the locations of Aboriginal heritage sites within and in immediate proximity to the Study Area. Only one site is located within the indicative Study Area for the Modification, namely site S1MC140 a previously recorded artefact scatter. Site S1MC140 is labelled on Figure 2.

PROPOSED METHODOLOGY

The Proposed Methodology for the Modification Aboriginal Cultural Heritage Assessment is as follows:

- Provision of existing information on Aboriginal heritage sites within the Study Area and surrounds.
- Representative field survey of the Study Area (in areas where sufficient survey coverage has not already been obtained).
- Conduct an archaeological assessment (including an archaeological significance assessment) of any known or potential Aboriginal heritage sites identified within the Study Area (which may include the use of existing information).
- A request by MCO to RAPs for comments regarding the cultural significance of Aboriginal heritage sites and/or areas within the Study Area.
- In consultation with the RAPs, identification of recommended management and mitigation measures for Aboriginal heritage sites/areas within the Study Area.
- Provide a copy of the draft Aboriginal Cultural Heritage Assessment to the RAPs for their review and feedback.
- Documentation of feedback received as part of the cultural assessment from RAPs for presentation in the final Aboriginal Cultural Heritage Assessment report (subject to the sensitivity of the information provided).

In accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW Department of Environment, Climate Change and Water, 2010), MCO requests that RAPs provide, where relevant, during the conduct of the Aboriginal Cultural Heritage Assessment, cultural information regarding:

- whether there are any Aboriginal sites/objects of cultural value to Aboriginal people in the Study Area or surrounds; and
- whether there are any places of cultural value to Aboriginal people in the Study Area or surrounds.

This may include places of social, spiritual and cultural value, historic places with cultural significance, and potential places/areas of historic, social, spiritual and/or cultural significance.

SENSITIVE CULTURAL INFORMATION – MANAGEMENT PROTOCOL

In the event that a RAP has sensitive or restricted public access information, it is proposed that MCO would manage this information (if provided by the Aboriginal community) in accordance with a sensitive cultural information management protocol.

It is anticipated that the protocol would include making note of and managing the material in accordance with the following key limitations/requirements as advised by the relevant RAP at the time of the information being provided:

- any restrictions on access to the material;
- any restrictions on communication of the material;
- any restrictions on the location/storage of the material;
- any cultural recommendations on handling the material;
- any contextual information;
- any names and contact details of persons authorised by the relevant Aboriginal party to make decisions concerning the Aboriginal material and the degree of authorisation;
- any details of any consent given in accordance with customary law;
- the level of confidentiality to be accorded to the material; and
- any access and use by the RAPs, of the cultural information in the material.

All RAPs should be aware of the mandatory NSW Office of Environment and Heritage requirement that all feedback provided must be documented in the final Aboriginal Cultural Heritage Assessment report, including copies of any submissions received and the proponents response to the issues raised.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

Following consultation on the Proposed Methodology and the undertaking of any required field components, a draft Aboriginal Cultural Heritage Assessment report will be prepared. The draft Aboriginal Cultural Heritage Assessment report will be provided to RAPs for comment and will include:

- Details of the sites/objects and/or places and their precise locations within the Study Area and an assessment of potential impacts from the Modification.
- Detailed records of the consultation conducted with RAPs and how any comments received throughout the assessment process were considered.
- Management and mitigation recommendations drawing on information provided by RAPs and the results of the Aboriginal Cultural Heritage Assessment.

CRITICAL TIMELINES

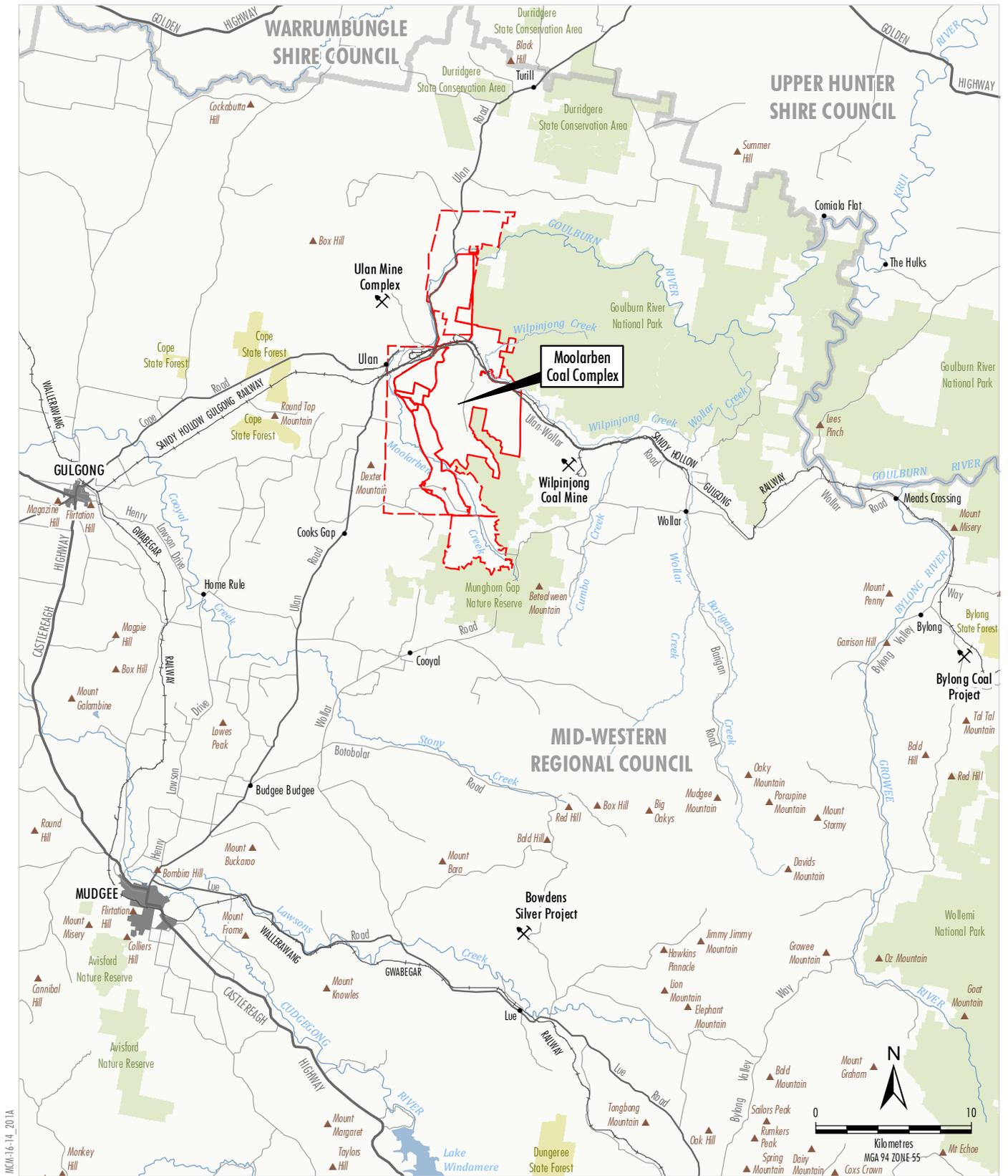
Critical timelines for the Modification Aboriginal Cultural Heritage Assessment are outlined below:

1. Collation of cultural significant information – ongoing throughout process until the end of the draft Aboriginal Cultural Heritage Assessment review period.
2. Provision of comments on the Proposed Methodology to Moolarben Coal – February 2017.
3. Field survey –February/March 2017.
4. Provision of a draft Aboriginal Cultural Heritage Assessment (including proposed management and mitigation measures) to RAPs for review and comment – February/March 2017.
5. Provision of comments from RAPs on draft Aboriginal Cultural Heritage Assessment to MCO – March/April 2017.
6. Finalise Aboriginal Cultural Heritage Assessment in consideration of comments received – April/May 2017.

REFERENCES

- Aboriginal Risk Assessment Services Pty Ltd (2006) *Moolarben Coal Project Aboriginal Cultural Heritage Assessment Report*. Report prepared for Moolarben Coal Mines Pty Limited.
- Aboriginal Risk Assessment Services Pty Ltd (2008) *Moolarben Coal Project Aboriginal Cultural Heritage Assessment Report Stage 2*. Report prepared for Moolarben Coal Mines Pty Limited.
- AECOM (2011) *Moolarben Preferred Project Report: Aboriginal Archaeological and Cultural Heritage Addendum*. Report prepared for Hansen Bailey.
- Department of Environment, Climate Change and Water (2010) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.
- Niche Environment and Heritage (2014a) *Moolarben Coal Mine OC4 South-West Modification Aboriginal Cultural Heritage Assessment*.
- Niche Environment and Heritage (2014b) *Moolarben Coal Complex UG1 Optimisation Modification Aboriginal Cultural Heritage Assessment*.
- South East Archaeology (2013) *Moolarben Coal Project – State 1 Optimisation Modification, Near Ulan, Central Tablelands of New South Wales: Aboriginal Cultural Heritage Assessment*. Report prepared for Moolarben Coal Pty Limited.

FIGURES



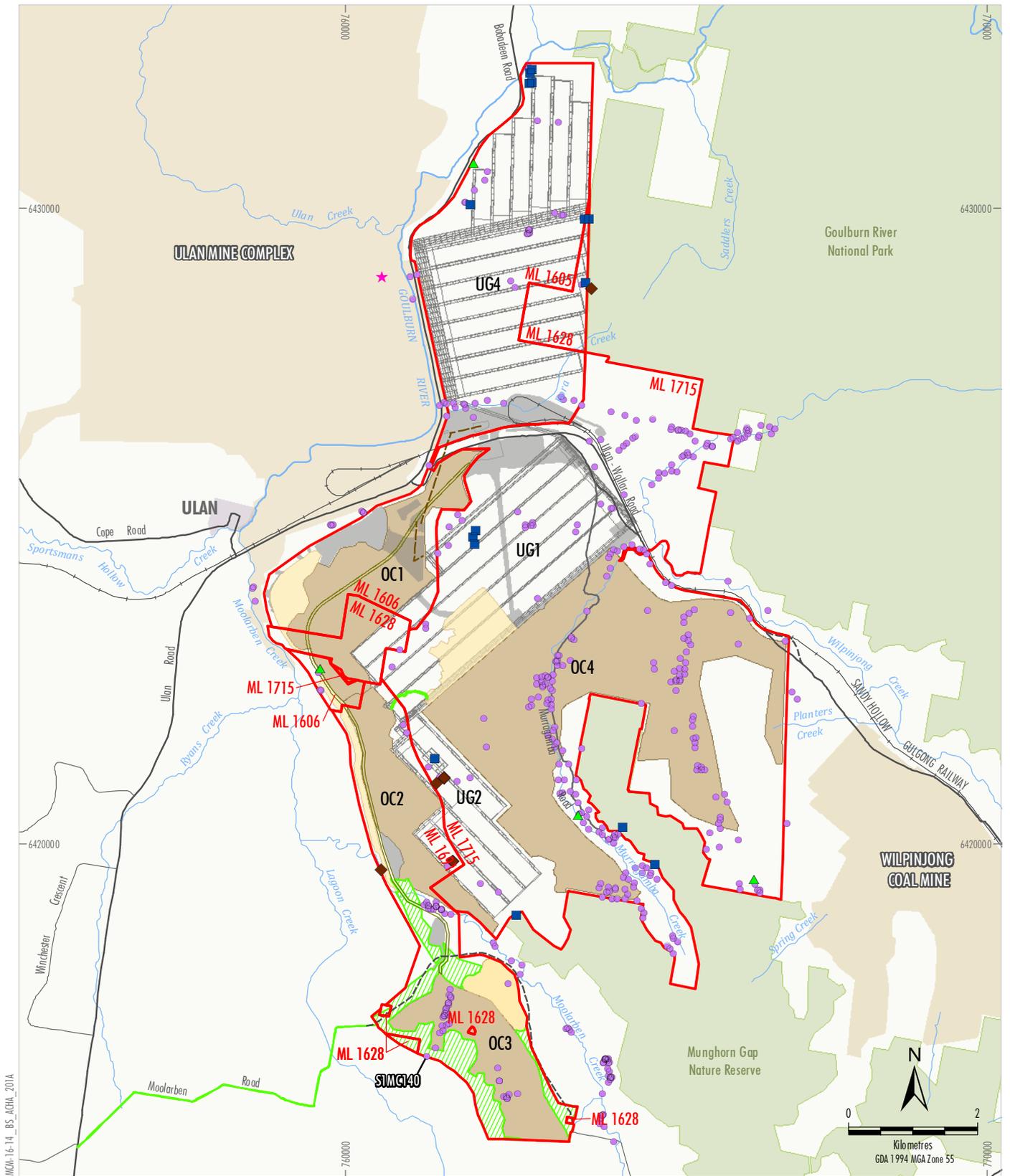
AMCA-16-14_201A

- LEGEND**
- Mining Lease Boundary
 - Exploration Licence Boundary
 - Local Government Boundary
 - NSW State Forest
 - NSW National Parks and Wildlife Service
 - ⚡ Mining Operation

Source: NSW Land & Property Information (2015);
 NSW Dept of Industry (2016);
 Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
 Regional Location

Figure 1



MOM-16-14_BS_ACHA_201A

- LEGEND**
- NSW National Parks and Wildlife Service
 - Other Mining Operations
 - Mining Lease Boundary
 - Approved Road Realignment (not yet constructed)
 - Approved Haul Road
 - Existing/Approved Development
 - Open Cut Mining Area
 - Out-of-pit Emplacement
 - Surface Infrastructure Area
 - Underground Longwall Layout
 - Open Cut Optimisation Modification
 - Indicative Study Area

- Aboriginal Heritage Sites**
- Open Artefact Site
 - Grinding Groove Site
 - Potential Archaeological Deposit (PAD)
 - Rock Shelter Site
 - Scarred Tree with Artefact Scatter

Source: MCO (June 2015); NSW Dept of Industry (2016); Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
 Indicative Study Area

Figure 2

ADDENDUM TO THE PROPOSED METHODOLOGY FOR THE MOOLARBEN COAL COMPLEX OPEN CUT OPTIMISATION MODIFICATION ABORIGINAL CULTURAL HERITAGE ASSESSMENT

10 March 2017

Since finalisation of the *Proposed Methodology for the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment* (dated 4 January 2017), and following future detailed mine planning, Moolarben Coal Operations Pty Ltd has identified an additional area being investigated for new coal conveying infrastructure.

As a result, the study area and survey area for the Moolarben Coal Complex Open Cut Optimisation Modification (the Modification) have been slightly modified to include this additional area.

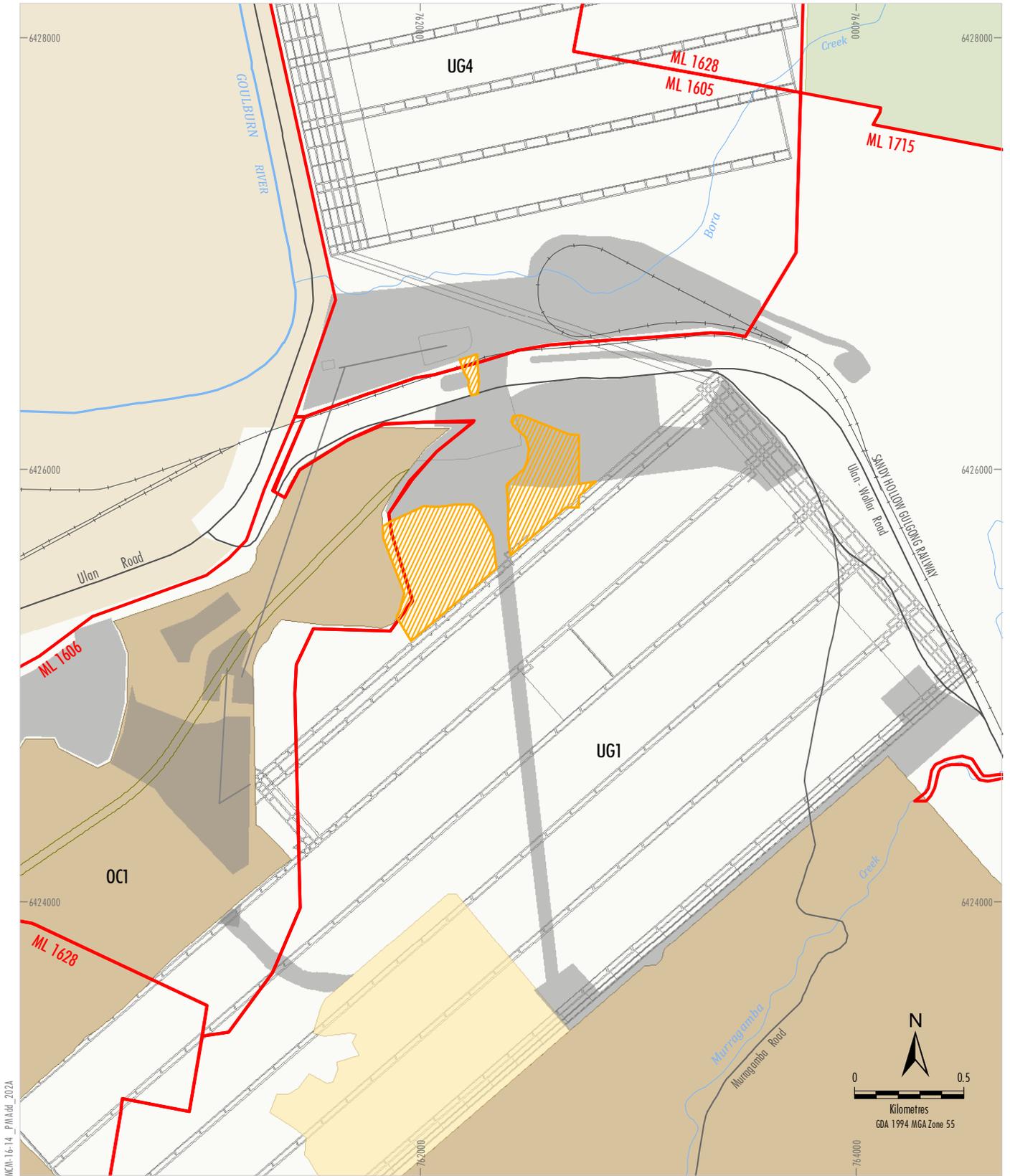
The representative field surveys for the Modification, which were described in the original *Proposed Methodology for the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment* (dated 4 January 2017), would therefore be augmented to also focus on the indicative survey area(s) presented in Figure 1.

There are no other proposed amendments to the *Proposed Methodology for the Moolarben Coal Complex Open Cut Optimisation Modification Aboriginal Cultural Heritage Assessment* (dated 4 January 2017), including no change to:

- Preliminary predictive model.
- Proposed assessment methodology.
- Sensitive cultural information management protocol.
- Content of the Aboriginal Cultural Heritage Assessment.
- Critical timelines for the Aboriginal Cultural Heritage Assessment.

Attachments:

Figure 1 – Moolarben Coal Complex Open Cut Optimisation Modification Revised Indicative Survey Area



MCM-16-14_PMAAdd_202A

- LEGEND**
- NSW National Parks and Wildlife Service
 - Other Mining Operations
 - Mining Lease Boundary
 - Approved Road Realignment (not yet constructed)
 - Approved Haul Road
 - Existing/Approved Development
 - Open Cut Mining Area
 - Out-of-pit Emplacement
 - Surface Infrastructure Area
 - Underground Longwall Layout
 - Indicative Additional Study Area

Source: MCO (2017); NSW Dept of Industry (2016);
Office of Environment and Heritage NSW (2016)


MOOLARBEN COAL COMPLEX
 Indicative Additional Study Area

Figure 1

Appendix 5 – National Parks and Wildlife Act Registers (AHIMS)

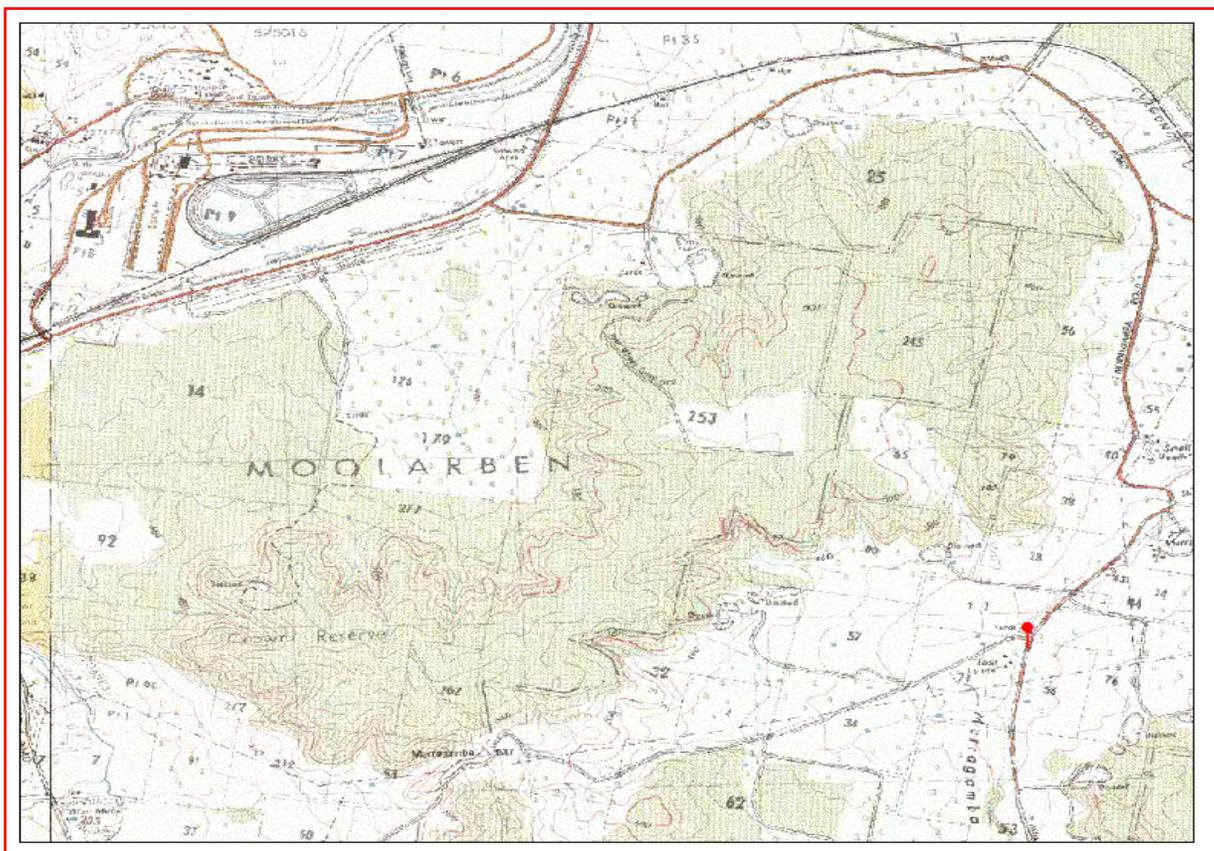
Niche Environment and Heritage
PO Box 3104
Umina Beach New South Wales 2257
Attention: Balazs Hansel
Email: bhansel@niche-eh.com

Date: 15 May 2017

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters, conducted by Balazs Hansel on 15 May 2017.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

92	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-3027	S2MC 347	GDA	55	762025	6424710	Closed site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact									Recorders Niche Environment and Heritage,Ms.Clare Anderson
36-3-3028	S2MC 348	GDA	55	762027	6424745	Closed site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Recorders Niche Environment and Heritage,Ms.Clare Anderson
36-3-3029	S2MC 349	GDA	55	761992	6424821	Closed site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Recorders Niche Environment and Heritage,Ms.Clare Anderson
36-3-3030	S2MC 350	GDA	55	762036	6424934	Closed site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Recorders Niche Environment and Heritage,Ms.Clare Anderson
36-3-3031	S2MC 351	GDA	55	762001	6424823	Closed site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact									Recorders Niche Environment and Heritage,Ms.Clare Anderson
36-3-0016	Ulan Murragamba	AGD	55	760796	6421957	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1299
	Contact									Recorders Fred McCarthy
36-3-0845	S1MC40	AGD	55	760441	6421958	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0847	S1MC42	AGD	55	760408	6421838	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0848	S1MC43	AGD	55	760558	6421874	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0850	S1MC45	AGD	55	760582	6421721	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0851	S1MC46	AGD	55	760547	6421941	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0852	S1MC47	AGD	55	760637	6422033	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0853	S1MC48	AGD	55	760569	6421916	Open site	Destroyed	Artefact : 1		
	Contact									Recorders Mr.Peter Kuskie,Mr.Giles Hamm
36-3-0854	S1MC49	AGD	55	760543	6422069	Open site	Destroyed	Artefact : 1		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Peter Kuskie,Mr.Giles Hamm					Permits		
36-3-0856	S1MC51	AGD	55	760434	6422195	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	Mr.Peter Kuskie,Mr.Giles Hamm					Permits		
36-3-0857	S1MC52	AGD	55	760422	6422175	Open site	Destroyed	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0859	S1MC54	AGD	55	760966	6421764	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0860	S1MC55	AGD	55	760964	6421902	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0861	S1MC56	AGD	55	760936	6421882	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0862	S1MC57	AGD	55	760906	6421882	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-1041	S1MC 225	AGD	55	761752	6425887	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-1042	S1MC226	AGD	55	761726	6426232	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-1043	S1MC227	AGD	55	761825	6426206	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-1059	S1MC243	AGD	55	762310	6424801	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0798	S1MC1	AGD	55	760670	6424444	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0799	S1MC2	AGD	55	760840	6424339	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0800	S1MC3	AGD	55	760846	6424309	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0801	S1MC4	AGD	55	760866	6424307	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0802	S1MC5	AGD	55	760867	6424306	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0803	S1MC6	AGD	55	760890	6424301	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-0804	S1MC7	AGD	55	760867	6424294	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0805	S1MC8	AGD	55	760548	6424002	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0806	S1MC9	AGD	55	760508	6424018	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0807	S1MC10	AGD	55	760645	6424004	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0808	S1MC11	AGD	55	760924	6423968	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0809	S1MC12	AGD	55	760933	6423948	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0810	S1MC13	AGD	55	761054	6423910	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0811	S1MC14	AGD	55	761050	6423907	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0812	S1MC15	AGD	55	761252	6425269	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0813	S1MC16	AGD	55	761168	6425107	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0814	S1MC17	AGD	55	760997	6425271	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0821	S1MC24	AGD	55	760514	6425250	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0822	S1MC25	AGD	55	761802	6425783	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0823	S1MC26	AGD	55	761766	6425183	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0824	S1MC27	AGD	55	761828	6425100	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0825	S1MC28	AGD	55	761627	6425002	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0826	S1MC29	AGD	55	761619	6424707	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-0827	S1MC30	AGD	55	761135	6424559	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0828	S1MC31	AGD	55	761132	6424567	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0829	S1MC32	AGD	55	761124	6424585	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0830	S1MC33	AGD	55	761125	6424584	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0831	S1MC34	AGD	55	761128	6424583	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0832	S1MC35	AGD	55	761125	6424584	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0833	S1MC36	AGD	55	761255	6424616	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0834	S1MC37	AGD	55	761256	6424618	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0835	S1MC38	AGD	55	761279	6424617	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0836	S1MC39	AGD	55	761280	6424620	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-0837	PAD 1 Moolarben Coal	AGD	55	761452	6424581	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0838	PAD 2 Moolarben Coal	AGD	55	761265	6423464	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0839	PAD 3 Moolarben Coal	AGD	55	761265	6423392	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-1143	S1MC306	GDA	55	762426	6426370	Open site	Valid	Artefact : 1		101600
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	
36-3-1145	S1MC308	GDA	55	761997	6421905	Open site	Valid	Artefact : 1		101600
	Contact	Recorders	Mr.Giles Hamm					Permits	3439	

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-2602	S2MC262	GDA	55	762104	6421992	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits		
36-3-2653	S2MC270	GDA	55	762243	6423241	Open site	Valid	Artefact : 1		
	Contact	Recorders	South East Archaeology					Permits		
36-3-0691	CE-15-IF	AGD	55	761205	6425777	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Lance Syme					Permits	2531	
36-3-0708	CE-32-IF	AGD	55	760509	6425477	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Lance Syme					Permits	2531	
36-3-0709	CE-33-IF	AGD	55	760810	6425593	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Lance Syme					Permits	2531	
36-3-1378	S2MC231	GDA	55	762203	6423681	Open site	Valid	Habitation Structure : -, Artefact : 31		101603
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-1208	S2MC61	GDA	55	762172	6421977	Open site	Valid	Artefact : 51		101603
	Contact	Recorders	South East Archaeology,Mr.Giles Hamm					Permits		
36-3-1209	S2MC62	GDA	55	762104	6421992	Open site	Valid	Artefact : 67		101603
	Contact	Recorders	South East Archaeology,Mr.Giles Hamm					Permits		
36-3-1478	Ulan ID#85 (Identifier 85)	GDA	55	762012	6426721	Open site	Valid	Artefact : -		102138
	Contact	Recorders	Ms.Laila Haglund					Permits		
36-3-1480	Ulan ID87 (Identifier 87)	GDA	55	761593	6426739	Open site	Valid	Artefact : -		102138
	Contact	Recorders	Ms.Laila Haglund					Permits		
36-3-3123	S1MC 426	GDA	55	761559	6426641	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3049	S2MC341	GDA	55	761325	6422151	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3050	S2MC338	GDA	55	761398	6422083	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3051	S2MC339	GDA	55	761440	6421928	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3052	S2MC335	GDA	55	762104	6422493	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3053	S2MC 334	GDA	55	762218	6423210	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		
36-3-3054	S2MC 332	GDA	55	761520	6422280	Open site	Valid	Artefact : -		
	Contact	Recorders	Niche Environment and Heritage,Ms.Caitlin Marsh					Permits		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
36-3-3056	S2MC 330	GDA	55	761747	6422263	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3057	S2MC 329	GDA	55	762051	6422445	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3060	S2MC322	GDA	55	762358	6423467	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3062	S2MC326	GDA	55	762273	6422328	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3063	S2MC 328	GDA	55	762002	6422319	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3064	S2MC337	GDA	55	761398	6422159	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3066	S2MC311	GDA	55	762405	6422925	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3068	S2MC342- S2MC333	GDA	55	761864	6422414	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3133	S2MC346	GDA	55	761262	6422263	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3134	S2MC345	GDA	55	761254	6422314	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3135	S2MC344	GDA	55	760969	6422406	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3136	S2MC343	GDA	55	761698	6422385	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>
36-3-3143	MUG1-Mod 3	GDA	55	762078	6423457	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Niche Environment and Heritage,Ms.Caitlin Marsh								<u>Permits</u>

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760702 - 762313, Northings : 6422090 - 6426560 with a Buffer of 200 meters. Additional Info : confirm site locations. Number of Aboriginal sites and Aboriginal objects found is 92

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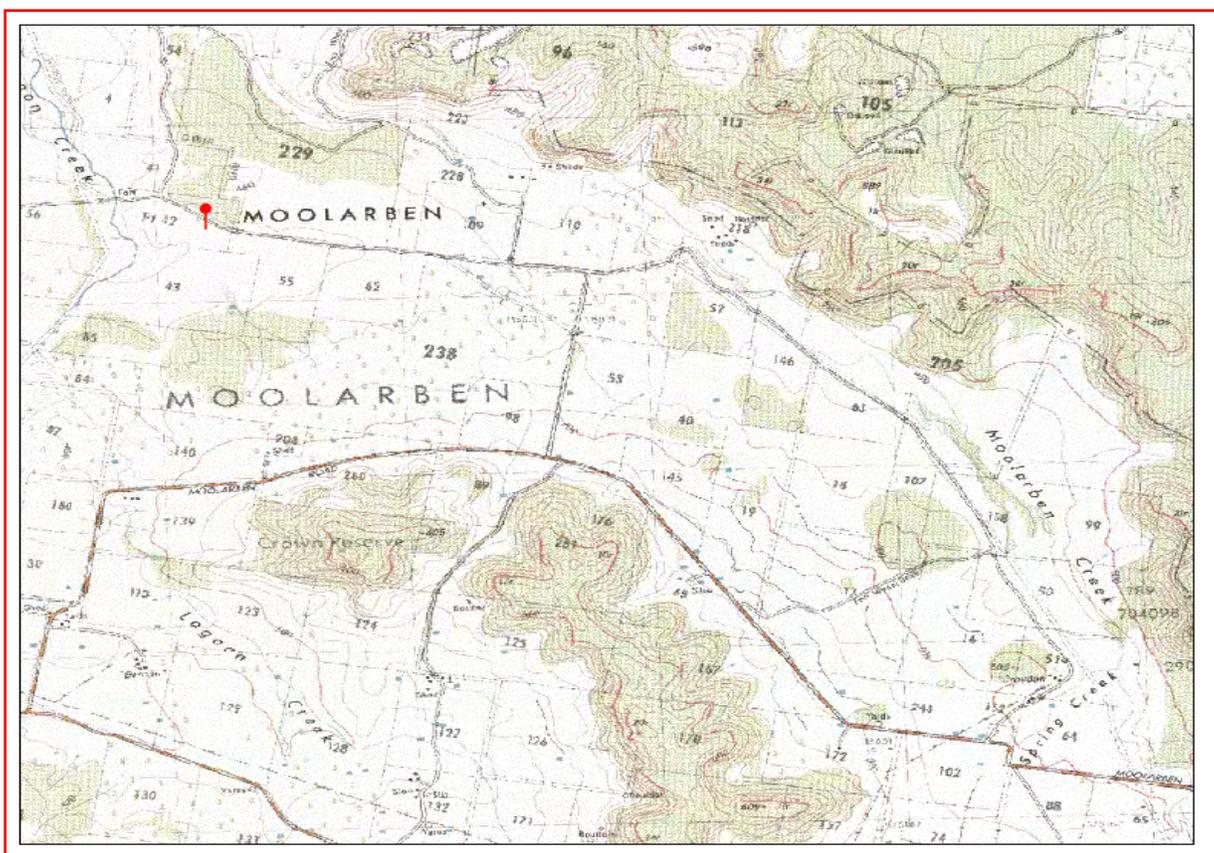
Niche Environment and Heritage
PO Box 3104
Umina Beach New South Wales 2257
Attention: Balazs Hansel
Email: bhansel@niche-eh.com

Date: 15 May 2017

Dear Sir or Madam:

AHIMS Web Service search for the following area at Datum :GDA, Zone : 55, Eastings : 760237 - 763634, Northings : 6415324 - 6419464 with a Buffer of 200 meters, conducted by Balazs Hansel on 15 May 2017.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

75	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-0027	Cooks Gap;	AGD	55	760387	6415931	Open site	Valid	Grinding Groove :-	Axe Grinding Groove	
	<u>Contact</u>									
36-3-0015	Cook Gap;	AGD	55	760387	6415931	Open site	Valid	Grinding Groove :-	Axe Grinding Groove	1299
	<u>Contact</u>									
36-3-0863	S1MC58	AGD	55	761241	6419040	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0864	S1MC59	AGD	55	761274	6419089	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0865	S1MC60	AGD	55	761555	6418906	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0886	S1MC78	AGD	55	761628	6417183	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0887	S1MC79	AGD	55	761592	6417154	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0888	S1MC80	AGD	55	761535	6417281	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0889	S1MC81	AGD	55	761547	6417308	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0890	S1MC82	AGD	55	761563	6417309	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0891	S1MC83	AGD	55	761557	6417330	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0892	S1MC84	AGD	55	761580	6417360	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0893	S1MC85	AGD	55	761613	6417323	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0894	S1MC86	AGD	55	761612	6417508	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0895	S1MC87	AGD	55	761615	6417500	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0896	S1MC88	AGD	55	761608	6417465	Open site	Valid	Artefact : 1		
	<u>Contact</u>									
36-3-0897	S1MC89	AGD	55	761591	6417421	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760237 - 763634, Northings : 6415324 - 6419464 with a Buffer of 200 meters. Additional Info : confirm site location. Number of Aboriginal sites and Aboriginal objects found is 75

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0898	S1MC90	AGD	55	761579	6417403	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0899	S1MC91	AGD	55	761631	6417624	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0900	S1MC92	AGD	55	761659	6417596	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0901	S1MC93	AGD	55	761659	6417588	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0902	S1MC94	AGD	55	761638	6417728	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0903	S1MC95	AGD	55	762537	6415994	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0904	S1MC96	AGD	55	762530	6416009	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0905	S1MC97	AGD	55	762523	6416029	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0906	S1MC98	AGD	55	762475	6416038	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0907	S1MC99	AGD	55	762553	6416059	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0908	S1MC100	AGD	55	762414	6416282	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0909	S1MC101	AGD	55	762415	6416283	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0910	S1MC102	AGD	55	762379	6416477	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0911	S1MC103a	AGD	55	762693	6416081	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0866	S1MC61	AGD	55	761650	6418891	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0867	S1MC62	AGD	55	761503	6418958	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0868	S1MC63	AGD	55	761502	6418979	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760237 - 763634, Northings : 6415324 - 6419464 with a Buffer of 200 meters. Additional Info : confirm site location. Number of Aboriginal sites and Aboriginal objects found is 75

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0869	S1MC64	AGD	55	761502	6418989	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0870	S1MC65	AGD	55	761382	6418984	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0871	S1MC66	AGD	55	761345	6418974	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0872	S1MC67	AGD	55	761298	6418996	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0873	S1MC68	AGD	55	761300	6419026	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0874	S1MC69	AGD	55	761300	6419031	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0875	S1MC70	AGD	55	761427	6419023	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0876	S1MC71	AGD	55	761428	6419024	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0877	S1MC72	AGD	55	761421	6419023	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0878	S1MC73	AGD	55	761429	6419089	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0939	S1MC130	AGD	55	762600	6418163	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0940	S1MC131	AGD	55	762763	6418104	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0941	S1MC132	AGD	55	763451	6417107	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0942	S1MC133	AGD	55	763477	6417119	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0943	S1MC134	AGD	55	763507	6417086	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0944	S1MC135	AGD	55	763535	6417042	Open site	Valid	Artefact : 1		
	Contact	Recorders		Mr.Giles Hamm				Permits		
36-3-0945	S1MC136	AGD	55	762737	6417948	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 15/05/2017 for Balazs Hansel for the following area at Datum :GDA, Zone : 55, Eastings : 760237 - 763634, Northings : 6415324 - 6419464 with a Buffer of 200 meters. Additional Info : confirm site location. Number of Aboriginal sites and Aboriginal objects found is 75

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0946	S1MC137	AGD	55	762338	6418398	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0947	S1MC138	AGD	55	762315	6418451	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0948	S1MC139	AGD	55	762549	6417807	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0949	S1MC140	AGD	55	761278	6416654	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0950	S1MC141	AGD	55	761409	6416796	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0951	S1MC142	AGD	55	761479	6417036	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0952	S1MC143	AGD	55	761535	6417066	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-0953	S1MC144	AGD	55	761519	6417142	Open site	Valid	Artefact : 1		
	Contact	Recorders	Mr.Giles Hamm					Permits		
36-3-2614	S1MC332	GDA	55	762299	6418767	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders	South East Archaeology					Permits		
36-3-2615	S1MC333	GDA	55	762086	6418954	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders	South East Archaeology					Permits		
36-3-2616	S1MC334	GDA	55	761975	6418915	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders	South East Archaeology					Permits		
36-3-2617	S1MC335	GDA	55	761874	6419277	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders	South East Archaeology					Permits		
36-3-2618	S1MC336	GDA	55	761725	6418961	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact	Recorders	South East Archaeology					Permits		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
36-3-2619	S1MC337	GDA	55	761575	6419390	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact									Recorders South East Archaeology Permits
36-3-2620	S1MC338	GDA	55	761564	6419379	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact									Recorders South East Archaeology Permits
36-3-2621	S1MC339	GDA	55	761544	6419370	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact									Recorders South East Archaeology Permits
36-3-2622	S1MC340	GDA	55	761472	6419251	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact									Recorders South East Archaeology Permits
36-3-2983	S1MC384	GDA	55	760788	6419355	Open site	Valid	Artefact :-		
	Contact									Recorders Mr.Corey O'Driscoll Permits
36-3-2985	S1MC386	GDA	55	760565	6419600	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	Contact									Recorders Mr.Peter Kuskie Permits
36-3-3137	S1MC419	GDA	55	763297	6417006	Open site	Valid	Artefact :-		
	Contact									Recorders Niche Environment and Heritage,Ms.Caitlin Marsh Permits
36-3-3138	S1MC418	GDA	55	763075	6417264	Open site	Valid	Artefact :-		
	Contact									Recorders Niche Environment and Heritage,Ms.Caitlin Marsh Permits
36-3-3139	S1MC417	GDA	55	763087	6417264	Open site	Valid	Artefact :-		
	Contact									Recorders Niche Environment and Heritage,Ms.Caitlin Marsh Permits
36-3-3140	S1MC416	GDA	55	763087	6417293	Open site	Valid	Artefact :-		
	Contact									Recorders Niche Environment and Heritage,Ms.Caitlin Marsh Permits
36-3-3141	S1MC414	GDA	55	762715	6417560	Open site	Valid	Artefact :-		
	Contact									Recorders Niche Environment and Heritage,Ms.Caitlin Marsh Permits

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Niche Environment and Heritage

A specialist environmental and heritage consultancy.

Head Office

Niche Environment and Heritage

PO Box 2443 North Parramatta NSW 1750

Email: info@niche-eh.com

All mail correspondence should be through our Head Office