GLENCORE

Glendell Mine Modification 4

RESPONSE TO SUBMISSIONS

May 2019

Appendix 1
Glendell Modification 4 Aboriginal Cultural Heritage Assessment Report 2019

A view of the study area to the west of Glendell's light vehicle access road.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

GLENDELL MINE MODIFICATION 4

MOUNT OWEN COMPLEX

MAY 2019

Report Prepared by

OzArk Environment & Heritage

for Umwelt Environmental & Social Consultants

on behalf of

Mt Owen Pty Ltd

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ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT COVER SHEET

Report Title	Aboriginal Cultural Heritage Assessment Report: Glendell Mine Modification 4. Mt Owen Complex
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Date of Report	May 2019
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Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

OzArk Environmental & Heritage Management (OzArk) has been engaged by Umwelt Environmental & Social Consultants (Umwelt), on behalf of Mt Owen Pty Limited (Mount Owen) to complete an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed Glendell Mine Modification 4 (the Proposed Modification).

OzArk was first engaged in mid-2017 to undertake the assessment of the DA boundary modification as it was then understood. Following the field assessment on Wednesday 23 August 2017, the project was put on hold as Mount Owen evaluated the mine plan in relation to the Glendell Continued Operations Project (GCOP). In mid-2018 the assessment associated with the Proposed Modification was re-initiated. In this time the proposed disturbance area was reduced in size from that assessed in August 2017. All portions of the Proposed Disturbance Area were assessed in 2017. In addition, in April and May 2018 assessment for the GCOP included all the Proposed Disturbance Area. As a result, the study area was again assessed by OzArk archaeologists and members of the Aboriginal community in 2018.

In November 2018 the OzArk report, *Aboriginal Due Diligence Assessment Report: Glendell Mine Modification 4. Mt Owen Complex*, was completed and was included in a *Statement of Environmental Effects* (SEE) prepared by Umwelt. During the exhibition period for the SEE, the OzArk report was reviewed by the Office of Environment and Heritage (OEH). In their response, OEH noted that a Due Diligence assessment was deemed inadequate for a State Significant Development Modification and that the cultural values of the study area were not completely understood. In addition, three submissions from the public were received that noted certain inadequacies in the original report.

The Due Diligence process was followed for the original assessment as the Proposed Modification study area is within the existing boundary for the *Mount Owen Complex Aboriginal Cultural Heritage Management Plan* (ACHMP). As stipulated in the ACHMP, there is on-going consultation with the Aboriginal community, both through the mechanism of the Aboriginal Cultural Heritage Working Group (ACHMP Section 1.4.3), and through the quarterly site condition monitoring which includes a roster of representatives from the Aboriginal community (ACHMP Section 5.7). In addition, the study area had been previously assessed in its entirety in Umwelt 2004, and partially in OzArk 2014, and had been walked over during the quarterly monitoring program. It was therefore felt that an assessment methodology following the Due Diligence guidelines was justifiable in this instance.

However, while the submissions on the earlier version of this report will be detailed in the ACHAR, the OEH review and the public submissions prompted Mount Owen to initiate the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* so that the cultural values of the

study area can be known and to incorporate this information, as well as responses to other public submissions, into this ACHAR.

This ACHAR will use the original 2017 survey, as well as the 2018 survey for the GCOP, as the basis for the current assessment and no additional fieldwork has been undertaken to inform this ACHAR.

Because of the 2017 survey, four Aboriginal sites, Swamp Creek IF-1 to Swamp Creek IF-4 (37-3-1490 to 37-3-1493), were recorded within the study area assessed as part of the 2017 survey, however, these sites are located outside of the Proposed Disturbance Area now associated with the Proposed Modification.

The assumption in this report is that all landforms within the study area are liable to be impacted should the Proposed Modification be approved. While all sites recorded as part of the visual inspection of the study area in August 2017 are outside of the Proposed Disturbance Area, three sites recorded during the 2018 survey associated with GCOP are either wholly within the study area or partially within the study area (Swamp Creek OS1: 37-3-1499; Glendell North OS28: 37-3-1508; Glendell North OS31: 37-3-1545). It is noted that Swamp Creek OS1 includes three of the isolated find sites recorded in the 2017 survey (Swamp Creek IF-2: 37-3-1492; Swamp Creek IF-3: 37-3-1493; Swamp Creek IF-4: 37-3-1490).

As such, three low density artefact scatter sites will be impacted by the Proposed Modification (Swamp Creek OS1: 37-3-1499; Glendell North OS28: 37-3-1508; Glendell North OS31: 37-3-1545). However, only one site, Glendell North OS28: 37-3-1508, will be totally impacted, while the remaining two sites will only have a small portion of their site extent impacted by the Proposed Modification. As all sites liable to be harmed by the Proposed Modification are in highly disturbed contexts and have a low scientific value, an appropriate mitigation would be to undertake a recording and collection of all low-density surface artefacts within the Proposed Disturbance Area.

The following recommendations are made regarding the Aboriginal cultural heritage values of the study area:

1) Should the Proposed Modification be approved, the Mount Owen Complex ACHMP should be updated to include the management recommendations contained in this report. To update the ACHMP, consultation with the Aboriginal community is required as set out in Section 8.1 of the Mount Owen Complex ACHMP.
2) The updated ACHMP should stipulate that the recording and collection of surface artefacts occur at three sites: Swamp Creek OS1 (37-3-1499); Glendell North OS28 (37-3-1508); and Glendell North OS31 (37-3-1545). The collection of surface artefacts should follow the procedure set out in the Mount Owen Complex ACHMP Section 6.2.1.1.

3) Only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area should be subject to the collection of surface artefacts.
4) The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area should be fenced to ensure they are conserved within the landscape.
5) Should Aboriginal artefacts or human skeletal material be uncovered during works within the study area, all work should cease and the Mount Owen Complex ACHMP Sections 6.1 or 6.2 should be followed.
6) Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts and are aware of the legislative protection of Aboriginal objects under the *National Parks and Wildlife Act 1974* and the contents of the Mount Owen Complex ACHMP.

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FIGURES

TABLES

1 INTRODUCTION

1.1 INTRODUCTION

OzArk Environmental & Heritage Management (OzArk) has been engaged by Umwelt Environmental & Social Consultants (Umwelt), on behalf of Mt Owen Pty Limited (Mount Owen) to complete Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed Glendell Mine Modification 4 (the Proposed Modification).

The Mount Owen Complex is located within the Hunter Coalfields in the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres (km) northwest of Singleton and 24 km southeast of Muswellbrook (**Figure 1-1**) and consists of the Glendell Mine (Barrett Pit), Mount Owen Mine (North Pit) and Ravensworth East Mine (Bayswater North Pit). Mount Owen, a subsidiary of Glencore Coal Pty Limited (Glencore) operates Glendell Mine under development consent DA 80/952, which regulates the mining of coal from Glendell Mine and the rehabilitation of the mining area. The processing of coal mined from Glendell Mine and transportation of coal for export is regulated by development consent SSD-5850 (Mount Owen Continued Operations) which also regulates mining at the Mount Owen and Ravensworth East Mines, and associated activities.

Development Consent DA 80/952 was originally granted in 1983. Mining commenced in 2009 following two subsequent modifications to the consent in 1997 and 2008. An additional modification to DA 08/952 was granted in 2016 to provide for the realignment of an existing powerline. DA 08/952 (as modified) provides for mining operations at the Glendell Mine until 2024 and the extraction of approximately 50 million tonnes (mt) run of mine (ROM) coal at an annual production rate of 4.5 million tonne per annum (Mtpa).

Although DA 80/952 provides for mining operations at Glendell until 2024, based on the current mining schedule mining operations will cease in 2020, Mount Owen are seeking a minor extension to the approved pit shell (the Proposed Modification) to access additional coal reserves from the Barrett Pit and provide for the continuity of mining operations for approximately an additional eight months.

Figure 1-1: Location of the Glendell DA boundary.

1.2 BRIEF DESCRIPTION OF THE PROPOSED MODIFICATION

Mount Owen is seeking to modify the approved Glendell mine plan in order to access an additional 2.5 Mt ROM coal and provide for an additional eight months of mining operations. The mine plan will be amended to provide for a minor extension to the approved pit shell.

The extension of the northern and western boundary of the approved pit shell will require an additional approximately 12 hectare (ha) of disturbance in order to accommodate the proposed mine plan changes. However, the approved disturbance area has been revised to remove an area previously approved for disturbance on the eastern boundary of the site. An area of approximately 15.5 ha will removed from the approved disturbance area as part of the Proposed Modification. This will result in a net decrease (approximately 3.5 ha) in the overall disturbance area associated with the Glendell Mining operations (**Figure 1-2**).

No changes are proposed to the current approved mining methods, extraction limits, processing rates, transportation methods, operational hours or workforce numbers.

Table 1-1 provides a comparison between the Approved Operations and the Proposed Modification.

Table 1-1: Comparison between the Approved Operations and the Proposed Modification.

Item	Description	Change from Approved Operations
Mining Method	Truck and excavator	No change to mining methods
Target Seams	To Barrett Seam Down to approximately 200 metre (m) depth	No change to target seam or mining depth
Total Reserve Recovered	Total of approximately 50 Mt ROM coal	Additional approximately 2.5 Mt Rom Coal (approximately 5% of total approved resource)
Disturbance Area	Approved disturbance area of approximately 834 ha	Additional proposed disturbance of approximately 12 ha Reduction of approved disturbance area associated with an area of undisturbed vegetation of approximately 15.5 ha Net decrease in approved disturbance area of approximately 3.5 ha
Annual Production	4.5 Mtpa	No Change to annual production
Mine Life	2024	Additional approximately eight months of mining Current approved mining operations will cease in 2022 (based on current mining schedule) proposed mining will cease 2023 No increase to approved mine life
CHPP Capacity	Up to 17 Mtpa (under SSD-5850)	No change
Management of Mining Waste	Emplacement of waste in-pit and out-of-pit up to maximum height of 160 m	No change to location and height of emplacement areas
Water Management	Existing Swamp Creek and Bettys Creek diversion Management of water within the existing water management system and the GRAWTS	No change to existing approved creek diversions Extension of water management system to proposed disturbance area and continued management of water within the GRAWTS
Operational Workforce	Up to approximately 300 people	No change to operational workforce
Hours of Operation	24 hours, 7 days per week	No change to hours of operation

Item	Description	Change from Approved Operations
Final Landform	One approved void (Barrett Pit) Rehabilitation strategy includes progressive rehabilitation to create a stable final landform with incorporated vegetation corridors providing links between the offset areas and existing remnant vegetation and post mining land use a combination of grazing land and bushland.	No change to approved rehabilitation strategy Minor changes to the design of the final landform to incorporate proposed changes to the mine plans.

1.3 BACKGROUND TO THIS ASSESSMENT

OzArk was first engaged in mid-2017 to undertake the assessment of the DA boundary modification as it was then understood. Following the field assessment in August 2017, the project was put on hold as Mount Owen evaluated the mine plan in relation to the Glendell Continued Operations Project (GCOP). In mid-2018 the assessment associated with the Proposed Modification was re-initiated. In this time the disturbance area for the Proposed Modification was reduced in size compared to that assessed in August 2017. As the now Proposed Disturbance Area is located within the 2017 study area, all portions of the Proposed Disturbance Area were assessed in 2017. In addition, in April and May 2018 assessment for the GCOP included all of the 2017 study area. As a result, the 2017 study area was again assessed by OzArk archaeologists and members of the Aboriginal community in 2018.

1.4 PROPOSED WORK

Mount Owen propose to amend the approved disturbance boundary for the Glendell Mine to include approximately a further 12 ha located along the western boundary of the current DA 08/952 (as modified) approved disturbance area. Apart from this additional 12 ha, all other areas of the Proposed Modification are within the approved disturbance area for the Approved Operations. For the purposes of this report, it is assumed that there are likely to be substantial ground disturbing impacts within the additional 12 ha of the Proposed Disturbance Area.

1.5 STUDY AREA

For the purposes of this report, the study area refers to the additional 12 ha of land that is likely to be impacted should the Proposed Modification be approved. All other impacts associated with the Proposed Modification are located in land already approved for disturbance as part of the Approved Operations.

The study area occupies an approximate 2 km by 100 m (maximum width) strip along the existing western boundary for the current DA 08/952 (as modified) (**Figure 1-3**). The study area is generally parallel and to the east of Swamp Creek; a tributary to Bowmans Creek that it joins just south of the study area. In the main, the study area is within paddocks that has previously been used for agricultural purposes such as grazing. Portions of the study area have more recently been impacted by approved mining infrastructure such as the construction of a light vehicle access road and drainage bunds.

Figure 1-2: Proposed Modification overview.

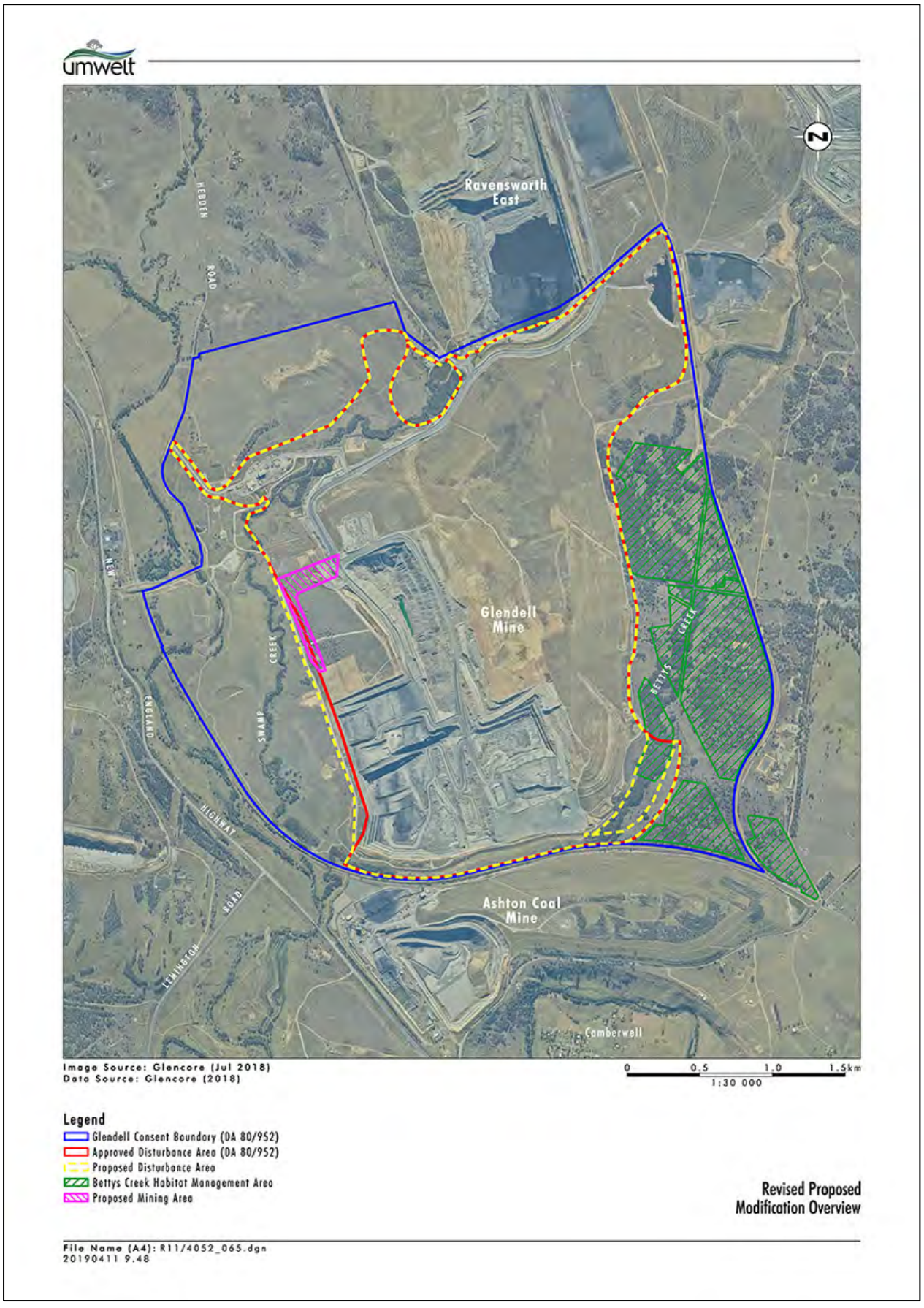


Figure 1-3: Aerial showing the study area.

1.6 RELEVANT LEGISLATION

Cultural heritage is managed by a number of state and national Acts. Baseline principles for the conservation of heritage places and relics can be found in the *Burra Charter* (Australia ICOMOS 2013). The *Burra Charter* has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The *Burra Charter* generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a state level.

A number of Acts of parliament provide for the protection of heritage at various levels of government.

1.6.1 State legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

This Act established requirements relating to land use and planning. The framework governing environmental and heritage assessment in NSW is contained within the following parts of the EP&A Act:

- **Part 4**: Local government development assessments, including heritage. May include schedules of heritage items;
    - Division 4.7: Approvals process for state significant development;
    - Section 4.55: Modification of consents—generally
        - (1A) Modifications involving minimal environmental impact. A consent authority may modify the consent if:

          (a) it is satisfied that the proposed modification is of minimal environmental impact, and

          (b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted.

National Parks and Wildlife Act 1974 (NPW Act)

Amended during 2010, the NPW Act provides for the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places. Under the Act (Part 6), an Aboriginal object is defined as: any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains.

An Aboriginal place is defined under the NPW Act as an area which has been declared by the Minister administering the Act as a place of special significance for Aboriginal culture. It may or may not contain physical Aboriginal objects.

As of 1 October 2010, it is an offence under Section 86 of the NPW Act to 'harm or desecrate an object the person knows is an Aboriginal object'. It is also a strict liability offence to 'harm an Aboriginal object' or to 'harm or desecrate an Aboriginal place', whether knowingly or unknowingly. Section 87 of the Act provides a series of defences against the offences listed in Section 86, such as:

- The harm was authorised by and conducted in accordance with the requirements of an *Aboriginal Heritage Impact Permit* (AHIP) under Section 90 of the Act
- The defendant exercised 'due diligence' to determine whether the action would harm an Aboriginal object, or
- The harm to the Aboriginal object occurred during the undertaking of a 'low impact activity' (as defined in the regulations).

Under Section 89A of the Act, it is a requirement to notify the Office of Environment and Heritage (OEH) Director-General of the location of an Aboriginal object. Identified Aboriginal items and sites are registered on Aboriginal Heritage Information Management System (AHIMS).

1.6.2 Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Matters of National Environmental Significance listed under the EPBC Act include the National Heritage List and the Commonwealth Heritage List, both administered by the Commonwealth Department of the Environment and Energy. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to National/Commonwealth heritage places.

1.6.3 Applicability to the Proposed Modification

The Proposed Modification is being sought pursuant to Section 4.55 (1a) of the EP&A Act.

Any Aboriginal objects within the study area are afforded legislative protection under the NPW Act.

It is noted there are no Commonwealth or National heritage listed places within the study area, and as such, the heritage provisions of the EPBC Act do not apply.

1.7 ASSESSMENT APPROACH

The current assessment follows the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010; Code of Practice).

Field assessment and reporting follows the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

1.8 RESPONSES TO THE PREVIOUS VERSION OF THIS REPORT

In November 2018, the OzArk report, *Aboriginal Due Diligence Assessment Report: Glendell Mine Modification 4. Mt Owen Complex*, was completed and was included in a *Statement of Environmental Effects* (SEE) prepared by Umwelt. During the exhibition period, the OzArk report was reviewed by OEH. In their response, OEH noted that a Due Diligence assessment was deemed inadequate for a State Significant Development Modification and that the cultural values of the study area were not completely understood (**Appendix 1**).

In addition, three submissions from the public were received that noted certain inadequacies in the original report (**Appendix 1**). These submissions are detailed in **Table 1-2**, however, the OEH review and the three public submissions prompted Mount Owen to initiate the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* so that the cultural values of the study area can be known (see **Section 3**) and to incorporate this information, as well as responses to other public submissions, into this ACHAR.

Table 1-2: Responses to submissions made to an earlier version of this report.

Stakeholder	Recommendation	Action
OEH Recommendation 1	OEH recommends that an Aboriginal archaeological cultural heritage assessment report is prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the Glendell Mine Modification 4 footprint. The Aboriginal cultural heritage assessment report should be prepared in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and the Aboriginal cultural heritage. consultation requirements for proponents 2010 (DECCW).	The ACHCRs have been initiated to ensure all cultural values of the study area will be captured and understood. These findings, if any, will be included in this ACHAR.
OEH Recommendation 2	OEH recommends that only Aboriginal objects that occur within the Modification 4 proposed disturbance boundary should be salvaged as part of the project. The portion of Aboriginal sites that occur outside the Modification 4 proposed disturbance boundary should not be salvaged as part of the project.	The recommendations within this ACHAR comply with this recommendation.
OEH Recommendation 3	OEH recommends that the existing Aboriginal Cultural Heritage Management Plan for the Mount Owen Complex (OzArk 2018) is updated to manage the Aboriginal objects within the proposed Glendell Mine Modification 4 proposed disturbance area.	The recommendations within this ACHAR comply with this recommendation.
Plains Clans of the Wonnarua People	The registered Native title party were not consulted with regard to this Mod.	The ACHCRs have been initiated to ensure all cultural values of the study area will be captured and understood.
Plains Clans of the Wonnarua People	AHIMS search was not undertaken	While Mount Owen have taken considerable and recent steps to ensure the accuracy of its heritage database including engaging consultants to verify the database and to undertake ground-truthing of problematic sites, an AHIMS search has been undertaken (**Section 5.3.2**). This search did not change the understanding of the archaeological context of the study area.

Stakeholder	Recommendation	Action
Camberwell Anonymous	The concern of the recent media release of the Garrison diary entries related to the massacre of aboriginal people in the area, in which was not found in the report presented by Glencore.	This press release is presumably an article run by the Newcastle Herald on 1 December 2018. This article recounts the events surrounding the documented account of when 18 Aboriginals were 'slaughtered' at the Ravensworth Estate and the adjoining Lethbridge Estate between 1825 and 1826. As this article post-dates the finalisation of the earlier version of this report, it was not possible to include it in the report. However, this ACHAR does briefly examine the history of colonial occupation in the area (**Section 5.4**) and examines why it is unlikely that the study area contains evidence of this conflict (**Section 6.4**).
Anonymous Camberwell	In relation to the article in the Saturday 1st December 2018 Newcastle Herald on the aboriginal history and diary of the Garrison, that the assessment has not taken account of the recent information of massaqcre of aboriginal people in the area.	This article recounts the events surrounding the documented account of when 18 Aboriginals were 'slaughtered' at the Ravensworth Estate and the adjoining Lethbridge Estate between 1825 and 1826. As this article post-dates the finalisation of the earlier version of this report, it was not possible to include it in the report. However, this ACHAR does briefly examine the history of colonial occupation in the area (**Section 5.4**) and examines why it is unlikely that the study area contains evidence of this conflict (**Section 6.4**).

2 THE ARCHAEOLOGICAL ASSESSMENT

2.1 PURPOSE AND OBJECTIVES

The purpose of the current study is to identify and assess heritage constraints relevant to the proposed works.

2.1.1 Aboriginal archaeological assessment objectives

The current assessment will apply the Code of Practice in the completion of an Aboriginal archaeological assessment, in order to meet the following objectives:

Objective One: Undertake background research on the study area to formulate a predicative model for site location within the study area

Objective Two: Identify and record objects or sites of Aboriginal heritage significance within the study area, as well as any landforms likely to contain further archaeological deposits

Objective Three: Assess the likely impacts of the proposed work to Aboriginal cultural heritage and provide management recommendations.

2.2 DATE OF THE ARCHAEOLOGICAL ASSESSMENT

The fieldwork component of this assessment was undertaken by OzArk on Wednesday 23 August 2017.

2.3 OZARK INVOLVEMENT

2.3.1 Field assessment

The fieldwork component of the current assessment was undertaken by Ben Churcher, Principal Archaeologist at OzArk (BA [Hons], University of Queensland; Dip Ed, University of Sydney).

2.3.2 Reporting

The reporting component of the assessment was undertaken by:

- Report Author: Stephanie Rusden (OzArk Project Archaeologist, BS University of Wollongong, BA University of New England)
- Contributor: Ben Churcher
- Reviewer: Ben Churcher.

3 CULTURAL VALUES OF THE STUDY AREA

3.1 ABORIGINAL COMMUNITY CONSULTATION

The proponent has undertaken the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs) for the Proposed Modification.

3.1.1 Stage 1: Identifying RAPs for the Proposed Modification

On 4 February 2019 OEH to consented to use the current GCOP Registered Aboriginal Party (RAP) list for the Proposed Modification (**Appendix 2**). There are 28 RAPs for the GCOP as shown on **Table 3-1**.

Table 3-1: Registered Aboriginal Parties for the GCOP.

Name of individual/group	Contact name
Aboriginal Native Title Elders Consultants	John & Margaret Matthews
AGA Services	Ashley, Gregory & Adam Sampson
Aliera French Trading	Aliera French
	Donna & George Sampson
Crimson-Rosie	Jeffery Matthews
Culturally Aware	Tracey Skene
D F T V Enterprises	Derrick Vale Sr
Didge Ngunawal	Paul Boyd & Lilly Carrol
Gomery Cultural Consultants	David Horton
Hunter Valley Cultural Surveying	Luke Hickey
Hunter Valley Environment Land & Mining Services	Des Hickey
JLC Cultural Services	Jenny-Lee Chambers
Lower Hunter Aboriginal Incorporated	Les Ahoy
Lower Hunter Wonnarua Council Inc	Thomas Miller
Murra Bidgee Mullangari Aboriginal Corporation	Ryan Carroll Johnson & Darleen Johnson-Carroll
Muragadi Heritage Indigenous Corporation	Jesse Carroll - Johnson
Smith Dhagaans Cultural group	Tim Smith
Ungooroo Aboriginal Corporation	Alan Paget & Sarah Hall
Valley ELM corp	Irene Ardler
Wallagan Cultural Services	Maree Waugh
Wanaruah Local Aboriginal Land Council	Noel Downs
Wattaka Wonnarua C.C. Service	Des Hickey
Wonn 1 Contracting (Kawul Pty Ltd)	Arthur Fletcher
Wonnarua Culture Heritage	Gordon Griffiths
Wonnarua Nation Aboriginal Corporation	Laurie Perry
Yarrawalk (a division of Tocomwall Pty Ltd), Tocomwall Pty Ltd on behalf of Scott Franks and Anor on behalf of the Plains Clan of the Wonnaru People NSD1680/2013	Scott Franks
Yinarr Cultural Services	Kathleen Steward Kinchela
	Kevin Duncan

3.1.2 Stages 2 and 3: Providing information about the Proposed Modification

On 6 February 2019 all RAPS for the Proposed Modification were sent a copy of the Stage 2/3 information document (**Appendix 3**). As stipulated in the ACHCRs, the RAPs were provided with 28 days to review and comment on the information within this document with a closing date of 6 March 2019.

The cover letter for the Stages 2/3 document (**Appendix 3**) also reiterated that the study area was within the area considered by the GCOP cultural values assessments and invited any further information that would aid in determining the cultural values of the study area.

As of the closing date for review of the Stage 2/3 information document, no responses were received from the Aboriginal community. Although expressly invited, no further information pertaining to the cultural values of the study area were put forward by the Aboriginal community.

3.1.3 Stage 4: Providing a draft ACHAR for review

All RAPS were provided a draft ACHAR on 18 March 2019 **(Appendix 4**). As stipulated in the ACHCRs, the RAPs were provided with 28 days to review and comment on the information within this document with a closing date of 18 April 2019.

During the consultation period, one response was received from Culturally Aware who confirmed no concern or issues with the ACHAR.

No further feedback requiring incorporation into this ACHAR was received.

3.2 ABORIGINAL CULTURAL VALUES WITHIN THE STUDY AREA

During the assessment for the Mount Owen Continued Operations Project (MOCO project), an extensive assessment of Aboriginal cultural heritage values was undertaken (Umwelt 2015). No known cultural values are known to exist pertaining directly to the location of the study area. However, Umwelt 2015 states that the landscape and waterways within or near the study area, including Swamp Creek, Bettys Creek and Bowmans Creek, have cultural value for the local Aboriginal community in a general manner as these features are part of the community's Country.

No Aboriginal community members accompanied the visual inspection of the study area during the August 2017 assessment. However, Aboriginal community were present during the April/May 2018 GCOP assessment that included the study area and no specific cultural values pertaining to the study area were raised.

4 LANDSCAPE CONTEXT

An understanding of the environmental contexts of a study area is requisite in any Aboriginal archaeological investigation (DECCW 2010). It is a particularly important consideration in the development and implementation of survey strategies for the detection of archaeological sites. In addition, natural geomorphic processes of erosion and/or deposition, as well as humanly activated landscape processes, influence the degree to which these material culture remains are retained in the landscape as archaeological sites; and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

4.1 TOPOGRAPHY AND HYDROLOGY

The majority of the study area is located within lower slope landforms adjacent to the flat floodplain of Swamp Creek to the west, and mid-slope landforms associated with a north-south trending ridge to the east (**Figure 4-1**).

The study area is generally parallel to Swamp Creek and is located from 50 m to 450 m to the east of Swamp Creek. The study area traverses three highly ephemeral drainage lines that flow into Swamp Creek. While these ephemeral drainage lines would not have retained water for any length of time following rainfall, Swamp Creek would have been (prior to approved mining modifications) a semi-permanent, second order watercourse. At its southern extent, the study area is within 40 m of Bettys Creek which, like Swamp Creek would have been a semi-permanent source of water. At its southern extent, the study area is within 300 m of Bowmans Creek: a regional source of permanent water.

Bettys Creek was once a third order watercourse (Umwelt 2003) prior to approved mining impacts. It has been noted in previous archaeological assessments that during wet periods, Bettys Creek was characterised by a chain of ponds morphology. It was noted that a complete absence of water is also possible (Umwelt 2004). It is also accepted that changes to the hydrology of the area due to mining and creek diversions are likely to have greatly altered the pre-1788 form of Bettys Creek and other creek systems such as Swamp Creek.

Figure 4-1: Examples of the topography within the study area.

	
1. View south in the northern portion of the study area.	2. View southwest in the southern portion of the study area.

4.2 GEOLOGY AND SOILS

The study area is wholly located within the Central Hunter Foothills landscape unit (Mitchell 2002). The geology of this landscape unit is characterised by Permian lithic sandstone, conglomerate, shale and coal (Mitchell 2002: 73). Coal resources come from this landscape unit. As has been commonly reported in other surveys in this region (Brayshaw 1986a), there are two major soil depositional units in the Assessment Boundary. An upper unit (commonly called the A-Horizon), composed primarily of sand and silt but sometimes with gravel present. This upper unit overlies and is very distinct from the underlying clay and gravel B-Horizon which ranges from brown to yellow in colour.

Silcrete was recorded to be outcropping at site MOCO OS-10 (37-3-1198) to the northwest of the study area (OzArk 2013: 113). The outcrop was observed to extend into areas of very low visibility, so the extent of the outcrop is uncertain. No large rock formations are known to outcrop within the study area itself.

4.3 VEGETATION

The study area has been entirely cleared of the primary tree and shrub cover and is now dominated by pastoral grasses and a few scattered regrowth Casuarinas. Casuarinas and eucalypt regrowth populate the banks of the nearby creek lines. Prior to European occupation, Mitchell (2002: 73) models that the vegetation within this landscape unit would have been comprised of woodlands to open forest of Spotted Gum, Forest Red Gum, Narrow-Leaved Ironbark, Mugga, and White Box with Kangaroo Grass and Wallaby Grass.

4.4 LAND USE HISTORY AND EXISTING LEVELS OF DISTURBANCE

The study area has been historically used for agricultural purposes. It is uncertain exactly what past land uses took place within the study area, but it is likely that the two most significant causes of disturbance would be associated with grazing and vegetation clearance. Within the study area are the remains of some holding yards that demonstrate the area's long association with husbandry practices and the subsequent disturbances stemming from soil compaction and other impacts to the soil profile (**Figure 4-2**). Other disturbances stem from approved mining activities, such as the construction of a light vehicle access track and drainage bunds (**Figure 4-2**).

As the study area is located within lower slopes, erosion, exacerbated by vegetation clearance, is likely to have had a significant impact on the soil profile over time.

Figure 4-2: Examples of land use disturbances within the study area.

	
1. View of historic items indicating the past agricultural land use of the study area.	2. View of a drainage bund within the study area.

4.5 CONCLUSION

The availability of semi-reliable water sources close to the study area indicate that the area would have been a favourable location for Aboriginal occupation in the past. While the widespread alteration of the landscape makes it difficult to accurately ascertain what other resources may have been available in the past, the relatively temperate climate and availability to reliable water sources would have enabled occupation of the area during all seasons.

The generally high degree of landform modification from both agricultural uses (vegetation clearing etc.), as well as more recent mining activities (roads and drainage works), indicates that the integrity of any archaeological features (i.e. artefact scatters), had they existed within the study area, are likely to have been diminished or dispersed.

5 ABORIGINAL ARCHAEOLOGY BACKGROUND

5.1 ETHNO-HISTORIC SOURCES OF REGIONAL ABORIGINAL CULTURE

The study area is in the Wonnarua tribal area of the upper Hunter Valley.

The Wonnarua people lived in an environment rich in food resources. Freshwater fish, shellfish, reptiles, mammals, birds and plant food provide a diverse diet (see Brayshaw 1981b). Brayshaw (1986b: 82) suggests that inland groups visited the coast during the summer when marine resources were plentiful, and coastal groups travelled inland to participate in the winter kangaroo hunts. Trade and/or exchange also occurred between the coastal and inland groups. Reed spears and shells were traded inland for possum skin rugs and fur cord (Brayshaw 1986b: 41). Social gatherings were a feature of Aboriginal life in this area.

Visiting by coastal and inland groups for initiations and ceremonies seemed to occur. These were conducted within earthen circles. Carved trees were associated with these sites (Brayshaw 1981b: 12).

Material culture items for this area included many items made of bark obtained from various trees. For example, tea tree bark (*Melaleuca quinguenervia*) was used for the construction of huts, and the bark of the cabbage-tree (*Livistona australis*) and kurrajong (*Brachychiton eopulneus*) were used to make cord for the manufacture of fishing lines and nets and also for sewing up canoes (Brayshaw 1981b). Baskets, shields and canoes were also made from bark. Some shields, however, were also made from the wood of the nettle tree (*Orticaceael* or fig (Ficus spp.). Boomerangs, clubs, spear throwers and hatchets were also manufactured. Spears were of composite manufacture, usually being lengths of grass tree (*Xanthorrhoea australis*) to which points of hard wood were attached. Maintenance tools included stone adzes and chisels, abrasive stones, small fishhook files, bone awls and sharpened shell knives and scrapers (Brayshaw 1981b: 10). After 1788 glass and iron hatchets became sought after items.

There is virtually no reference to flaked stone tools in the nineteenth century descriptions of Aboriginal material culture in the Hunter Valley. This paucity of information is at odds with the types of occupation evidence which are preserved in the valley. By far the most common type of Aboriginal site in the inland part of the valley is the “open campsite” or stone artefact scatter.

There are few records of the Aboriginal population of the central valley. Howe in 1819 reports five people at Jerry’s Plains, Dangar in 1824 reports 15 people at Dartbrook, Mathew in 1830 reports 60 people on the Wollombi and 300 men are reported at Patricks Plains in 1834. At least 200 men were involved in the 1826 attack on Merton. Scott and McLeod in 1826 estimated a total of about 500 people at that time (Resource Planning 1991: 17) although this estimate, and the others above, are likely to be highly inaccurate as they are based on assumptions rather than detailed censuses.

From 1825 there is documented conflict between the Aboriginal population and settlers within the Hunter Valley, including the Ravensworth/Foy Brook area (for example, *The Australian*, 9 September 1826 [http://trove.nla.gov.au/ndp/del/page/4248909]). Although the exact location of these conflicts is unknown, the history of raids and counter-raids demonstrate that the Wonnarua people were fierce defenders of their tribal lands.

5.2 REGIONAL ARCHAEOLOGICAL CONTEXT

A very large amount of heritage work has been undertaken in the Hunter Valley and a comprehensive study of this is beyond the scope of this assessment. Consequently, only a brief regional archaeological context that focuses on work in similar landforms to the study area is provided here.

Evidence from the Central Lowlands sub-region of the Hunter Valley (broadly between Murrurundi in the north and Cessnock in the south-east), suggests that archaeological material is scattered almost continuously, but in varying density, along most creek banks and flats. It has been suggested that archaeological material is primarily contained in a corridor approximately 100 m wide on either side of a creek channel (Koettig 1990: 13).

In broad terms, these open artefact scatters appear to be confined to the A-Horizon of the soil (topsoil) profile which is generally less than 50 centimetres (cm) in depth (Hughes 1984; Stern 1981). These sites are often disturbed, and stratification is unclear (Hughes 1984: 8). Artefacts are generally manufactured from indurated mudstone, with silcrete, fossilised wood and chert occurring less frequently (Hiscock and Koettig 1985). Features found at open surface scatters include hearths, pits, ovens and heat treatment areas (Burton *et al.* 1990). These sites are generally detected where some form of ground disturbance has occurred, for example erosion due to both cultural and non-cultural processes, and thus the extent of the site is often difficult to determine. Often the density of artefacts on the surface do not relate to the amount of subsurface archaeological material (see Koettig 1990: 15).

A review of GHD (2005), HLA-Envirosciences (2005) and Umwelt (2007) provides the following regional synthesis:

- Archaeological sites, even where surface evidence is not present, occur on most landforms. This was confirmed by a HLA-Envirosciences (2005) excavation program, in which Aboriginal sites were encountered on alluvial terraces, flats, slopes, bench areas, spurs and ridgelines. HLA-Envirosciences acknowledges that the sample areas were biased somewhat as they were all near creek lines
- Site frequency and density are dependent on their location in the landscape. This theme is consistent throughout NSW and is influenced by a range of factors, the most relevant of which the existing level of disturbance. More specifically, the potential for undisturbed in situ deposits remaining in the upper Hunter on a mining property is generally low

- The highest concentration of Aboriginal sites on the valley floor surrounds creeks and waterways
- Few scarred trees are recorded reflecting the high degree of tree clearing in the region
- The most frequently recorded raw material is indurated mudstone (a fine gained siliceous material) associated with Hunter River gravels. Other frequently recorded materials include locally sourced silcrete, quartz and volcanic stones.

5.3 LOCAL ARCHAEOLOGICAL CONTEXT

5.3.1 Previous archaeological assessments

5.3.1.1 Umwelt 2004

Umwelt conducted an Aboriginal archaeological assessment for the Glendell Project Area, encompassing the current study area, involving survey during September, October and December 2001, as well as geomorphic investigations during May 2002.

The Glendell survey area incorporated sections of Bowmans Creek, Swamp Creek and Bettys Creek. As part of the archaeological brief, a desk-top study and an in-field reconnaissance were undertaken with the aim of identifying areas within the Glendell Project Area that contained Aboriginal resources. The resources sought for identification within the Glendell Project Area included fresh water supplies, food and medicine plants, faunal prey species, stone suitable for implement manufacture, areas suitable for camping, areas that provided an extensive outlook, areas with major and minor creek confluences that had often been found to have Aboriginal camp sites and the terrain units that may have acted as pathways between resource locations.

The information compiled was then used to assist in the preparation of a predictive model related to the location and nature of sites within the Glendell Project Area. In addition, past land-use practices and geomorphic studies were used to determine areas where artefactual material may remain in a relatively undisturbed context. Geomorphic studies were also used to investigate a buried soil profile within the shared Bowmans Creek/Swamp Creek floodplain and to determine the likelihood of this soil profile containing artefactual material from the late Pleistocene to early Holocene periods.

As a result of the research it was concluded that the entire Glendell Project Area would have supplied adequate resources for small groups of hunter-gatherers living a mobile lifestyle. Bowmans Creek was highlighted as an area that should have formed the focus of camping activities of longer duration, possibly by larger numbers of people, due to an increased abundance and reliability of the resource base.

Other areas, such as the lower western slopes adjacent to Bettys Creek were assessed as having attracted groups of people for short-term visits to harvest abundant seasonal foods. Bowmans

Creek was therefore cited as likely to have the largest sites in terms of spatial extent and numbers of artefacts.

Such sites were predicted as likely to be found on the lower slopes, terraces and floodplains along Bowmans Creek, spreading further across the Bowmans Creek/Swamp Creek floodplain. Bettys Creek and Swamp Creek were listed as likely to have evidence of more sporadic and short-term use as overnight camping locations.

A pattern of site distribution was evident from the previously recorded sites in the locale with the majority of sites located along the watercourses (58%). More of these were associated with ephemeral tributaries (30%) than major creek lines and their associated floodplains and terraces (30%). A little more than half (54%) of the sites were within 30 m of the closest watercourse and 66% within 100 m. In relation to the slopes, sites were more commonly located on the foot slopes/lower slopes (18.5%), than the crest/upper slopes (16.6%) and mid slopes (8%).

A total of 37 previously unrecorded sites were located during the 2001 fieldwork survey of the Glendell Project Area. The sites consisted of 30 artefact scatters, including one small quarry site with an associated artefact scatter, one scatter in an area with a buried soil profile and seven isolated finds. The Bowmans Creek 5 quarry site (37-3-0617) was recorded as having an associated artefact scatter as the majority of the artefacts in the site were manufactured from mudstone and silcrete rather than the quartz and quartzite materials available at the site.

The artefact scatter in the area with the buried soil profile (Bowmans Creek/Swamp Creek Trench; 37-3-0469) was located on the shared floodplain between Bowmans Creek and Swamp Creek. In this area a trench approximately 300 m in length was constructed during the 1980s to divert Swamp Creek into Bowmans Creek. At the time of the 2001 survey the trench was not connected to the creeks (as it remains so today). The artefact scatter eroding from the A-Horizon of the floodplain was observed to be approximately one metre above the buried soil profile. This profile was later determined through geomorphic investigation to be of early Pleistocene to Tertiary age and did not contain any artefactual material.

Artefact analysis of the salvage assemblage recorded:

- Flakes and broken flakes dominated the assemblage (78%), followed by flaked pieces (15%) and cores (3%). Within the flake category, 4% were retouched and half of the retouched flakes were backed. Heat shatter accounted for 3% of the artefacts
- The mudstone and silcrete flakes were of similar size. Volcanic flakes were generally larger and heavier than flakes composed of other raw materials
- Volcanic flakes had a significantly higher percentage of cortex than silcrete or mudstone, and mudstone artefacts had a higher percentage of cortex than silcrete

- Silcrete artefacts had a higher overall rate of retouch than mudstone artefacts (8.2% and 6.3% respectively), and silcrete retouched artefacts were more likely to be backed than retouched mudstone artefacts
- A number of artefacts relating to post-European occupation of the area were also recovered, including fragments of glass and pottery. The location of this material closely correlated with concentrations of Aboriginal stone artefacts. Additionally, at least one Aboriginal artefact manufactured from glass was salvaged, suggesting that the area was used by Aboriginal people in the post-contact period.

5.3.1.2 Umwelt 2013

Salvage of the Glendell Project Area was undertaken under NPWS s.90 Consent #2267 and formed Part 4 of the salvage program for the Bettys Creek valley. This archaeological salvage within the Glendell Project Area was conducted by Umwelt and the Registered Aboriginal Parties (RAPs) between November 2005 and February 2006 on behalf of Glendell Joint Venture, now Mount Owen.

A total of 2,713 artefacts were recovered from the Glendell Project Area salvage including 824 (30.6%) from the surface collection, 274 (10.1%) from Excavation 1 (Bettys Creek 10), 19 (0.7%) from Excavation 2 (Bettys Creek 9), 1,414 (52.1%) from Excavation 3 (Bettys Creek 2) and 177 (6.5%) from the grader scrapes. A total of 2,604 (96%) of the artefacts were recovered from the Bettys Creek catchment, 52 (1.9%) from the Bowmans Creek catchment and 57 (2.1%) from the Swamp Creek catchment.

Observations made from the surface collection assemblage are as follows:

- The highest number of artefacts were collected from Bettys Creek 14 (26.7% of the surface collection assemblage), followed by Bettys Creek 10 (19.5% of the assemblage)
- 60.6% of the artefacts were collected from lower slopes and floodplains associated with creek lines (56.7% from Bettys Creek; 3.3% from Swamp Creek and 0.7% from Bowmans Creek)
- Sites on low but elevated spurs in tributary confluences comprised 22.2% of the assemblage; ridge crests (7.5%); sites on lower slopes on tributary channels more than 150m from the main creek channel (7.5%); mid slope sites (1.3%) and upper slopes (0.6%)
- The dominant artefact type was broken flakes (45%); followed by flakes (26.7%); flaked pieces (10.9%); retouched flakes (10%), cores (3.7%), heat shatter (3.4%) and grindstones (0.4%)
- A total of 31 cores were recovered from the surface collection. Of these, 21 were recovered from the Bettys Creek sites (17 from areas with tributary confluences with Bettys Creek)

- Mudstone was dominant within the assemblage making up 58.5% of the artefacts, followed by silcrete (31.9%) with the remaining raw materials making up 9.6% of the total assemblage.

Excavation was targeted at Bettys Creek 2, Bettys Creek 9 and Bettys Creek 10 indicated the following:

- Bettys Creek 10 and Bettys Creek 2 retained a level of spatial integrity reflected by knapping events and raw material distribution patterns
- Bettys Creek 9 contained artefacts in a secondary context
- All three locations contained backed flakes
- A ground oven identified at Bettys Creek 2 had an absolute date of 2188+/-39 BP (years before present)
- It was possible to obtain one radiocarbon date of 3077±40 BP (calibrated-Wk-20912) from Square K Spit 3 of Excavation 3 within the Mount Owen Extension Area. The date was relative in nature as it belonged to a large piece of burnt wood that was associated with artefacts both above and below it. Thus, the artefacts above it must be dated to later than 3077±40 BP and those below it to earlier
- Broken flakes (45.7%) dominated the artefact assemblage, followed by flakes (38.7%)
- Bettys Creek 10 and Bettys Creek 2 were dominated by mudstone while Bettys Creek 9 was dominated by silcrete. Overall, mudstone was dominate (55.7%) over silcrete (32.3%)
- A small knapping event was evident at Bettys Creek 10, with greater amounts of knapping noted at Bettys Creek 2
- Core to flake ratios for Bettys Creek 10 were 1:28.7 and for Bettys Creek 2 were 1:27.4 suggesting knapping on site.

5.3.1.3 OzArk 2014

From 2012 to 2013, OzArk completed the *Aboriginal Archaeological Values Assessment: Mount Owen Continued Operations* (OzArk 2014). The assessment covered 464 ha within the Mount Owen Complex and included surface survey and test excavation. In total, 11 artefact scatters, 20 isolated finds and three extensions to previously recorded sites were recorded.

A very small portion of this area is included within the current study area.

The results of the 2012/2013 OzArk assessment were:

- 91% of the newly recorded sites were either isolated finds or low-density artefact scatters without associated archaeological deposits
- Test excavation was carried out at two locations. No sub-surface artefacts were retrieved from one site and 114 artefacts were excavated from the other site. At the site that

recorded artefacts (MOCO OS-4), most of the artefacts were concentrated in a small area, representing two or three discreet knapping events of mudstone and silcrete

- Widespread disturbances and thin A-Horizon soils were noted across the assessment area. Thin, or non-existent, A-Horizon soils were also noted during the test excavation at both locations
- The most common raw materials were indurated mudstone and silcrete with smaller quantities of chert, siltstone, quartzite and quartz also identified
- Flakes and flaked pieces accounted for the bulk of assemblages. Proportions of cores and backed blades were low
- Most sites were situated close to drainage lines.

5.3.1.4 OzArk 2017

In early 2017 the MOCO salvage program took place under the authority of the 2016 *Mount Owen Complex Aboriginal Cultural Heritage Management Plan* (ACHMP) (OzArk 2017). This program was completed in the approved disturbance areas associated with the MOCO Project Area located adjacent to the Proposed Modification study area.

This program included the collection of surface artefacts at 30 sites resulting in 189 artefacts being recorded. Included in the tally of 30 sites, were two sites where limited archaeological excavation took place resulting in a further 187 artefacts being recorded. An additional area on the east bank of Bowmans Creek, along an upper terrace landform, was also subject to archaeological investigation by manual excavation but the area proved to be highly disturbed and no artefacts were recorded.

Of all the sites investigated in the 2017 salvage program, MOCO OS-4 recorded the highest artefact density with 71 surface artefacts (35.98% of all surface artefacts recorded during the salvage program) and 186 artefacts recorded in the excavation component of the program (constituting almost all the artefacts recorded in the excavation component of the program). MOCO OS-4 was located on an unnamed watercourse (termed the ‘eastern drainage’) approximately 5.4 km northeast from the current study area. MOCO OS-4 was in an area heavily affected by erosion and the investigation showed that while one concentration of artefacts remained in situ, the majority of the site had been displaced by the erosion.

Other sites that recorded more than 10 artefacts during the salvage program were MOCO OS-3, MOCO OS-9 and MOCO OS-10. All other sites recorded very low artefact numbers supporting the conclusion reached in OzArk 2014 that the remaining archaeological values at Mount Owen Complex consist of low density, often displaced, artefact scatters.

The recording of these sites affords with the general picture emerging that sites located away from permanent water are likely to have a low artefact density and low site complexity.

5.3.1.5 OzArk 2018

During the quarterly monitoring program for the Mount Owen Complex (OzArk 2018), a number of further artefacts were noted in the vicinity of Swamp Creek IF-2 to Swamp Creek IF-4 that were recorded in August 2017 as part of the visual inspection for the Proposed Modification (see **Section 6.2**, **Figure 5-1**). As a result, it was decided that an artefact scatter would be registered in the area which would include the three previously recorded isolated finds. The artefact scatter, Swamp Creek OS1 (37-3-1499), therefore includes:

- Swamp Creek IF-2 (37-3-1492)
- Swamp Creek IF-3 (37-3-1493)
- Swamp Creek IF-4 (37-3-1490).

The southern portion of Swamp Creek OS1 is within the study area although most of the site is outside of the study area (**Figure 5-1**).

5.3.1.6 OzArk 2019

During April and May 2018, OzArk completed the *Aboriginal Archaeological Values Assessment: Glendell Continued Operations* Project (2019 forthcoming). This assessment included all of the current study area and was conducted by OzArk archaeologists and members of the Aboriginal community.

Overall, this assessment recorded 33 previously unrecorded artefact scatters, 24 isolated finds, one scarred tree and one potential archaeological deposit (PAD).

This assessment recorded two sites that are located within the study area:

- One low density artefact scatter (Glendell North OS28) is wholly within the study area. This site consists of three artefacts located along a track: a mudstone flake, a mudstone piece of angular shatter and a quartz flake
- A second site, Glendell North OS31, extends into the study area but is mostly located outside of the study area. This site consists of 15 artefacts (12 mudstone, two silcrete and one quartz) located in a disturbed context on the same drainage bund as Swamp Creek IF-2 to Swamp Creek IF-4 (see **Section 6.2**).

In addition, the following sites were recorded near the study area:

- Glendell North OS25 is located on the eastern bank of Swamp Creek approximately 60 m west of the study area. Glendell North OS25 consists of two mudstone flakes
- Glendell North OS27 consists of a mudstone flake and a silcrete flake located in a disturbed context on a dam wall 20 m east of the study area
- Glendell North OS30 is in a disturbed context on a dam wall and consists of three mudstone artefacts including a core. At its closest, Glendell North OS30 is approximately 45 m west of the study area

- Glendell North IF22: an isolated mudstone flake located on the eastern bank of Swamp Creek approximately 28 m west of the study area
- Glendell North IF24: an isolated silcrete flake recorded on a vehicle track approximately 8 m south of the study area.

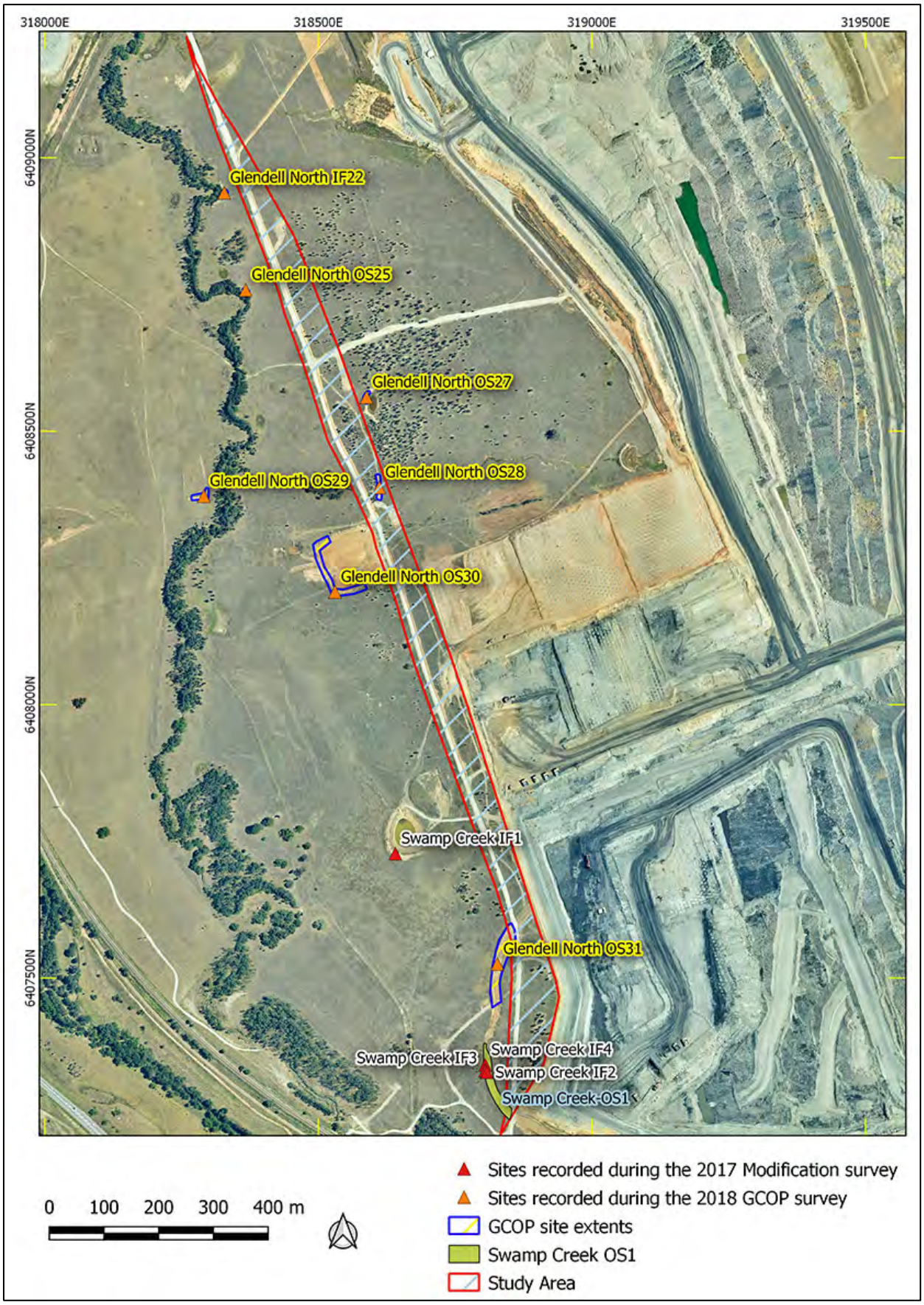
Figure 5-1 shows those sites recorded in 2018 for the GCOP assessment that are either within or closely adjacent to the study area.

The GCOP assessment also included a test excavation program that was undertaken in September 2018. Two locations inspected during this program are near the study area:

- Area 9 located on the western bank of Swamp Creek approximately 85 m west of the study area
- Area 10 located on the eastern bank of Swamp Creek approximately 45 m west of the study area.

As was found elsewhere during the GCOP test excavation program, there was a very low density of subsurface artefacts at both areas. Area 9 recorded a single mudstone flake at a depth of 10–20 cm and Area 10 recorded three artefacts (two mudstone flakes and a piece of angular silcrete shatter) also at a depth of 10–20 cm. These results indicate that there are unlikely to be substantial subsurface archaeological deposits near the study area.

Figure 5-1: The study area in relation to sites recorded during the 2017 and 2018 surveys.



5.3.2 Desktop database searches conducted

A desktop search was conducted on the following databases to identify any potential previously-recorded heritage within the study area. The results of this search are summarised in **Table 5-1**.

Table 5-1. Aboriginal heritage: desktop-database search results.

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	21/2/19	Singleton LGA	No places listed on either the National or Commonwealth heritage lists are located within the study area.
National Native Title Claims Search	21/2/19	Native Title Tribunal spatial data (downloaded 20/4/17)	NC2013/006 (Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People) covers the study area.
Local Environment Plan (LEP)	21/2/19	Singleton Local Environmental Plan 2013	None of the Aboriginal places noted occur near the study area.
OEH AHIMS	5/11/18	4 x search areas encompassing the study area	The centroid of one site is within the study area.

As per **Table 5-1**, it is noted that the study area includes land currently subject to Native Title Claim (NC2013/006 Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People).

A search of the OEH administered AHIMS database was completed over the study area on 5 November 2018. This search consisted of four quadrants due to the large number of sites in the area (GDA Zone 56): Eastings: 315100–318450, Northings: 6410750–6415100; Eastings: 315100–318450, Northings: 6406400–6410750; Eastings: 318450–321800, Northings: 6410750–6415100; and Eastings: 318450–321800, Northings: 6406400–6410750.

It is noted that this search returned one entry for site 37-3-1506 which is a restricted site that has been listed as ‘not a site’ with AHIMS. This site, Bowmans Creek Complex, is listed as a burial site, a conflict site, and an Aboriginal resource and gathering site (pers comm. Mr Scott Franks, 2018). 37-3-1506 covers the entirety of the study area. The relationship of this site to the study area is discussed further in **Section 6.4**.

In addition, there is a previously recorded massacre site near the study area that is discussed in greater detail in **Section 5.4**.

As well as the AHIMS database, the Mount Owen Complex maintains an up-to-date, accurate GIS system of recorded sites within the MOC ACHMP boundary. The sites on the Mount Owen Complex GIS heritage database have been verified against the AHIMS data, as well as being inspected on the ground to verify current site conditions and the accuracy of the AHIMS data at particular sites. As such, there is a high degree of confidence in the data held on the Mount Owen Complex GIS heritage database.

Figure 5-2 shows the location of previously recorded AHIMS sites in relation to the study area. Not all of the GCOP sites are shown on **Figure 5-2** as not all had been registered at the time of the AHIMS search, however, these are shown on **Figure 5-1**.

Figure 5-2: AHIMS sites near the study area.

It can be seen on **Figure 5-1** and **Figure 5-2** that a number of sites are located close to the study area although only one previously recorded site registered with the AHIMS register plots to within the study area. Some observations on the data displayed on **Figure 5-2** follow:

- 37-3-1490 to 37-3-1493 (Swamp Creek IF-1 to Swamp Creek IF-4; see **Figure 5-1**) were recorded as a result of the assessment for the Proposed Modification in August 2017 (see **Section 6.2**). All sites are isolated finds in disturbed contexts. As such, all have low scientific values
- 37-3-1499 (Swamp Creek OS1; see **Figure 5-1**) was recorded as a result of the quarterly monitoring program at the Mount Owen Complex when further artefacts were noted in the vicinity of Swamp Creek IF-2 to Swamp Creek IF-4. See **Section 5.3.1.5** for further details
- The majority of sites shown on **Figure 5-2** are stone artefact sites. Most sites have a low artefact density; except in the vicinity of the study area, site 37-3-0469 that is recorded as containing 479 artefacts (see **Section 5.3.1.1** for further details on this site)
- The majority of sites recorded in the vicinity of the study area are in disturbed contexts where the artefacts are likely to be in secondary contexts. This includes recordings on dam walls, along drainage bunds and associated with major earthworks that took place to construct a trench from Swamp Creek to Bowmans Creek.

5.4 COLONIAL OCCUPATION

Due to its proximity to Sydney, its nutrient rich alluvial soils, grazing pastures for livestock and cedar trees on the higher terraces of the valley, the Hunter Valley was a desirable location for early colonial settlement. Within a short timeframe, the Aboriginal people of the area had to deal with the depletion of their resources and major changes to the environment caused by ill-informed European farming practices.

The early colonial settlers observed valleys of grassland and rich alluvial soils adjacent to the major waterways that were ideal for agriculture and cattle/sheep grazing, and soon the prime land was occupied. But the allure of the area continued and as more colonists settled in the Hunter Valley the more marginal hill slopes were occupied and cleared of standing timber.

As noted by Tocomwall (2017: 35):

> *By 1825 more land was owned by the new settlers and the original Aboriginal inhabitants became increasingly disenfranchised from their traditional lands. The invasion by the European settlers changed the distribution of vegetation, with increasing landscape instability as a result of the logging of the forested areas around the higher elevations and the clearing of the brush around the understorey and along the tributaries for agriculture and pastoral farming. Aboriginal dependence of the Hunter River for many staples meant that the Wonnarua suffered severely when the Europeans settled: they immediately lost access to water and the raw materials in the*

> *river and on the banks. They also lost their game to the intruders who chased kangaroos in hunts to reduce competition for their introduced grazing animals; shellfish and fish populations also declined. Breton (1833) wrote that he only noted 16 kangaroos, in contrast to a previous visit to the area when they had numbered in the hundreds. The loss of fish for protein and the loss of managed plains for game hunting and seed gathering destroyed long established hunting and gathering practices of the Aboriginal community. This exclusion and alteration of the landscape by the Europeans brought them into conflict with the local Wonnarua People.*

As demonstrated in the Sydney Basin (Gapps 2018), conflict was widespread, organised and long-running resulting in considerable death and destruction of property on both sides of the conflict. While contact sites are likely to leave an identifiable archaeological signature, conflict sites are much less likely to be preserved in the archaeological record.

Conflict between the Wonnarua and colonial settlers is, however, documented in the wider region of the study area. AHIMS site 37-3-0390 (Ravensworth Massacre Site) is located on the western side of the New England Highway and outside of the study area (**Figure 5-2**). This site recording registers the historic account of the murder of 18 Aboriginal people in 1827. However, as noted on the site card, and as examined in previous reports such as Umwelt 2004 and ACHM 2013, the location of the massacre was '*near (the) town of Ravensworth'* although the *'exact location (is) unknown*'. While the exact location may now be extremely difficult to pin-point with any accuracy, the historical accounts show that the wide-spread frontier war that accompanied the first colonial settlement of Aboriginal lands across Australia, also occurred in the Hunter Valley.

5.5 PREDICTIVE MODEL FOR SITE LOCATION

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shell, and some bones that remain preserved in the current landscape. Even these however may not be found in their original depositional context since

these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of European farming practices. Scarred trees, by their nature, may survive for up to several hundred years but rarely beyond.

Knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded within the study area:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.

    - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the study area.

- Open artefact scatters are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as ‘open’, that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as ‘open camp sites’.

  Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

  Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

    - Artefact scatters, as well as isolated stone artefacts, are the predominant site types occurring in the region. The expected location of artefact scatters is on eroded exposures most commonly adjacent to creek lines, such as Swamp Creek, Bettys Creek, and their associated drainages. This site type is likely to be in a secondary context from disturbances such as erosion, farming and mining practices. It is likely that any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used. Should these site types be present, the artefact assemblage is likely to be dominated by flakes from mudstone and silcrete. Other

recorded materials could include quartz, chert, tuff, volcanics and petrified wood. It is noted that the study area has already been subjected to several previous archaeological assessments that have recorded a number of sites in the vicinity. This indicates that further artefact scatters could be possible but that previous assessments have probably recorded the larger examples of this site type.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields, and canoes. Bark was also removed to gather food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting or bark removal. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

    - Due to the near-total clearance of trees from within the study area, this site type is predicted to be very rare. It is also noted that this site type is very rare at a regional level.

- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.

    - This site type could be recorded within the study area should suitable rock outcroppings be available.

- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

    - Although it is possible that this site type could be found within the study area, it is considered a rare site type especially given the disturbance that has occurred within the study area.

6 RESULTS OF THE SITE INSPECTION

6.1 SAMPLING STRATEGY AND FIELD METHODS

Standard archaeological field survey and recording methods were employed in this study (Burke & Smith 2004). The study area was traversed by pedestrian means; first by walking south to the west of the light vehicle access road and then north to the east of the light vehicle access road.

Figure 6-1 shows the pedestrian survey tracks carried out during the site inspection. The yellow line illustrates the survey track of an OzArk archaeologist taken during the 2018 GCOP survey while the black line shows the survey track of the OzArk archaeologist taken during the August 2017 assessment for the Proposed Modification.

Figure 6-1: Survey coverage of the study area.

6.2 EFFECTIVE SURVEY COVERAGE

Two of the key factors influencing the effectiveness of archaeological survey are ground surface visibility (GSV) and ground surface exposure (GSE). These factors are quantified in order to ensure that the survey data provides adequate evidence for the evaluation of the archaeological materials across the landscape. For the purposes of the current assessment, these terms are used in accordance with the definitions provided in the *Code of Practice* (DECCW 2010).

Ground surface visibility (GSV) is defined as:

> *… the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stone ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals'* (DECCW 2010: 39).

GSE is defined as:

> *… different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals'* (DECCW 2010: 37).

Given the relatively restricted size of the study area, all of the survey area was contained within one landscape unit: lower slope. **Table 6-1** examines the effective survey coverage of the study area. Through an interplay of GSE and GSV this results in the determination that 6.5 per cent of the study area was effectively surveyed as the remaining 93.5 per cent of the study area was obscured by ground cover and/or topsoils. While the effective survey coverage appears to be low, it must be borne in mind that this is an average and that there were opportunities to observe the ground surface across the study area allowing an adequate sample to be obtained. In addition, the figures in **Table 6-1** do not consider small areas of GSE between clumps of grass, for example, although these small patches of GSE raise the survey efficacy further.

Table 6-1: Survey coverage data.

Survey Unit	Landform	Survey Unit Area (sq m)	GSV %	GSE %	Effective Coverage Area (sq m) (= Survey Unit Area x GSV % x GSE %)	Effective Coverage % (= Effective Coverage Area / Survey Unit Area x 100)
1	Lower slope	120000	65	10	7800	6.5

Table 6-2 indicates that although the survey efficacy was relatively low that this did not hamper the detection of Aboriginal sites. However, these results also underlie a much-commented on phenomenon in Australian archaeology that site recordings are generally restricted to areas of

prior disturbance as this disturbance acts to reveal the artefacts. This 'false image' of site distribution needs to be considered when undertaking Aboriginal cultural heritage assessments.

Table 6-2: Landform summary—sampled areas.

Landform	Landform area (sq m)	Area Effectively Surveyed (sq m) (= Effective Coverage Area)	% of Landform Effectively Surveyed (= Area Effectively Surveyed / Landform x 100)	Number of Sites	Number of Artefacts or Features
Lower slope	120000	7800	6.5	4	4

6.3 ABORIGINAL SITES RECORDED

Four Aboriginal sites, Swamp Creek IF-1 to Swamp Creek IF-4, were recorded because of the current assessment (**Table 6-3**). All are located outside of the current study area for the Proposed Modification as the study area in August 2017 was larger than the current study area.

Table 6-3: Survey results.

Site name	Coordinates (GDA Zone 56)	Site type	Site extent	Landform
Swamp Creek IF-1 (37-3-1491)	318640E 6407727N	Isolated find	2m x 2m	Flat
Swamp Creek IF-2 (37-3-1492)	318807E 6407327N	Isolated find	2m x 2m	Lower slope
Swamp Creek IF-3 (37-3-1493)	318805E 6407330N	Isolated find	2m x 2m	Lower slope
Swamp Creek IF-4 (37-3-1490)	318805E 6407340N	Isolated find	2m x 2m	Lower slope

Swamp Creek IF-1 (37-3-1491)

Site Type: Isolated find

GPS Coordinates: GDA Zone 56 318640E 6407727N

Location of Site: Swamp Creek IF-1 is located on the western wall of a dam outside of the study area for the Proposed Modification. The site is 200 m east of Swamp Creek and 170 m west of the light vehicle access road.

Description of Site: The site consists of an isolated mudstone end scraper (**Table 6-4**). Four flakes have been removed along the distal end of the scraper with steep retouch. The scraper was recorded along a dam wall and is therefore in a secondary context (**Figure 6-2**). As a result, it is assessed that Swamp Creek IF-1 is not associated with further, intact, archaeological deposits.

Table 6-4: Swamp Creek IF-1. Recorded artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (mm)	Retouch type
End scraper	Mudstone	Complete	Secondary	48 x 57 x 18	Steep

Figure 6-2: Swamp Creek IF-1. View of site and the recorded artefact.

1. View southeast to Swamp Creek IF-1 site location (pink flag).

2. Swamp Creek IF-1: GDA Zone 56 318640E 6407727N. A mudstone end scraper.

3. View of retouch along the distal margin of the scraper.

Swamp Creek IF-2 (37-3-1492)

Site Type: Isolated find

GPS Coordinates: GDA Zone 56 318807E 6407327N

Location of Site: Swamp Creek IF-2 is located along a drainage bund outside of the study area for the Proposed Modification (**Figure 6-3**). The site is 130 m northeast of Bettys Creek and 290 m of Swamp Creek.

Description of Site: The site consists of an isolated mudstone flake (**Table 6-5**). The flake is complete and retains approximately 30% cortex. The flake was recorded on a lower slope landform in an area of exposure along a drainage bund. The site is therefore in a secondary context and as a result, it is assessed that Swamp Creek IF-2 is not associated with further, intact, archaeological deposits.

Table 6-5: Swamp Creek IF-2. Recorded artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (mm)
Flake	Mudstone	Complete	Secondary	41 x 25 x 12

Figure 6-3: Swamp Creek IF-2. View of site and the recorded artefact.

1. Swamp Creek IF-2 site location along a drainage bund (pink flag).

2. Swamp Creek IF-2: GDA Zone 56 318807E 6407327N. A mudstone flake.

Swamp Creek IF-3 (37-3-1493)

Site Type: Isolated find

GPS Coordinates: GDA Zone 56 318805E 6407330N

Location of Site: Swamp Creek IF-3 is located along a drainage bund outside of the study area for the Proposed Modification (**Figure 6-4**). The site is 4 m northwest of Swamp Creek IF-2; 132 m northeast of Bettys Creek; and 292 m of northeast Swamp Creek.

Description of Site: The site consists of an isolated mudstone flake with a faceted platform (**Table 6-6**). The flake was recorded on a lower slope landform in an area of exposure along a drainage bund. The site is therefore in a secondary context and as a result, it is assessed that Swamp Creek IF-3 is not associated with further, intact, archaeological deposits.

Table 6-6: Swamp Creek IF-3. Recorded artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (mm)
Flake	Mudstone	Complete	Tertiary	14 x 23 x 5

Figure 6-4: Swamp Creek IF-3. View of site and the recorded artefact.

1. Swamp Creek IF-3 site location along a drainage bund (pink flag).

2. Swamp Creek IF-3: GDA Zone 56 318805E 6407330N. A mudstone flake.

Swamp Creek IF-4 (37-3-1490)

Site Type: Isolated find

GPS Coordinates: GDA Zone 56 318805E 6407340N

Location of Site: Swamp Creek IF-4 is located along a drainage bund outside of the study area for the Proposed Modification (**Figure 6-5**). The site is 9 m north of Swamp Creek IF-3; 141 m northeast of Bettys Creek; and 300 m of northeast Swamp Creek.

Description of Site: The site consists of an isolated mudstone flake (**Table 6-7**). The flake is complete and retains approximately 40% cortex. The flake was recorded on a lower slope landform in an area of exposure along a drainage bund. The site is therefore in a secondary context and as a result, it is assessed that Swamp Creek IF-4 is not associated with further, intact, archaeological deposits.

Table 6-7: Swamp Creek IF-4. Recorded artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (mm)
Flake	Mudstone	Complete	Secondary	20 x 23 x 6

Figure 6-5: Swamp Creek IF-4. View of site and the recorded artefact.

1. Swamp Creek IF-4 site location along a drainage bund (pink flag).

2. Swamp Creek IF-4: GDA Zone 56 318805E 6407340N. A mudstone flake.

6.4 DISCUSSION

The predictive model (**Section 4.1**) suggested that landforms within the study area were favourable to Aboriginal occupation. The predictive model also stated that should Aboriginal sites be recorded in the study area they are likely to have a low artefact density and be within a disturbed context. Although four new Aboriginal sites, all isolated finds, were recorded, all conformed to the predictive model as they are isolated finds in disturbed contexts.

The assessment results also conform to previous assessments in the area (**Section 5.3**):

- Umwelt 2004 (**Section 5.3.1.1**) demonstrated that a clear majority of sites are closely associated with waterways. As there are no non-ephemeral waterways in the study area this explains the low artefact density of the recordings. Umwelt 2004 also demonstrated that lower slopes contained more sites when compared to crests or upper slope landforms. As the study area is located within lower slope landforms, this perhaps explains why sites were recorded during the assessment

- Umwelt 2013 demonstrated that occupation along Swamp Creek near the study area was less than occupation along nearby creek systems such as Bettys Creek (**Section 5.3.1.2**)

- OzArk 2014 (**Section 5.3.1.3**) demonstrated that sites were either isolated finds or low-density artefact scatters without associated archaeological deposits in landforms away from watercourses. OzArk 2014 also showed that subsurface deposits are not common at the Mount Owen Complex and that there is evidence of widespread disturbance to the soil profile

- OzArk 2019 (forthcoming) (**Section 5.3.1.6**) showed that test excavation in the vicinity of the study area demonstrated a very low subsurface artefact density.

As such, the current results support the general archaeological context that has been built up at the Mount Owen Complex in that: occupation along Swamp Creek is likely to indicate short-term or sporadic use; numbers of sites away from waterways is greatly reduced; lower slope landforms

are likely to record sites; there is unlikely to be subsurface deposits associated with sites; and sites are likely to have been disturbed.

As the sites were recorded along a bulldozed bund for a drainage channel and on a dam wall, these sites represent concentrations of artefacts accumulated by artificial means; thus skewing the 'picture' of site distribution. In this case, a distribution of background artefacts that exist in most Australian landscapes have been artificially concentrated into the one place giving the impression of a foci whereas, in fact, none previously existed.

Given that only isolated finds in a secondary context were recorded, and that a high degree of land-use disturbance was noted, there is a low likelihood of intact sub-surface archaeological deposits being present within the study area.

As noted in **Section 5.3.2**, the Bowmans Creek Complex (37-3-1506) is registered as an Aboriginal resource and gathering site, a burial site and a conflict site. After the registration, AHIMS changed the site status to 'not a site' pending further information being provided to determine the veracity of the large site area.

Although this site includes the study area, it does not currently need to be considered as it has no statutory protection. However, should this change, and the site is reinstated on the AHIMS register, it is highly unlikely that the study area contains any of the values associated with this registration. Specifically:

- Aboriginal resource and gathering site: all portions of the study area have been cleared of native vegetation in the past and currently only support regrowth vegetation. While the past disturbances to the landscape do not preclude the presence of Aboriginal resource plants or animals in the study area, it is likely that these have been highly disturbed. Further, as the study area does not contain water resources, it is likely that any resources within the study area would be very limited in their range
- Burial site: due to the agricultural phase of land use in the study area, soil loss has been considerable and had there been burials in the area, it is likely that these have been disturbed and/or dispersed. Further, the study area does not contain sand bodies—a favoured burial location—and burials are extremely rare at the regional level potentially precluding their existence in the study area
- Conflict site: While it is acknowledged that the wider area saw conflict between early colonial settlers and Aboriginal people (see **Section 5.4**), there are no remains of colonial settlements within the study area meaning that it is impossible deduce that the conflict actually occurred within the study area.

6.5 ASSESSMENT OF SIGNIFICANCE

6.5.1 Introduction

The appropriate management of cultural heritage items is usually determined on the basis of their assessed significance as well as the likely impacts of any proposed developments. Scientific,

cultural and public significance are identified as baseline elements of significance assessment, and it is through the combination of these elements that the overall cultural heritage values of a site, place or area are resolved.

Social or Cultural Value

This area of assessment concerns the importance of a site or features to the relevant cultural group: in this case the Aboriginal community. Aspects of social value include assessment of sites, items, and landscapes that are traditionally significant or that have contemporary importance to the Aboriginal community. This importance involves both traditional links with specific areas, as well as an overall concern by Aboriginal people for their sites generally and the continued protection of these. This type of value may not be in accord with interpretations made by the archaeologist: a site may have low archaeological value but high social value, or vice versa.

Archaeological/Scientific Value

Assessing a site in this context involves placing it into a broader regional framework, as well as assessing the site's individual merits in view of current archaeological discourse. This type of value relates to the ability of a site to answer current research questions and is also based on a site's condition (integrity), content and representativeness.

The overriding aim of cultural heritage management is to preserve a representative sample of the archaeological resource. This will ensure that future research within the discipline can be based on a valid sample of the past. Establishing whether a site can contribute to current research also involves defining 'research potential' and 'representativeness'. Questions regularly asked when determining significance are: can this site contribute information that no other site can? Is this site representative of other sites in the region?

Aesthetic Value

This refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Australia ICOMOS 2013).

Historic Value

Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.

Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage. Consequently, the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives. This means it is

often necessary to collect oral histories along with archival or documentary research to gain a sufficient understanding of historic values.

6.5.2 Assessed significance of the recorded sites

Social or Cultural Value

Aboriginal heritage is of great value to many people and the site therefore has social value. Any assessment of social or cultural value is typically determined through consultation with the Aboriginal community. Although community consultation did not advance any specific information regarding the cultural values of the recorded sites (see **Section 3.1.3**), all newly recorded sites have been assigned high social/cultural value.

This value is determined as the Aboriginal community often express a cultural connection with all artefacts; both as markers for the Aboriginal occupation of the area, as well as a tangible link with their ancestors.

Archaeological/Scientific Value

The scientific significance of Swamp Creek IF-1 to Swamp Creek IF-4 is assessed as extremely low as all sites represent artefacts in secondary contexts. These sites are described as having low scientific / archaeological significance based on the following factors:

- Few formal tool types
- Located in areas where there has been a complete or near complete loss of A-Horizon soils by erosion
- Widespread past and current erosion creating high landform modification
- Not possible to determine the original or primary context of the recorded artefacts.

Aesthetic Value

None of the newly recorded sites does contain any features that are likely to be appreciated on aesthetic grounds, either as individual objects or in terms of setting as it is within a heavily disturbed landscape which has been impacted by mining and agricultural activities. Therefore, the sites are considered to have low aesthetic value.

Historic Value

None of the Aboriginal sites recorded have an apparent direct relationship to known historical Aboriginal sites (such as missions or massacre sites). It is possible that the area saw some of the earliest contact between Aboriginals and non-Aboriginal settlers, however, none of the recorded Aboriginal sites display evidence that they constitute ‘contact’ or ‘post-contact’ Aboriginal sites. To that end, all recorded sites are assessed as having no historic value.

Table 6-8 tabulates the assessment of significance for the recorded sites.

Table 6-8: Significance assessment of recorded sites.

Site Name	Social or Cultural Value	Archaeological / Scientific Value	Aesthetic Value	Historic Value
Swamp Creek IF-1 (37-3-1491)	High	Low	Low	None
Swamp Creek IF-2 (37-3-1492)	High	Low	Low	None
Swamp Creek IF-3 (37-3-1493)	High	Low	Low	None
Swamp Creek IF-4 (37-3-1490)	High	Low	Low	None

6.6 LIKELY IMPACTS TO ABORIGINAL HERITAGE FROM THE PROPOSED MODIFICATION

The assumption in this report is that all landforms within the study area are liable to be impacted should the Proposed Modification be approved. While all sites recorded as part of the visual inspection of the study area in August 2017 are outside of the study area, three sites recorded after the August 2017 inspection during the 2018 GCOP survey, are either wholly within the study area or partially within the study area (Swamp Creek OS1: 37-3-1499; Glendell North OS28: 37-3-1508; Glendell North OS31: 37-3-1545).

Regarding the two sites that are partially within the study area it will be a recommendation here that only the portions of the site within the Proposed Disturbance Area be salvaged should the Proposed Modification be approved. While both sites are within modified landforms and in a secondary context along a drainage bund, the portions of the sites remaining outside of Proposed Disturbance Area should be protected by fencing and conserved within the landscape. **Table 6-9** sets out the impact assessment arising from the Proposed Modification.

Table 6-9: Impact assessment.

Site Name	AHIMS Id	Degree of disturbance	Scientific significance	Type of Harm (Direct/Indirect / None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
Swamp Creek IF-1	37-3-1491	High	Low	None	None	No loss of value
Swamp Creek IF-2	37-3-1492	High	Low	None	None	No loss of value
Swamp Creek IF-3	37-3-1493	High	Low	None	None	No loss of value
Swamp Creek IF-4	37-3-1490	High	Low	None	None	No loss of value
Swamp Creek OS1	37-3-1499	High	Low	Direct	Partial	Partial loss of value
Glendell North OS28	37-3-1508	High	Low	Direct	Total	Total loss of value
Glendell North OS31	37-3-1545	High	Low	Direct	Partial	Partial loss of value

6.7 ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND CUMULATIVE IMPACT FOR THE PROPOSED MODIFICATION

Australia's *National Strategy for Ecologically Sustainable Development* (Ecologically Sustainable Development Steering Committee 1992) defines ecologically sustainable development (ESD) as:

> *…using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.*

The management and mitigation of Aboriginal sites involves consideration of ESD principles including cumulative impacts, the precautionary principle and the principle of intergenerational equity (OEH 2011: 12–13).

With regards to cultural heritage, the most important aspect of ESD is inter-generational equity whereby the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. Similarly inter-generational equity maintains that places and items of cultural heritage value should be preserved for the education, enjoyment and use of future generations.

The Proposed Modification adds to the cumulative impact on the region's Aboriginal cultural heritage as three sites will be harmed. However, the heritage impact value of this loss is low as the sites consist of low-density artefact scatters in disturbed contexts and two of the three sites will only be minimally impacted. Therefore, the loss has a negligible cumulative impact on the region's Aboriginal cultural heritage resource.

Nevertheless, it is understood that this rather analytical approach to determining cultural loss is not shared by everyone. For example, for a similar project, the Wanaruah Local Aboriginal Land Council have stated that *any* cumulative loss of Aboriginal cultural heritage values is neither 'minimal' nor 'negligible':

> *So to assess the cultural value of an area you actually need to look at that area as part of a landscape. However as usual the consultant has only looked at the area of direct impact. This not only neglects the impact this will cause to the holistic landscape, it also fails to consider the cumulative impacts…*
>
> *The report continues on about how much disturbance there has been because of agriculture. Our response is SO WHAT? There has been ground disturbance and yes the archaeological record has been damaged. That does not affect the cultural value of the land. Yes there has been ploughing, tree removal and erosion, but that has not radically changed the landscape. It is still the same valley with the same waterways and evidence of past occupation. People could still walk, fish, hunt, gather and conduct ceremony here, and with rehabilitation the land could be returned to a state*

> *similar to that pre settlement. Open Cut Mining however WILL radically change the landscape it will destroy much of the cultural values of the landscape.*
>
> Pers comm. Noel Downs, 25 January 2019.

While the views of the WLALC are respected and understood, due to the relatively small size of the study area, and the nature of the small number of sites to be impacted, it is still felt that the cumulative impacts of the Proposed Modification on Aboriginal cultural heritage values will be negligible. The study area *has* been radically changed, and while people could 'walk' there, there is little opportunity for this landscape to return to its pre-1788 form. As the landscape is irrevocably changed (mostly because of soil loss during the agricultural land use of the area) and is surrounded by highly modified landforms, its ability to contribute to a wider cultural landscape is greatly diminished.

7 MANAGEMENT AND MITIGATION: ABORIGINAL HERITAGE

7.1 GENERAL PRINCIPLES FOR THE MANAGEMENT OF ABORIGINAL SITES

Appropriate management of cultural heritage items is primarily determined based on their assessed significance as well as the likely impacts of the proposed development. **Section 6.5.2** and **Section 6.6** describe, respectively, the significance / potential of the recorded sites and the likely impacts of the Proposed Modification. The following management options are general principles, in terms of best practice and desired outcomes, rather than mitigation measures against individual site disturbance.

- Avoid impact by altering the development proposal or in this case by avoiding impact to a recorded Aboriginal site. If this can be done, then a suitable curtilage around the site must be provided to ensure its protection both during the short-term construction phase of development and in the long-term use of the area. If plans are altered, care must be taken to ensure that impacts do not occur to areas not previously assessed.

- If impact is unavoidable then approval to salvage the sites under the authority of an approved ACHMP should be undertaken.

7.2 MANAGEMENT AND MITIGATION OF RECORDED ABORIGINAL SITES

As all sites liable to be harmed by the Proposed Modification are in highly disturbed contexts and have a low scientific value, an appropriate mitigation would be to undertake a recording and collection of all low density surface artefacts.

Three sites will be impacted by the Proposed Modification: all low-density artefact scatters (Swamp Creek OS1: 37-3-1499; Glendell North OS28: 37-3-1508; Glendell North OS31: 37-3-1545).

Only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area should be salvaged.

The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area should be fenced to ensure they are conserved within the landscape.

The protocol for the collection of surface artefacts at these sites should follow the Mount Owen Complex ACHMP Section 6.2.1.1.

8 RECOMMENDATIONS

Under Section 89A of the NPW Act it is mandatory that all newly-recorded Aboriginal sites be registered with OEH AHIMS. As a professional in the field of cultural heritage management it is the responsibility of OzArk to ensure this process is undertaken.

To this end it is noted that four Aboriginal sites were recorded during the assessment.

The following recommendations are made on the basis of these impacts and with regard to:

- Legal requirements under the terms of the NPW Act whereby it is illegal to damage, deface or destroy an Aboriginal place or object without the prior written consent of OEH;
- The findings of the current investigations undertaken within the study area; and
- The interests of the Aboriginal community.

To ensure that Aboriginal cultural heritage values are protected in the study area, the following recommendations are made:

1) Should the Proposed Modification be approved, the Mount Owen Complex ACHMP should be updated to include the management recommendations contained in this report. In order to update the ACHMP, consultation with the Aboriginal community is required as set out in Section 8.1 of the Mount Owen Complex ACHMP.
2) The updated ACHMP should stipulate that the recording and collection of surface artefacts occur at three sites: Swamp Creek OS1 (37-3-1499); Glendell North OS28 (37-3-1508); and Glendell North OS31 (37-3-1545). The collection of surface artefacts should follow the procedure set out in the Mount Owen Complex ACHMP Section 6.2.1.1.
3) Only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area should be subject to the collection of surface artefacts.
4) The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area should be fenced to ensure they are conserved within the landscape.
5) Should Aboriginal artefacts or human skeletal material be uncovered during works within the study area, all work should cease and the Mount Owen Complex ACHMP Sections 6.1 or 6.2 should be followed.
6) Work crews should undergo cultural heritage induction to ensure they recognise Aboriginal artefacts and are aware of the legislative protection of Aboriginal objects under the NPW Act and the contents of the Mount Owen Complex ACHMP.

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APPENDIX 1: RESPONSES TO VERSION 1 OF THIS REPORT

OEH Response

NSW GOVERNMENT Office of Environment & Heritage

DOC18/881099-1
DA 80/952 MOD 4

Mr Philip Nevill
Environmental Assessment Officer
Resource Assessments, Planning Services
Department of Planning & Environment
philip.nevill@planning.nsw.gov.au

Dear Philip

Glendell Mine (DA 80/952) Modification 4

I refer to your e-mail dated 15 November 2018 in which the Department of Planning and Environment (DPE) invited the Office of Environment and Heritage (OEH) to comment on the Environmental Assessment for the Glendell Mine Modification 4 project (DA 80/952 MOD 4). OEH has reviewed the Statement of Environmental Effects, prepared by Umwelt (Australia) Pty Limited (dated November 2018), that describes the project.

OEH's recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Steven Cox, Senior Team Leader Planning, on 4927 3150 or via email at rog.hcc@environment.nsw.gov.au.

Yours sincerely

Sharon Molloy 7/12/2018

SHARON MOLLOY
Director Hunter Central Coast Branch
Conservation and Regional Delivery Division

Contact officer: STEVEN COX
02 4927 3150

Enclosure: Attachments A and B

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Attachment A

OEH's recommendations

Glendell Mine Modification 4

1. OEH recommends that an Aboriginal archaeological cultural heritage assessment report is prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the Glendell Mine Modification 4 footprint. The Aboriginal cultural heritage assessment report should be prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011)* and the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)*.

2. OEH recommends that only Aboriginal objects that occur within the Modification 4 proposed disturbance boundary should be salvaged as part of the project. The portion of Aboriginal sites that occur outside the Modification 4 proposed disturbance boundary should not be salvaged as part of the project.

3. OEH recommends that the existing Aboriginal Cultural Heritage Management Plan for the Mount Owen Complex (OzArk 2018) is updated to manage the Aboriginal objects within the proposed Glendell Mine Modification 4 proposed disturbance area.

4. OEH is satisfied with the biodiversity assessment conducted and no further biodiversity assessment of the impact area is required.

5. No further flooding assessment is required for this project.

Attachment B

OEH's detailed comments

Glendell Mine Modification 4

Aboriginal Cultural Heritage

1. An Aboriginal cultural heritage assessment report should be prepared

OEH has reviewed the information supplied with respect to Aboriginal cultural heritage for the Glendell Mine Modification 4. Modification 4 comprises an area of 12 hectares, a 2 kilometre x 100 metre strip along the length of the western boundary of the current approved disturbance area. The proposed modification area is within 200 metres of Swamp Creek, which is a tributary of Bowmans Creek and a major watercourse in the local area. OEH considers that this is an area of archaeological sensitivity.

OEH notes that the *Aboriginal Due Diligence Archaeological Assessment: Glendell Mine Modification 4, Mount Owen Complex* was undertaken for Modification 4 (OzArk EHM, November 2018). Please note that the due diligence process is not sufficient to support a state significant development modification project. Due diligence is a legal defence against harm under the *National Parks and Wildlife Act 1974*. Accordingly, OEH does not review or comment on the due diligence process undertaken by proponents. OEH considers that a due diligence process is inadequate to assess the impacts of this proposal on the Aboriginal archaeological and cultural heritage values of the subject land.

OEH notes that three new sites were recorded during the due diligence survey:

- AHIMS 37-3-1499 Swamp Creek OS1
- AHIMS 37-3-1508 Glendell North OS28
- AHIMS number pending Glendell North OS31

OzArk EHM (2018) asserts that these sites will be impacted and therefore harmed by the proposed modification. As only a portion of these sites lie within the modification boundary, only partial salvage is required with the remainder of the artefacts outside of the Modification 4 boundary requiring protection by a No-Go Zone Barrier Fence.

A fourth new site was also identified, directly to the east of the modification boundary within the approved disturbance boundary. OEH is unable to determine from the information provided if it is likely to be impacted.

The Aboriginal archaeological and cultural heritage values of the Glendell Mine Modification 4 proposed disturbance area should be documented in an Aboriginal cultural heritage assessment report. The identification of cultural heritage values should be guided by the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011) and consultation with Aboriginal people must be undertaken and documented in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW).

The Aboriginal cultural heritage assessment report should assess any impacts on Aboriginal cultural values. The Aboriginal cultural heritage assessment report should demonstrate attempts have been made to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the Aboriginal cultural heritage assessment report must outline measures proposed to mitigate impacts.

Recommendation 1

OEH recommends that an Aboriginal archaeological cultural heritage assessment report is prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the Glendell Mine Modification 4 footprint. The Aboriginal cultural heritage

assessment report should be prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011) and the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW).

2. Only Aboriginal objects within the proposed disturbance area should be impacted

OEH notes that OzArk EHM intends to combine the following three previously recorded sites (identified in August 2017 and outside of the Modification 4 boundary):

- AHIMS 37-3-1492 (Swamp Creek IF-2)
- AHIMS 37-3-1493 (Swamp Creek IF-3)
- AHIMS 37-3-1490 (Swamp Creek IF-4)

OzArk EHM intends to amalgamate these sites with another site within the boundary:

- AHIMS 37-3-1499 (Swamp Creek OS1)

OzArk EHM proposes total salvage at all these sites as part of Modification 4, even though some of the artefacts lie outside the modification boundary. There is no evidence of consultation with the Aboriginal stakeholders on this matter.

Recommendation 2

OEH recommends that only Aboriginal objects that occur within the Modification 4 proposed disturbance boundary should be salvaged as part of the project. The portion of Aboriginal sites that occur outside the Modification 4 proposed disturbance boundary should not be salvaged as part of the project.

3. The Aboriginal Cultural Heritage Management Plan should be updated

OEH has reviewed the *Aboriginal Cultural Heritage Management Plan (ACHMP) for the Mount Owen Complex (OzArk 2018)*. OEH recommends that the existing ACHMP (OzArk 2018) be updated to manage the Aboriginal objects within the proposed Glendell Mine Modification 4 Consent Boundary. The proposed modification boundary must be updated on all relevant figures in the ACHMP.

Recommendation 3

OEH recommends that the existing Aboriginal Cultural Heritage Management Plan for the Mount Owen Complex (OzArk 2018) is updated to manage the Aboriginal objects within the proposed Glendell Mine Modification 4 proposed disturbance area.

Biodiversity

4. OEH is satisfied with the biodiversity assessment

OEH reviewed the Biodiversity Development Assessment Report, the Biodiversity Assessment Method calculator file, and the Geographic information shapefiles for this project and is satisfied with assessment undertaken. The proponent has not identified which of the offsetting options available under the NSW biodiversity offsets policy for major projects will be used to meet the 109 ecosystem credits generated if this development is approved.

Recommendation 4

OEH is satisfied with the biodiversity assessment conducted and no further biodiversity assessment of the impact area is required.

Plains Clans of the Wonnarua People response

Objects to this project

The application, falls short of compliance under the NPW Acts for protecting Aboriginal heritage. contained in the documents page 24 of the Oz ark assessments makes the following statement.
No Aboriginal community members accompanied the visual inspection of the study area during the August 2017 assessment. However, Aboriginal community were present during the April/May 2018 GCOP assessment that included the study area and no specific cultural values pertaining to the study area were raised.

The registered Native title party were not consulted with regard to this Mod.The Department of the Environment and Energy has received our applications under section 9 and section 10 of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth) (the ATSIHP Act). the area we are seeking protection is contained with in the application lodged with ATSIHP. this further demonstrates that no consolation was done with the registered native title claim group. the Bowmans glens creek area is of significant cultural importance to Wonnarua people.

Also contained on page 24 of the ozark report in the following statement.

A search of the OEH administered AHIMS database was not completed over the study area as the Mount Owen Complex maintains an up-to-date, accurate GIS system of recorded sites within the MOC ACHMP boundary. The sites on the Mount Owen Complex GIS heritage database have been verified against the AHIMS data, as well as being inspected on the ground to verify current site conditions and the accuracy of the AHIMS data at particular sites. As such, there is a high degree of confidence in the data held on the Mount Owen Complex GIS heritage database.Mount Owen Complex is not the regularity regulator for AHMIS that is the Office of heritage and invirоment this statement confirms that proper current search of the AHIMS system was not completed as a requirement under the NPW Acts. i cannot believe the OEH have not reviewed this document before it was submitted to your department and if it was reviewed by OEH Newcastle serious questions need to be asked as to what this department are in fact doing when it comes to ensuring these applications are in compliance with the NPW Acts dealing with Aboriginal heritage.

i would like to point out that crown land 58/D752499 is still registered on the clown lands data base as a Crown reserve and conformation should be court weather Native title under a section 29 would need to be granted before this land could be destroyed.

Anonymous Camberwell 3 response (highlighting added)

Glendell Mine Modification 4

Application: DA80/952Mod 4

To Department of Planning

We object to the modification on these grounds as listed below;

1. Glencore at a CCC made comment to the fact of the Department of Planning advised Glencore that the modification would not be placed on public exhibition. The feedback we received from our representative and which would remove our right to make comment of the modification
2. The above statement re-enforces the concern that the department has already approved this application and the comments of the community will not be taken seriously.
3. The other concern is fact Glencore made this statement at a CCC, which would give the impression of perception that a deal was made prior to the presentation between the department and Glencore and the perception of possibility of dishonesty action could have taken place.
4. The concern of the recent media release of the Garrison diary entries related to the massacre of aboriginal people in the area, in which was not found in the report presented by Glencore.
5. The air quality report has not taken in account of the new NEPM standard of particulate matter and the fact that Camberwell is already in the exceedances of the Ambient air quality from data provided by the UHAQN which looks at the cumulative impact and there has been no improvement at all in the last number of years.
6. The tank water which we require for drinking, is continually grey in colour from the amount of dust collected on the roof and as explained to us that Glencore is not responsible to clean our tank as it is not apart of the consent conditions.
7. Camberwell is heavily impacted by Glencore operations and there is no provision in the consent conditions for acquistion on request, knowing the area in this village is exposed to the highest levels of PM10 possibly in that state.

Regards

APPENDIX 2: OEH RECOMMENDATIONS REGARDING STAGE 1 OF THE ACHCRS

NSW GOVERNMENT Office of Environment & Heritage

DOC19/12328-1
Glendell Mine Modification 4 - RAP List

Ms Jodie Benton
OzArk EHM
jodie@ozarkehm.com.au

Dear Jodie

Glendell Mine Modification 4 – Aboriginal Stakeholder List

In response to your request under Section 4.1.2(a) of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010), please find attached a list of known Aboriginal parties that have self-nominated for Singleton Council Local Government Area (LGA). Please note the following information with respect to Aboriginal consultation for your project.

Aboriginal stakeholder lists maintained by OEH are comprised of self-nominated individuals and organisations

Please note that the attached list is comprised only of self-nominated individuals and Aboriginal organisations who could have an interest in your project. The list is not vetted by OEH. As the list comprises only of self-nominated individuals and Aboriginal organisations, it is not necessarily an exhaustive list of all Aboriginal parties who may hold an interest in the project. Further consultation in accordance with step 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010) is required to identify Aboriginal people who may hold either cultural or historical knowledge relevant to determining the significance of Aboriginal objects or places within your proposed project area.

Aboriginal stakeholder lists may cover multiple Local Aboriginal Land Council boundaries

Please note that the attached list may contain two or more Local Aboriginal Land Councils (LALCs) that occur in the LGA. Please review the boundary of your specific project area and ensure you consult with all LALC(s) that overlap with your project area. OEH does not require you to contact any LALCs on the attached list that you determine are wholly located outside your project area.

Ensure you document the consultation process

Please ensure all consultation undertaken in accordance with the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010) is documented within an Aboriginal Cultural Heritage Assessment Report (ACHAR). This must include copies of all correspondence sent to or received from all Registered Aboriginal Parties (RAPs) throughout the entire consultation process. Omission of these records in the final ACHAR may cause delays in the assessment of an Aboriginal Heritage Impact Permit (AHIP) application or a major project Aboriginal cultural heritage assessment and could require parts of the consultation process to be repeated if the evidence provided to OEH

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does not demonstrate that the consultation process has been conducted in accordance with our consultation requirements.

Demonstrate that reasonable consultation attempts have been made

Please ensure you provide evidence to demonstrate that reasonable attempts have been made to contact the relevant parties identified through step 4.1.2 of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010). If this evidence is not provided, OEH may deem that the consultation process has not complied with the consultation requirements. Similarly, the proponent is required to record all feedback received from RAPs, along with the proponent's response to the feedback. Where concerns or contentious issues are raised by RAPs during the consultation process, OEH expects that reasonable attempts are made to address and resolve these matters, however OEH acknowledges that in some cases, this may not be achievable. In the case where conflict cannot be resolved, it is the responsibility of the proponent to record these differences and provide the necessary information in their ACHAR with their AHIP application or major project ACHAR.

Consultation should not be confused with employment

As outlined in Section 3.4 of the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010), the consultation process involves getting the views of, and information from, Aboriginal people and reporting on these. It is not to be confused with other field assessment processes involved in preparing a proposal and an application. OEH does not have any role with respect to commercial engagement. Where RAPs are engaged commercially to provide field services as part of an assessment process, that is a matter for the proponent to manage as they see fit. However, if a proponent is proposing to undertake consultation processes or elicit cultural information from RAPs during the course of conducting a field survey, OEH considers this to form part of the consultation process and expects that all RAPs would be afforded the opportunity to be involved in the process.

Contacting our office

To ensure we can respond to enquiries promptly, please direct future correspondence to our central mailbox: rog.hcc@environment.nsw.gov.au.

Should you require any further information, please do not hesitate to contact us.

Yours sincerely

G. S. Goode

GILLIAN GOODE
Archaeologist
Hunter Central Coast Branch
Conservation and Regional Delivery Division

4 February 2019

APPENDIX 3: ACHCRS STAGES 2 & 3 DOCUMENT

Sample cover letter sent to all RAPs with the Stage 2 & 3 information document

MT OWEN
OPEN CUT
GLENCORE

6 February 2019

Name
GCOP Project RAP list and ACHMP distribution list
Address
Address
Address

Re: Glendell Mine Modification 4 – Aboriginal Cultural Heritage Assessment

Dear XXXX,

The existing Glendell Mine is part of the Mount Owen complex located in the Singleton Local Government Area, and currently operates under Development Approval DA 80/952. Mt Owen Pty Limited (Mount Owen) is now seeking a minor modification to DA 80/952 which will provide a small extension to the approved Glendell Mine mining area (Proposed Modification). The Proposed Modification will involve the following key aspects:

- 12 hectares of new disturbance, mostly around the edges of the existing Glendell mine
- access to an additional approximately 2.5 Mt ROM Coal from the Barrett Pit and
- providing approximately eight months of continued mining operations and ongoing employment

The Proposed Modification will provide the opportunity for the implementation of operational efficiencies, continued mining operations at the Glendell Mine and the continued employment of the existing workforce for an additional approximately 8 months.

The disturbance area associated with the Proposed Modification is fully contained within the larger GCOP Project Area, and within the area covered by the GCOP Cultural Values Assessment (refer to Figure 1 – Location Plan). As you are a Registered Aboriginal Party (RAP) for the GCOP Project, you are now included in the consultation process for the Proposed Modification. However, should you not wish to be consulted any further about the Proposed Modification, please let us know and we will remove you from the associated RAP list.

Further information on the location and nature of this Proposed Modification is contained in the attached document (Aboriginal Cultural Heritage Assessment Background, Glendell Mine Modification 4, OzArk). The attached document has been sent to you as part of Stage 2/3 of the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.

The purpose of the attached document is to provide background information on the archaeological assessment conducted to date for the Proposed Modification. As outlined in this document, field assessment has previously occurred as part of the larger GCOP Project in 2018, and also includes some survey undertaken by OzArk, focussed on the study area relevant to the Proposed Modification in 2017. As a result no further field survey is proposed for the Proposed Modification. However, should you wish to view the study area, it will be possible to schedule a site visit if requested. Any further requests for a site visit, that will be unpaid, should be forwarded to Ned Stephenson (Environment and Community

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GLENCORE

Manager) at (02) 65202693 or ned.stephenson@glencore.com.au.

It should be noted that the assessment process in relation to GCOP so far has included extensive consultation, survey and workshops with the relevant RAP's and knowledge holders, any knowledge or relevant information already provided in relation to the GCOP will be taken into consideration and utilised (where appropriate) in the assessment of the Proposed modification. If you can share any additional Aboriginal cultural heritage values or knowledge relevant to the proposed disturbance area associated with the Proposed Modification, we welcome this input to the assessment. Please provide comment on the attached documentation within twenty eight (28) days. This period closes on 6 March 2019.

Should you have any queries in relation to the enclosed information, or require need any help supplying feedback, please do not hesitate to contact our office.

If you would like to discuss or would like further information please do not hesitate to contact me on the details below.

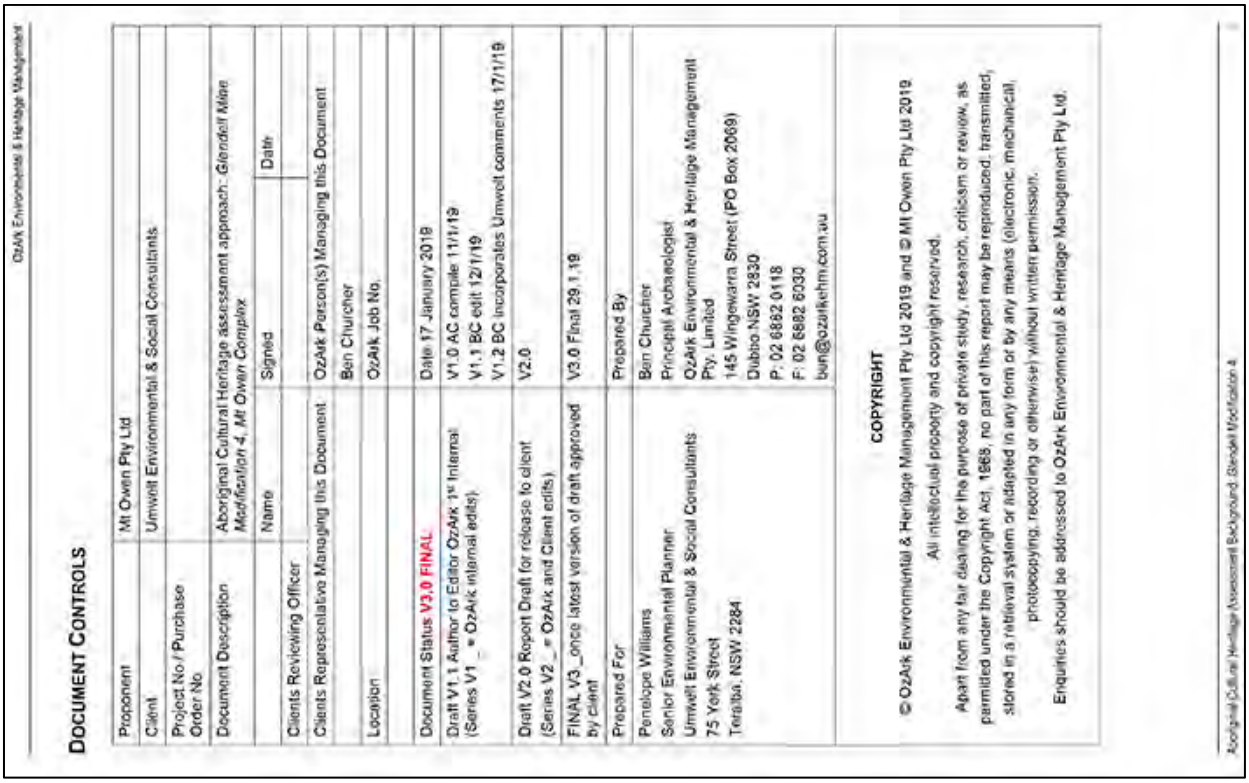
Yours sincerely,

Ned Stephenson
Environment and Community Manager
02 6520 2693
Ned.stephenson@glencore.com.au

Attachment – Aboriginal Cultural Heritage Assessment Background, Glendell Mine Modification 4, OzArk

Page 2 of 2

Stages 2/3 information document issued to RAPs on 6 February 2019



OzArk Environment & Heritage

Document Controls

Proponent	Mt Owen Pty Ltd
Client	Umwelt Environmental & Social Consultants
Project No / Purchase Order No	
Document Description	Aboriginal Cultural Heritage assessment approach: *Glendell Mine Modification 4, Mt Owen Complex*
	Name / Signed / Date
Clients Reviewing Officer	
Clients Representative Managing this Document	
	OzArk Person(s) Managing this Document
	Ben Churcher
Location	OzArk Job No.
Document Status **V3.0 FINAL**	Date 17 January 2018
Draft V1.1 Author to Editor OzArk 1st Internal (Series V1_ = OzArk internal edits).	V1.0 AC compile 11/1/19 V1.1 BC edit 12/1/19 V1.2 BC incorporates Umwelt comments 17/1/19
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FINAL V3_once latest version of draft approved by client	V3.0 Final 29.1.19
Prepared For	Prepared By
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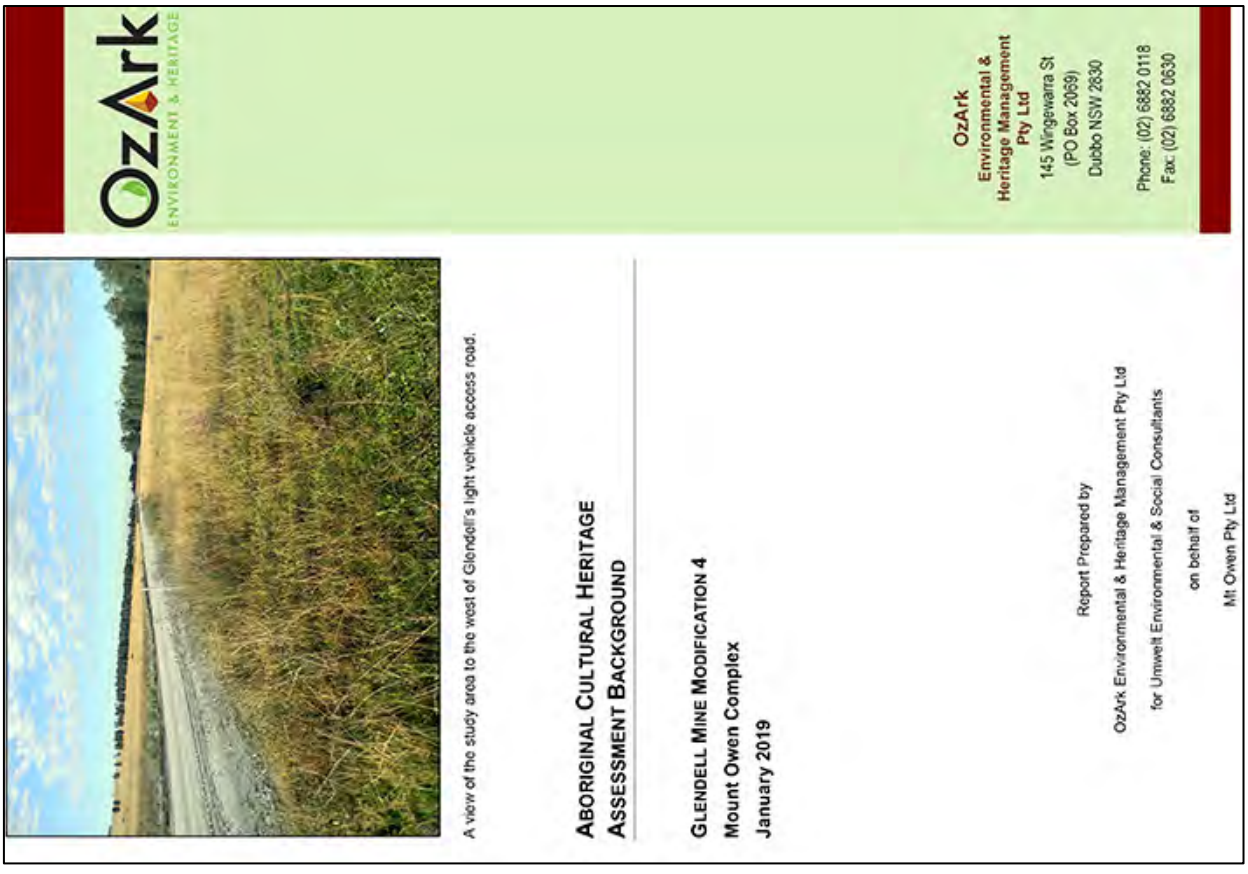

OzArk
ENVIRONMENT & HERITAGE

A view of the study area to the west of Glendell's light vehicle access road.

Aboriginal Cultural Heritage Assessment Background

Glendell Mine Modification 4
Mount Owen Complex
January 2019

Report Prepared by
OzArk Environmental & Heritage Management Pty Ltd
for Umwelt Environmental & Social Consultants
on behalf of
Mt Owen Pty Ltd

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Acknowledgement

OzArk acknowledge the Traditional Owners of the area on which this assessment will take place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

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1 INTRODUCTION

OzArk Environmental & Heritage Management (OzArk) has been engaged by Umwelt Environmental & Social Consultants (Umwelt), on behalf of Mt Owen Pty Limited (Mount Owen) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) of the proposed Glendell Mine Modification 4 (the Proposed Modification).

The purpose of this document is to provide background information relating to the Proposed Modification and to seek further information on the cultural values of the study area prior to producing the ACHAR. This document satisfies the requirements of Stage 2/3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs) in that it provides information to the Registered Aboriginal Parties (RAPs) to enable them to provide an informed consideration of the cultural values of the study area.

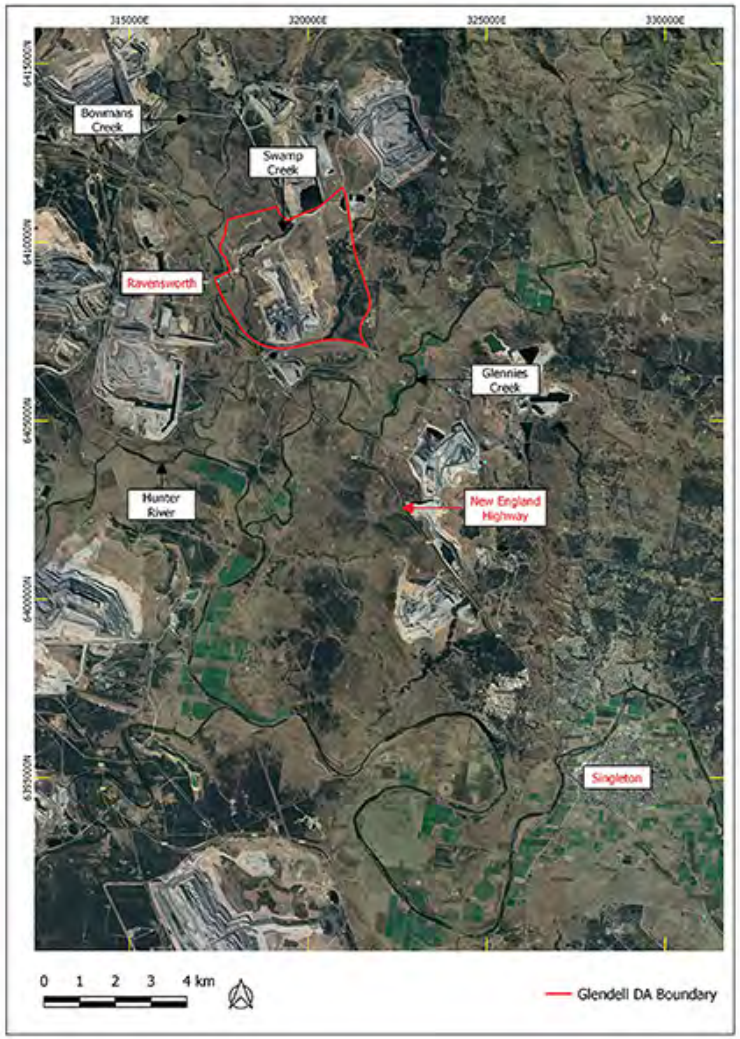
1.1 PROPOSED MODIFICATION OVERVIEW

The Mount Owen Complex (MOC) is located within the Hunter Coalfields in the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres (km) northwest of Singleton and 24 km southeast of Muswellbrook (**Figure 1-1**) and consists of the Glendell Mine (Barrett Pit), Mount Owen Mine (North Pit) and Ravensworth East Mine (Bayswater North Pit). Mount Owen, a subsidiary of Glencore Coal Pty Limited (Glencore) operates Glendell Mine under development consent DA 80/952, which regulates the mining of coal from Glendell Mine and the rehabilitation of the mining area. The processing of coal mined from Glendell Mine and transportation of coal for export is regulated by development consent SSD-5850 (Mount Owen Continued Operations) which also regulates mining at the Mount Owen and Ravensworth East Mines, and associated activities.

Development consent DA 80/952 was originally granted in 1983. Mining commenced in 2009 following two subsequent modifications to the consent in 1997 and 2008. An additional modification to DA 08/952 was granted in 2016 to provide for the realignment of an existing powerline. DA 08/952 (as modified) provides for mining operations at the Glendell Mine until 2024 and the extraction of approximately 50 million tonnes (mt) run of mine (ROM) coal at an annual production rate of 4.5 million tonne per annum (Mtpa).

Although DA 80/952 provides for mining operations at Glendell until 2024, based on the current mining schedule mining operations will cease in 2022, Mount Owen are seeking a minor extension to the approved pit shell (the Proposed Modification) in order to access additional coal reserves from the Barrett Pit and provide for the continuity of mining operations for approximately an additional eight months.

Figure 1-1: Location of the Glendell DA boundary.



1.1 Brief Description of the Proposed Modification

Mount Owen is seeking to modify the approved Glendell mine plan in order to access an additional 2.5 Mt ROM coal and provide for an additional eight months of mining operations. The mine plan will be amended to provide for a minor extension to the approved pit shell.

The extension of the northern and western boundary of the approved pit shell will require an additional approximately 12 hectare (ha) of disturbance in order to accommodate the proposed mine plan changes. However, the approved disturbance area has been revised to remove an area previously approved for disturbance on the eastern boundary of the site. An area of approximately 15.5 ha will removed from the currently approved disturbance area as part of the Proposed Modification. This will result in a net decrease (approximately 3.5 ha) in the overall disturbance area associated with the Glendell mining operations (**Figure 1-2**).

No changes are proposed to the current approved mining methods, extraction limits, processing rates, transportation methods, operational hours or workforce numbers.

Table 1-1 provides a comparison between the Approved Operations and the Proposed Modification.

Table 1-1: Comparison between the Approved Operations and the Proposed Modification.

Item	Description	Change from Approved Operations
Mining Method	Truck and excavator	No change to mining methods
Target Seams	To Barrett Seam Down to approximately 200 metre (m) depth	No change to target seam or mining depth
Total Reserve Recovered	Total of approximately 50 Mt ROM coal	Additional approximately 2.5 Mt Rom Coal (approximately 5% of total approved resource)
Disturbance Area	Approved disturbance area of approximately 834 ha	Additional proposed disturbance of approximately 12 ha Reduction of approved disturbance area associated an area of undisturbed vegetation of approximately 15.5 ha Net decrease in approved disturbance area of approximately 3.5 ha
Annual Production	4.5 Mtpa (ROM Coal)	No Change to annual production
Mine Life	2024	Additional approximately eight months of mining Current approved mining operations will cease in 2022 (based on current mining schedule) proposed mining will cease 2023 No increase to approved mine life
CHPP Capacity	Up to 17 Mtpa (under SSD-5850)	No change
Management of Mining Waste	Emplacement of waste in-pit and out-of-pit up to maximum height of 160 m	No change to location and height of emplacement areas
Water Management	Existing Swamp Creek and Bettys Creek diversion Management of water within the existing water management system and the GRAWTS	No change to existing approved creek diversions Extension of water management system to proposed disturbance area and continued management of water within the GRAWTS
Operational Workforce	Up to approximately 300 people	No change to operational workforce
Hours of Operation	24 hours, 7 days per week	No change to hours of operation

Item	Description	Change from Approved Operations
Final Landform	One approved void (Barrett Pit) Rehabilitation strategy includes progressive rehabilitation to create a stable final landform with incorporated vegetation corridors providing links between the offset areas and existing remnant vegetation and post mining land use a combination of grazing land and bushland.	No change to approved rehabilitation strategy. Minor changes to the design of the final landform to incorporate proposed changes to the mine plans.

Figure 1-2: Proposed Modification overview.

1.2 PROPOSED WORK

Mount Owen propose to amend the approved disturbance boundary for the Glendell Mine to include approximately a further 12 ha located along the western boundary of the current DA 08/952 (as modified) approved disturbance area. Apart from this additional 12 ha, all other areas of the Proposed Modification are within the approved disturbance area for the Approved Operations. For the purposes of this report, it is assumed that there are likely to be substantial ground disturbing impacts within the additional 12 ha of the Proposed Disturbance Area.

1.3 STUDY AREA

The study area refers to the additional 12 ha of land that is likely to be impacted should the Proposed Modification be approved. All other impacts associated with the Proposed Modification are located in land already approved for disturbance as part of the Approved Operations.

The study area occupies an approximate 2 km by 100 metres (m) (maximum width) strip along the existing western boundary for the current DA 08/952 (as modified) (**Figure 1-3**). The study area is generally parallel and to the east of Swamp Creek; a tributary to Bowmans Creek that it joins just south of the study area. In the main, the study area is located within paddocks that have previously been used for agricultural purposes such as grazing. Portions of the study area have more recently been impacted by approved mining infrastructure such as the construction of a light vehicle access road and drainage bunds.

Figure 1-3: Aerial showing the study area.

1.4 BACKGROUND TO THIS ASSESSMENT

OzArk was first engaged in mid-2017 to undertake the assessment of the DA boundary modification as it was then understood. Visual inspection of the Proposed Modification was undertaken by OzArk in August 2017. However, following this, the Proposed Modification was put on hold as Mount Owen evaluated the mine plan in relation to the Glendell Continued Operations Project (GCOP). In mid-2018 the Proposed Modification was re-initiated. In this time the disturbance area for the Proposed Modification was reduced in size compared to that inspected by OzArk in August 2017. As the now Proposed Disturbance Area is located within the 2017 study area, all portions of the Proposed Disturbance Area were assessed for archaeological values in 2017. In addition, in April and May 2018, assessment for GCOP included all of the 2017 study area. As a result, the 2017 study area was again assessed for the GCOP Aboriginal Archaeological Impact Assessment (AAIA) by OzArk archaeologists and members of the Aboriginal community in 2018.

An AAIA report was produced for the study area in 2018. Review of the AAIA by the Office of Environment and Heritage (OEH) recommended that an ACHAR be prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the study area. Integral to the development of the ACHAR was to also initiate the ACHCRs.

As the fieldwork has already been conducted following the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), this document is to provide an overview of the background and results of the field assessment and to seek further information pertaining to the cultural values of the study area prior to the production of the ACHAR.

2 ARCHAEOLOGICAL CONTEXT

2.1 INTRODUCTION

The study area is located in an area where the archaeological values are largely known due to the high amount of previous assessment either within the study area or in immediately adjacent landforms. This assessment approach will limit itself to those studies that are directly applicable to the study area.

2.2 ANTIQUITY OF ABORIGINAL OCCUPATION

The Aboriginal occupation of Australia begins prior to 40,000 BP (years before present) and possibly earlier than 50,000 BP. Dates exceeding 20,000 years occur in almost all parts of Australia resulting in the expectation that most areas should have a Pleistocene (>12,000 BP) occupational signature. However, such dates remain relatively rare due to a range of factors, both behavioural and post-depositional. These factors include a possible low density of occupation in the Pleistocene period, poor preservation of archaeological materials (particularly dateable organic materials) and significant coastline change over the past 18,000 years.

In 1986, Koettig undertook an archaeological survey approximately 6 km southeast of the Glendell Mine between Glennies Creek and Singleton (cited in Umwelt 2003). Following that survey, Koettig carried out several excavations at six locations along Glennies Creek. Koettig considered artefacts found in Site SGCD 16 (about one metre deep in Unit B of on an old alluvial terrace) were 'markedly different' to artefacts recovered from the artefacts in Unit A. Her conclusion was formed on the basis of the raw material used, large number of cores, the large percentage of cortex remaining on artefacts and larger sizes of artefacts. Artefacts from Unit B were from volcanic rocks while those in Unit A were predominantly mudstone and silcrete. Later, a date of >20,200 BP was obtained from a hearth associated with the artefacts placing the site well into the Pleistocene.

2.3 PREVIOUS ASSESSMENTS WITHIN OR NEAR THE STUDY AREA

There have been numerous archaeological investigations in the local area and a number within the study area itself. The results of these investigations provide an archaeological context for the current assessment. This section refers to archaeological investigations that were entirely or partially within the study area.

2.3.1 Umwelt 2004

Umwelt conducted an Aboriginal archaeological assessment for the approved Glendell Project Area, encompassing the current study area, involving survey during September, October and December 2001, as well as geomorphic investigations during May 2002.

The Glendell Project 2001 and 2002 survey area incorporated sections of Bowmans Creek, Swamp Creek and Bettys Creek. As part of the archaeological brief, a desk-top study and an in-field reconnaissance were undertaken with the aim of identifying areas within the Glendell Project Area that contained Aboriginal resources. The resources sought for identification within the Glendell Project Area included fresh water supplies, food and medicine plants, faunal prey species, stone suitable for implement manufacture, areas suitable for camping, areas that provided an extensive outlook, areas with major and minor creek confluences that had often been found to have Aboriginal camp sites and the terrain units that may have acted as pathways between resource locations.

The information compiled was then used to assist in the preparation of a predictive model related to the location and nature of sites within the Glendell Project Area. In addition, past land-use practices and geomorphic studies were used to determine areas where artefactual material may remain in a relatively undisturbed context. Geomorphic studies were also used to investigate a buried soil profile within the shared Bowmans Creek/Swamp Creek floodplain and to determine the likelihood of this soil profile containing artefactual material from the late Pleistocene to early Holocene periods.

As a result of the research it was concluded that the entire Glendell Project Area would have supplied adequate resources for small groups of hunter-gatherers living a mobile lifestyle. Bowmans Creek was highlighted as an area that should have formed the focus of camping activities of longer duration, possibly by larger numbers of people, due to an increased abundance and reliability of the resource base.

Other areas, such as the lower western slopes adjacent to Bettys Creek were assessed as having attracted groups of people for short-term visits to harvest abundant seasonal foods. Bowmans Creek was therefore cited as likely to have the largest sites in terms of spatial extent and numbers of artefacts.

Such sites were predicted as likely to be found on the lower slopes, terraces and floodplains along Bowmans Creek, spreading further across the Bowmans Creek/Swamp Creek floodplain. Bettys Creek and Swamp Creek were listed as likely to have evidence of more sporadic and short-term use as overnight camping locations.

A pattern of site distribution was evident from the previously recorded sites in the locale with the majority of sites located along the watercourses (58%). More of these were associated with ephemeral tributaries (30%) than major creek lines and their associated floodplains and terraces (30%). A little more than half (54%) of the sites were within 30 m of the closest watercourse and 66% within 100 m. In relation to the slopes, sites were more commonly located on the foot slopes/lower slopes (18.5%), than the crest/upper slopes (16.6%) and mid slopes (8%).

A total of 37 previously unrecorded sites were located during the 2001 fieldwork survey of the Glendell Project Area. The sites consisted of 30 artefact scatters, including one small quarry site with an associated artefact scatter, one scatter in an area with a buried soil profile and seven isolated finds. The Bowmans Creek 5 quarry site (37-3-0617) was recorded as having an associated artefact scatter as the majority of the artefacts in the site were manufactured from mudstone and silcrete rather than the quartz and quartzite materials available at the site.

The artefact scatter in the area with the buried soil profile (Bowmans Creek/Swamp Creek Trench; 37-3-0469) was located on the shared floodplain between Bowmans Creek and Swamp Creek. In this area a trench approximately 300 m in length was constructed during the 1980s to divert Swamp Creek into Bowmans Creek. At the time of the 2001 survey the trench was not connected to the creeks (as it remains so today). The artefact scatter eroding from the A-Horizon of the floodplain was observed to be approximately one metre above the buried soil profile. This profile was later determined through geomorphic investigation to be of early Pleistocene to Tertiary age and did not contain any artefactual material.

Artefact analysis of the salvage assemblage recorded:

- Flakes and broken flakes dominated the assemblage (78%), followed by flaked pieces (15%) and cores (3%). Within the flake category, 4% were retouched and half of the retouched flakes were backed. Heat shatter accounted for 3% of the artefacts
- The mudstone and silcrete flakes were of similar size. Volcanic flakes were generally larger and heavier than flakes composed of other raw materials
- Volcanic flakes had a significantly higher percentage of cortex than silcrete or mudstone, and mudstone artefacts had a higher percentage of cortex than silcrete
- Silcrete artefacts had a higher overall rate of retouch than mudstone artefacts (8.2% and 6.3% respectively), and silcrete retouched artefacts were more likely to be backed than retouched mudstone artefacts
- A number of artefacts relating to post-European occupation of the area were also recovered, including fragments of glass and pottery. The location of this material closely correlated with concentrations of Aboriginal stone artefacts. Additionally, at least one Aboriginal artefact manufactured from glass was salvaged, suggesting that the area was used by Aboriginal people in the post-contact period.

2.3.2 Umwelt 2013

Salvage of the Glendell Project Area was undertaken under NPWS s.90 Consent #2267 and formed Part 4 of the salvage program for the Bettys Creek valley. This archaeological salvage within the Glendell Project Area was conducted by Umwelt and the RAPs between November 2005 and February 2006 on behalf of Glendell Joint Venture, now Mount Owen.

A total of 2,713 artefacts were recovered from the Glendell Project Area salvage including 824 (30.6%) from the surface collection, 274 (10.1%) from Excavation 1 (Bettys Creek 10), 19 (0.7%)

from Excavation 2 (Bettys Creek 9), 1,414 (52.1%) from Excavation 3 (Bettys Creek 2) and 177 (6.5%) from the grader scrapes. A total of 2,604 (96%) of the artefacts were recovered from the Bettys Creek catchment, 52 (1.9%) from the Bowmans Creek catchment and 57 (2.1%) from the Swamp Creek catchment.

Observations made from the surface collection assemblage are as follows:

- The highest number of artefacts were collected from Bettys Creek 14 (26.7% of the surface collection assemblage), followed by Bettys Creek 10 (19.5% of the assemblage)
- 60.6% of the artefacts were collected from lower slopes and floodplains associated with creek lines (56.7% from Bettys Creek; 3.3% from Swamp Creek and 0.7% from Bowmans Creek)
- Sites on low but elevated spurs in tributary confluences comprised 22.2% of the assemblage; ridge crests (7.5%); sites on lower slopes on tributary channels more than 150m from the main creek channel (7.5%); mid slope sites (1.3%) and upper slopes (0.6%)
- The dominant artefact type was broken flakes (45%); followed by flakes (26.7%); flaked pieces (10.9%); retouched flakes (10%), cores (3.7%), heat shatter (3.4%) and grindstones (0.4%)
- A total of 31 cores were recovered from the surface collection. Of these, 21 were recovered from the Bettys Creek sites (17 from areas with tributary confluences with Bettys Creek)
- Mudstone was dominant within the assemblage making up 58.5% of the artefacts, followed by silcrete (31.9%) with the remaining raw materials making up 9.6% of the total assemblage.

Excavation was targeted at Bettys Creek 2, Bettys Creek 9 and Bettys Creek 10 indicated the following:

- Bettys Creek 10 and Bettys Creek 2 retained a level of spatial integrity reflected by knapping events and raw material distribution patterns
- Bettys Creek 9 contained artefacts in a secondary context
- All three locations contained backed flakes
- A ground oven identified at Bettys Creek 2 had an absolute date of 2188+/-39 BP (years before present)
- It was possible to obtain one radiocarbon date of 3077±40 BP (calibrated-Wk-20912) from Square K Spit 3 of Excavation 3 within the Mount Owen Extension Area. The date was relative in nature as it belonged to a large piece of burnt wood that was associated with artefacts both above and below it. Thus the artefacts above it must be dated to later than 3077±40 BP and those below it to earlier
- Broken flakes (45.7%) dominated the artefact assemblage, followed by flakes (38.7%)

- Bettys Creek 10 and Bettys Creek 2 were dominated by mudstone while Bettys Creek 9 was dominated by silcrete. Overall, mudstone was dominate (55.7%) over silcrete (32.3%)
- A small knapping event was evident at Bettys Creek 10, with greater amounts of knapping noted at Bettys Creek 2
- Core to flake ratios for Bettys Creek 10 were 1:28.7 and for Bettys Creek 2 were 1:27.4 suggesting knapping on site.

2.3.3 OzArk 2014

From 2012 to 2013, OzArk completed the *Aboriginal Archaeological Values Assessment: Mount Owen Continued Operations* (MOCO) (2014). The assessment covered 464 ha within the MOC and included surface survey and test excavation. In total, 11 artefact scatters, 20 isolated finds and three extensions to previously recorded sites were recorded.

A very small portion of this area is included within the current study area.

The results of the 2012/2013 OzArk assessment were:

- 91% of the newly recorded sites were either isolated finds or low density artefact scatters without associated archaeological deposits
- Test excavation was carried out at two locations. No sub-surface artefacts were retrieved from one site and 114 artefacts were excavated from the other site. At the site that recorded artefacts (MOCO OS-4), most of the artefacts were concentrated in a small area, representing two or three discreet knapping events of mudstone and silcrete
- Widespread disturbances and thin A-Horizon soils were noted across the assessment area. Thin, or non-existent, A-Horizon soils were also noted during the test excavation at both locations
- The most common raw materials were indurated mudstone and silcrete with smaller quantities of chert, siltstone, quartzite and quartz also identified
- Flakes and flaked pieces accounted for the bulk of assemblages. Proportions of cores and backed blades were low
- Most sites were situated close to drainage lines.

2.3.4 OzArk 2017

In early 2017 the MOCO salvage program took place under the authority of the 2016 *Mount Owen Complex Aboriginal Cultural Heritage Management Plan* (ACHMP) (OzArk 2017)[1]. This program

[1] Please note, this OzArk 2017 salvage program is separate from the 2017 assessment for the Proposed Modification that is discussed in **Section 3**.

was completed in the approved disturbance areas associated with the MOCO Project Area located adjacent to the Proposed Modification study area.

This program included the collection of surface artefacts at 30 sites resulting in 189 artefacts being recorded. Included in the tally of 30 sites, were two sites where limited archaeological excavation took place resulting in a further 187 artefacts being recorded. An additional area on the east bank of Bowmans Creek, along an upper terrace landform, was also subject to archaeological investigation by manual excavation but the area proved to be highly disturbed and no artefacts were recorded.

Of all the sites investigated in the 2017 salvage program, MOCO OS-4 recorded the highest artefact density with 71 surface artefacts (35.98% of all surface artefacts recorded during the salvage program) and 186 artefacts recorded in the excavation component of the program (constituting almost all of the artefacts recorded in the excavation component of the program). MOCO OS-4 was located on an unnamed watercourse (termed the 'eastern drainage') approximately 5.4 km northeast from the current study area. MOCO OS-4 was located in area heavily affected by erosion and the investigation showed that while one concentration of artefacts remained *in situ*, the majority of the site had been displaced by the erosion.

Other sites that recorded more than 10 artefacts during the salvage program were MOCO OS-3, MOCO OS-9 and MOCO OS-10. All other sites recorded very low artefact numbers supporting the conclusion reached in OzArk 2014 that the remaining archaeological values at MOC consist of low density, often displaced, artefact scatters.

The recording of these sites affords with the general picture emerging that sites located away from permanent water are likely to have a low artefact density and low site complexity.

2.3.5 OzArk 2018

During the quarterly monitoring program for the MOC (OzArk 2018), a number of further artefacts were noted in the vicinity of Swamp Creek IF-2 to Swamp Creek IF-4 that were recorded in August 2017 as part of the visual inspection for the Proposed Modification (see **Section 3.2**, **Figure 2-1**). As a result, it was decided that an artefact scatter would be registered in the area which would include the three previously recorded isolated finds. The artefact scatter, Swamp Creek OS1 (37-3-1499), therefore includes:

- Swamp Creek IF-2 (37-3-1492)
- Swamp Creek IF-3 (37-3-1493)
- Swamp Creek IF-4 (37-3-1490).

The southern portion of Swamp Creek OS1 is within the study area although the majority of the site is outside of the study area (**Figure 2-1**).

2.3.6 OzArk 2019

During April and May 2018, OzArk completed the *Aboriginal Archaeological Values Assessment: Glendell Continued Operations* (GCOP) Project (2019 forthcoming). This assessment covered the larger GCOP Project Area and included the current study area for the Proposed Modification and was conducted by OzArk archaeologists and members of the Aboriginal community.

Overall, this assessment recorded 33 previously unrecorded artefact scatters, 24 isolated finds, one scarred tree and one potential archaeological deposit (PAD) within the larger GOCO project area.

This assessment recorded two sites that are located within the study area for the Proposed Modification:

- One low density artefact scatter (Glendell North OS28) is wholly within the study area. This site consists of three artefacts located along a track: a mudstone flake, a mudstone piece of angular shatter and a quartz flake
- A second site, Glendell North OS31, extends into the study area but is mostly located outside of the study area. This site consists of 15 artefacts (12 mudstone, two silcrete and one quartz) located in a disturbed context on the same drainage bund as Swamp Creek IF-2 to Swamp Creek IF-4 (see **Section 3.2**).

In addition, the following sites were recorded in close proximity to the study area:

- Glendell North OS25 is located on the eastern bank of Swamp Creek approximately 60 m west of the study area. Glendell North OS25 consists of two mudstone flakes
- Glendell North OS27 consists of a mudstone flake and a silcrete flake located in a disturbed context on a dam wall 20 m east of the study area
- Glendell North OS30 is located in a disturbed context on a dam wall and consists of three mudstone artefacts including a core. At its closest, Glendell North OS30 is approximately 45 m west of the study area
- Glendell North IF22: an isolated mudstone flake located on the eastern bank of Swamp Creek approximately 28 m west of the study area
- Glendell North IF24: an isolated silcrete flake recorded on a vehicle track approximately 8 m south of the study area.

Figure 2-1 shows those sites recorded in 2018 for the GCOP assessment that are either within or closely adjacent to the study area for the Proposed Modification.

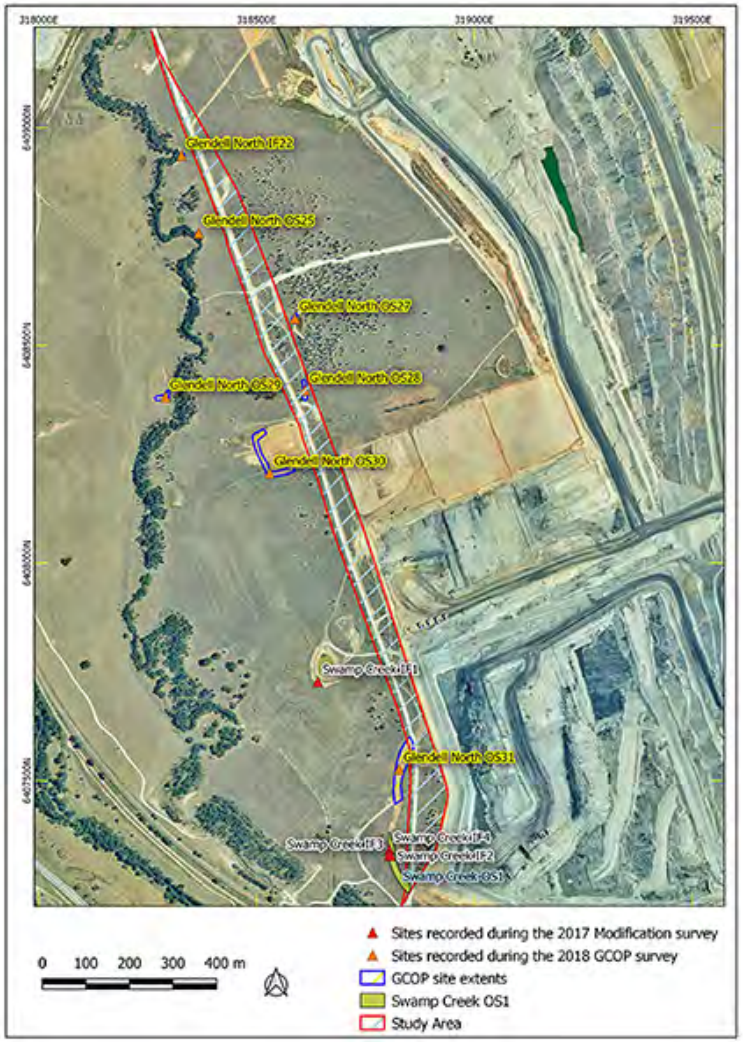
The GCOP assessment also included a test excavation program that was undertaken in September 2018. Two locations inspected during this program are in the vicinity of the study area:

- Area 9 located on the western bank of Swamp Creek approximately 85 m west of the study area

- Area 10 located on the eastern bank of Swamp Creek approximately 45 m west of the study area.

As was found elsewhere during the GCOP test excavation program, there was a very low density of subsurface artefacts at both areas. Area 9 recorded a single mudstone flake at a depth of 10–20 centimetres (cm) and Area 10 recorded three artefacts (two mudstone flakes and a piece of angular silcrete shatter) also at a depth of 10–20 cm. These results indicate that there are unlikely to be substantial subsurface archaeological deposits in the vicinity of the study area for the Proposed Modification.

Figure 2-1: Aerial showing the study area in relation to sites recorded during the 2017 and 2018 surveys.



2.3.7 Aboriginal cultural values within the study area

During the assessment for the MOCO project, an extensive assessment of Aboriginal cultural heritage values was undertaken (Umwelt 2015). No known cultural values are known to exist pertaining directly to the location of the study area. However, Umwelt 2015 states that the landscape and waterways within or near the study area, including Swamp Creek, Bettys Creek and Bowmans Creek, have cultural value for the local Aboriginal community in a general manner as these features are part of the community's Country.

No Aboriginal community members accompanied the visual inspection of the study area during the August 2017 assessment. However, Aboriginal community were present during the April/May 2018 GCOP assessment that included the study area and no specific cultural values pertaining to the study area were raised.

Consultation regarding the Aboriginal cultural values of the study area from Aboriginal community members is requested. Twenty eight (28) days are provided for the feedback and comments relating to the Proposed Modification. This period closes on 26 February 2019.

2.3.8 Desktop database searches conducted

A desktop search was conducted on the following databases to identify any potential previously-recorded heritage within the study area. The results of this search are summarised in **Table 2-1**.

Table 2-1. Aboriginal heritage: desktop-database search results.

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	12/9/17	Singleton LGA	No places listed on either the National or Commonwealth heritage lists are located within the study area.
National Native Title Claims Search	12/9/17	Native Title Tribunal spatial data (downloaded 20/4/17)	NC2013/006 (Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People) covers the study area.
Local Environment Plan (LEP)	12/9/17	Singleton Local Environmental Plan 2013	None of the Aboriginal places noted occur near the study area
OEH AHIMS database	5/11/18	Eastings: 315100-318450 Northings: 6410750-6415100	No AHIMS sites are registered within the study area.

As per **Table 2-1**, it is noted that the study area includes land currently subject to Native Title Claim (NC2013/006 Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People).

A search of the OEH administered AHIMS database was completed in November 2018 for the GCOP (OzArk 2019 forthcoming) which covers the Glendell Modification 4 study area (see **Appendix 1** for details). **Figure 2-2** shows the location of previously recorded AHIMS sites in relation to the study area. The GCOP sites are shown on **Figure 2-1** and are not shown on **Figure**

2-2 as they had not been registered at the time of the November 2011 AHIMS search (although they were registered shortly afterwards).

Figure 2-2: Valid AHIMS sites in the vicinity of the study area.

It can be seen on **Figure 2-2** that a number of sites are located close to the study area although there are no previously recorded sites registered with the AHIMS register that plot to within the study area. Some observations on the data displayed on **Figure 2-2** follow:

- 37-3-1490 to 37-3-1493 (Swamp Creek IF-1 to Swamp Creek IF-4) were recorded as a result of the assessment for the Proposed Modification in August 2017 (see **Section 2.3.4**). All sites are isolated finds in disturbed contexts. As such, all have low scientific values
- 37-3-1499 (Swamp Creek OS1) was recorded as a result of the quarterly monitoring program at the MOC when further artefacts were noted in the vicinity of Swamp Creek IF-2 to Swamp Creek IF-4. See **Section 2.3.5** for further details
- The locations marked 'not registered' on **Figure 2-2** are identified sensitive archaeological landforms. These areas have not recorded Aboriginal objects and therefore are management zones only without statutory protection
- All other sites shown on **Figure 2-2** are stone artefact sites and include three artefact scatters and two isolated finds. All sites have an extremely low artefact density apart from 37-3-0469 that was recorded as containing 479 artefacts (see **Section 2.3.1** for further details on this site)
- The majority of sites recorded in the vicinity of the study area are in disturbed contexts where the artefacts are likely to be in secondary contexts. This includes recordings on dam walls, along drainage bunds and associated with major earthworks that took place to construct a trench from Swamp Creek to Bowmans Creek.

One site is currently listed on AHIMS as a restricted site. This site, Bowman's Creek Complex (37-3-1506) was registered on 25 September 2018. This site is registered as an Aboriginal resource and gathering site, a burial site and a conflict site. Subsequent to the registration, AHIMS changed the site status to 'not a site' pending further information being provided to determine the veracity of the large site area. Although this site covers all of the study area, given the current status, further assessment is not required as it has no statutory protection[2]. However, should this change, and the site is reinstated on the AHIMS register, the following factors would need to be considered to determine if the values embodied with the site registration exist within the study area:

- Aboriginal resource and gathering site: all portions of the study area have been cleared of native vegetation in the past and currently only support scattered regrowth trees. While the past disturbances to the landscape do not preclude the presence of Aboriginal resource plants or animals in the study area, it is likely that these have been highly disturbed. Further, there are contiguous and identical landforms to the west of the study

[2] As the site is listed as 'not a site' on AHIMS, the site is not included as an AHIMS site within the Additional Disturbance Area for the remainder of this report.

area and should Aboriginal resource plants and animals be present within the study area, they will continue to be represented in this nearby area

- Burial site: due to the agricultural phase of land use in the study area, soil loss has been considerable and had there been burials in the area, it is likely that these have been disturbed and/or dispersed. Further, the study area does not contain sand bodies—a favoured burial location—and burials are extremely rare at the regional level potentially precluding their existence in the study area

- Conflict site: it is acknowledged that the wider area saw conflict between early colonial settlers and Aboriginal people, and activities associated with establishing the Ravensworth Homestead being a potential focus for such conflict, is located to the north of the study area. However, while material evidence of conflict in the study area cannot be discounted, it is difficult to predict where such evidence may located. As such, this value would need to be borne in mind and responded to at such time when any such evidence comes to light.

2.3.9 Predictive model

Knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded within the study area:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.

    - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the study area.

- Open artefact scatters are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short or long term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools, but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

  Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

    - Artefact scatters, as well as isolated stone artefacts, are the predominant site types occurring in the region. The expected location of artefact scatters is on eroded exposures most commonly adjacent to creek lines, such as Swamp Creek, Bettys Creek, and their associated drainages. This site type is likely to be in a secondary context from disturbances such as erosion, farming and mining practices. It is likely that any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used. Should these site types be present, the artefact assemblage is likely to be dominated by flakes from mudstone and silcrete. Other recorded materials could include quartz, chert, tuff, volcanics and petrified wood. It is noted that the study area has already been subjected to a number of previous archaeological assessments that have recorded a number of sites in the vicinity. This indicates that further artefact scatters could be possible but that previous assessments have probably recorded the larger examples of this site type.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields, and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting or bark removal. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently the distinction between European and Aboriginal scarred trees may not be clear.

    - Due to the near-total clearance of trees from within the study area, this site type is predicted to be very rare. It is also noted that this site type is very rare at a regional level.

- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.

    - This site type could be recorded within the study area should suitable rock outcroppings be available.

- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated

topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

- Although it is possible that this site type could be found within the study area, it is considered a rare site type especially given the disturbance that has occurred within the study area.

3 RESULTS OF THE FIELD ASSESSMENT

3.1 SAMPLING STRATEGY AND FIELD METHODS

The study area has been surveyed using pedestrian means twice over the past two years. In August 2017 a visual inspection was undertaken by OzArk for the Proposed Modification and in 2018 the study area was also included in the GCOP survey undertaken by OzArk and the RAPs. Standard archaeological field survey and recording methods were employed during the surveys (Burke & Smith 2004).

Figure 3-1 shows the pedestrian survey tracks carried out during the 2018 GCOP survey and the 2017 Proposed Modification site inspection. The yellow line illustrates the survey track of an OzArk archaeologist taken during the 2018 GCOP survey while the black line shows the survey track of the OzArk archaeologist taken during the August 2017 inspection for the Proposed Modification.

3.2 ABORIGINAL SITES RECORDED

Four Aboriginal sites, Swamp Creek IF-1 to Swamp Creek IF-4, were recorded as a result of the 2017 assessment of the study area (**Table 3-1**). All sites are located outside of the proposed disturbance area associated with the Proposed Modification as the study area in August 2017 was larger. Full details of the sites listed in **Table 3-1** will be available in the forthcoming ACHAR. **Figure 2-1** shows the location of the sites in relation to the study area for the Proposed Modification.

Table 3-1: Survey results.

Site name	Coordinates (GDA Zone 56)	Site type	Site extent	Landform
Swamp Creek IF-1 (37-3-1491)	318640E 6407727N	Isolated find	2m x 2m	Flat
Swamp Creek IF-2 (37-3-1492)	318807E 6407327N	Isolated find	2m x 2m	Lower slope
Swamp Creek IF-3 (37-3-1493)	318805E 6407330N	Isolated find	2m x 2m	Lower slope
Swamp Creek IF-4 (37-3-1490)	318805E 6407340N	Isolated find	2m x 2m	Lower slope

3.3 DISCUSSION

The predictive model (**Section 2.3.9**) suggested that landforms within the study area were favourable to Aboriginal occupation. The predictive model also stated that should Aboriginal sites be recorded in the study area they are likely to have a low artefact density and be within a disturbed context. Although four new Aboriginal sites, all isolated finds, were recorded, all conformed to the predictive model as they are isolated finds in disturbed contexts.

The assessment results also conform to previous assessments in the area (**Section 2.3**):

- Umwelt 2004 (**Section 2.3.1**) demonstrated that a clear majority of sites are closely associated with waterways. As there are no non-ephemeral waterways in the study area

this explains the low artefact density of the recordings. Umwelt 2004 also demonstrated that lower slopes contained more sites when compared to crests or upper slope landforms. As the study area is located within lower slope landforms, this perhaps explains why sites were recorded during the assessment

- Umwelt 2013 demonstrated that occupation along Swamp Creek in the vicinity of the study area was less than occupation along nearby creek systems such as Bettys Creek (**Section 2.3.2**)
- OzArk 2014 (**Section 2.3.3**) demonstrated that, in landforms away from watercourses, sites were either isolated finds or low density artefact scatters without associated archaeological deposits. OzArk 2014 also showed that subsurface deposits are not common at the MOC and that there is evidence of widespread disturbance to the soil profile
- OzArk 2019 (forthcoming) (**Section 2.3.6**) showed that test excavation in the vicinity of the study area demonstrated a very low subsurface artefact density.

As such, the current results support the general archaeological context that has been built up at the MOC in that: occupation along Swamp Creek is likely to indicate short-term or sporadic use; numbers of sites away from waterways is greatly reduced; lower slope landforms are likely to record sites; there is unlikely to be subsurface deposits associated with sites; and sites are likely to have been disturbed.

Given that only isolated finds in a secondary context were recorded, and that a high degree of land-use disturbance was noted, there is a low likelihood of intact sub-surface archaeological deposits being present within the study area.

Figure 3-1: Survey coverage of the study area.

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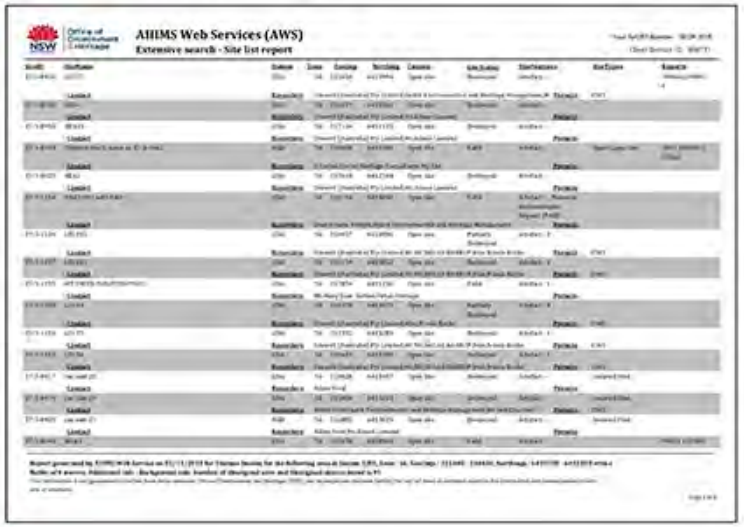
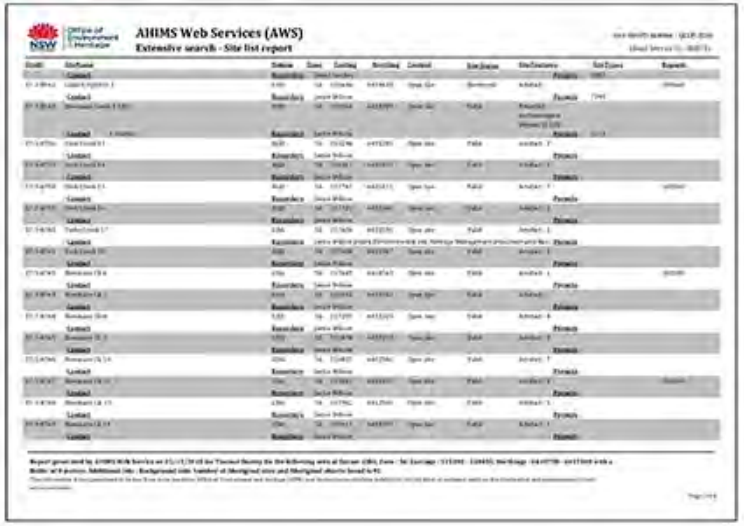
APPENDIX 1: AHIMS SEARCH RESULTS


AHIMS Web Services (AWS)
Extensive search - Site list report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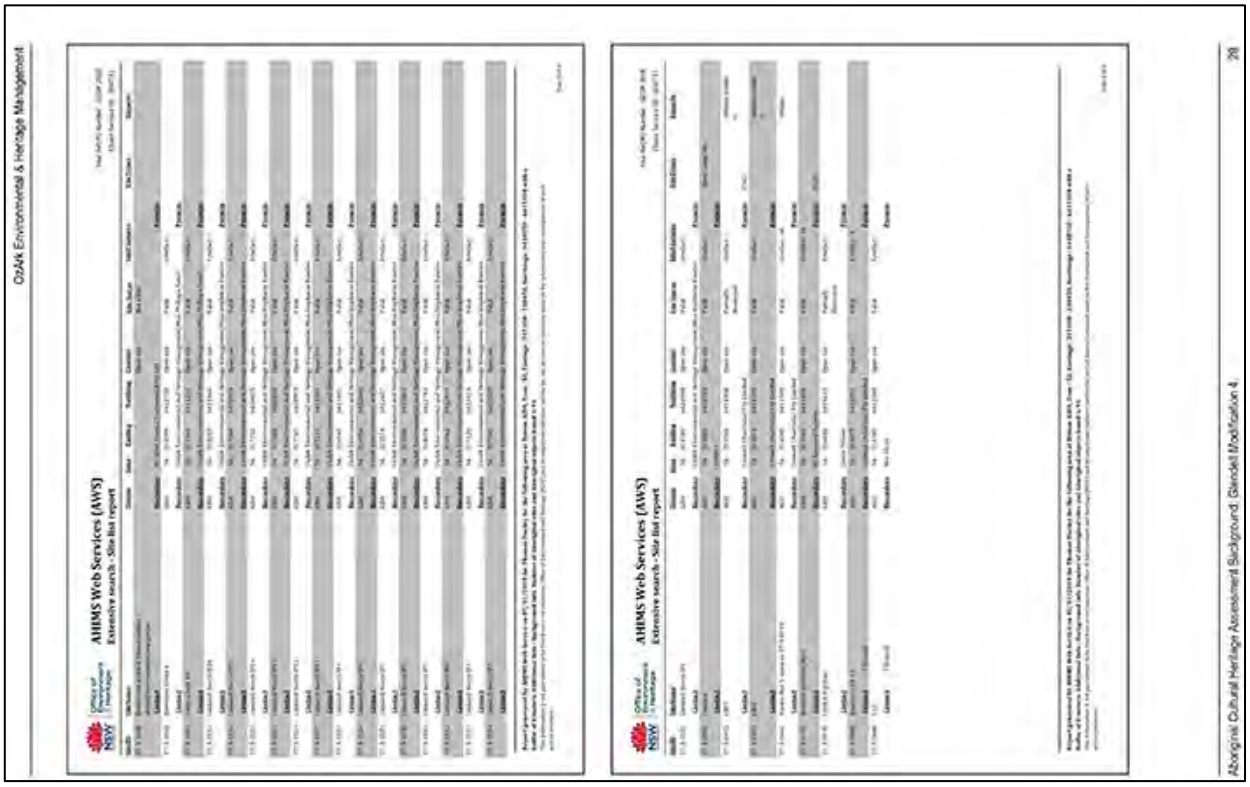
Extensive search - Site list report


OzArk Environmental & Heritage Management
AHIMS Web Services (AWS)
Extensive search - Site list report
Aboriginal Cultural Heritage Assessment Background: Glendell Modification 4
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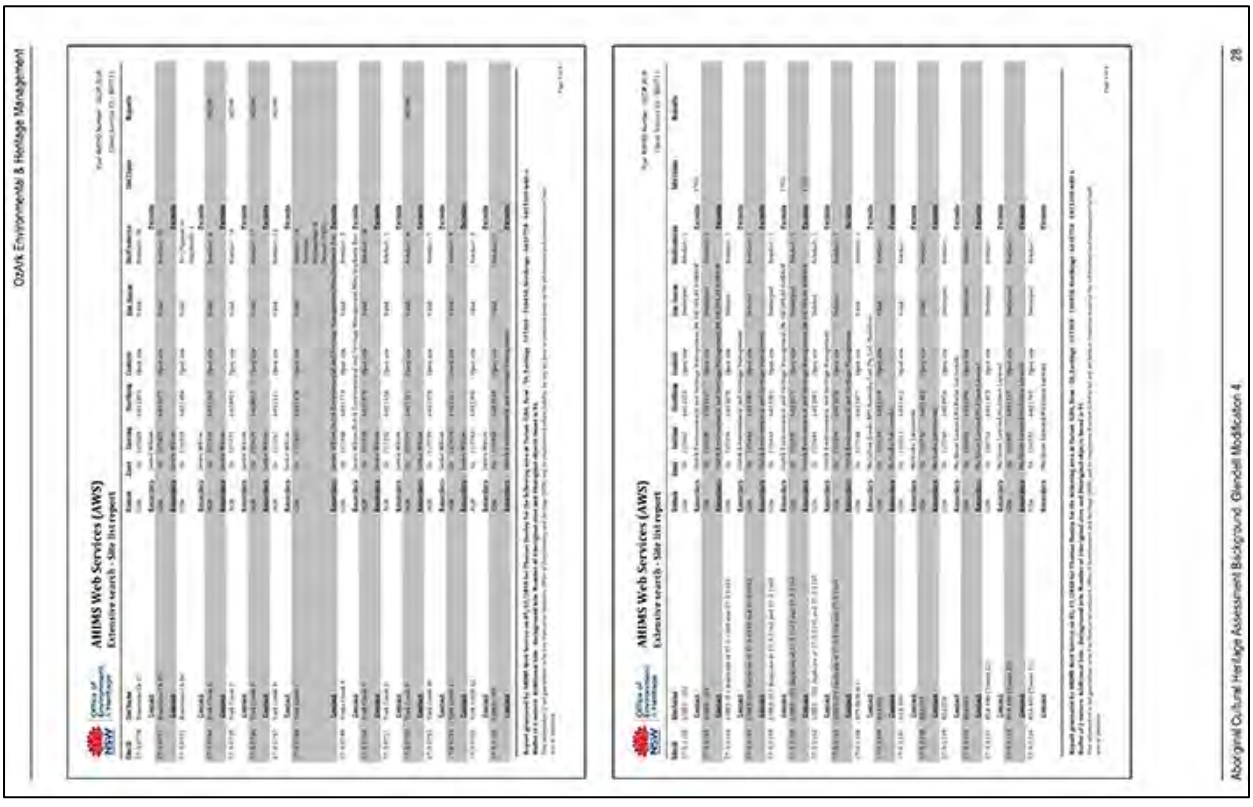
OzArk Environmental & Heritage Management
AHIMS Web Services (AWS)
Extensive search - Site list report
Aboriginal Cultural Heritage Assessment Background: Glendell Modification 4
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APPENDIX 4: ACHCRS STAGE 4

Sample cover letter sent with draft ACHAR

MT OWEN
OPEN CUT
GLENCORE

18 March 2019

[redacted]

Re: Glendell Mine Modification 4 – Aboriginal Cultural Heritage Assessment

Dear [redacted]

Further to the previous letter dated 6 February 2019 in relation to the Proposed Modification to DA 80/952 for Glendell Mine, the accompanying draft Aboriginal Cultural Heritage Assessment Report prepared for the Proposed Modification is provided for your information to provide the opportunity for you as a registered party to make a submission (whether written or oral).

The Proposed Modification will provide a small extension to the approved Glendell Mine mining area and involves the following key aspects:

- 12 hectares of new disturbance, mostly around the edges of the existing Glendell mine
- access to an additional approximately 2.5 Mt ROM Coal from the Barrett Pit and
- providing approximately eight months of continued mining operations and ongoing employment

The *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* allows for a period of at least 28 days for those parties to review the report and respond with any comments or submissions. Please provide comment on the attached report by 18 April 2019.

Should you have any queries in relation to the enclosed information, or require need any help supplying feedback, please do not hesitate to contact our office.

If you would like to discuss or would like further information please do not hesitate to contact me on the details below.

Yours sincerely,

Ned Stephenson
Environment and Community Manager
02 6520 2693
Ned.stephenson@glencore.com.au

Attachment – Aboriginal Cultural Heritage Assessment Report, Glendell Mine Modification 4, OzArk

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