Part 11B: Aboriginal Cultural Heritage Assessment – Private Haul Road

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EXECUTIVE SUMMARY

Gloucester Resources Limited (GRL) is proposing to develop a coal mine within Exploration Licence (EL) 6523, between 3.5km and 7km southeast of the Gloucester urban area. GRL intends to apply for development consent for the proposed coal mine under Part 4 (Division 4.1) of the Environmental Planning and Assessment Act 1979 (ETA Act) as the project is recognised to be a ‘State Significant Development’.

R.W. Corkery and Co. Pty Limited (RWC) engaged Archaeological Surveys & Reports Pty Ltd (ASR) on behalf of GRL to undertake an Aboriginal cultural heritage assessment to identify any archaeological sites of Aboriginal cultural significance that might represent a potential constraint to the operation of the proposed mine. The archaeological survey and assessment of the Mine Area and the associated power line corridors was undertaken in 2012 and is presented in a report by ASR dated February 2013. A copy of that assessment, focussing solely on the Mine Area for the amended Project and the power line corridors is reproduced as Part 11A of this compendium.

Since 2013, GRL has negotiated an agreement with Yancoal (the owner of the Stratford Coal Mine) that will allow coal mined from within the Rocky Hill open cut pits to be transported (after simple sizing) via a sealed internal road (hereafter referred to as the private haul road) to the northern boundary of the Stratford Mining Complex and then via the internal road network to the Stratford Coal Handling and Processing Plant, with product coal despatched via the Stratford Load-out Facility and Rail Loop to the Port of Newcastle.

RWC engaged ASR on behalf of GRL to undertake a survey of the proposed private haul road corridor to identify any archaeological sites of Aboriginal cultural significance that might represent a potential constraint to the construction and use of the proposed road.

In a walk-over of the proposed route when soils were being tested Mick Leon (representing Gangga Marrang) recorded two isolated artefacts. Only one of these artefacts will be impacted by the proposed private haul road, however it is recommended that both be salvaged.

Initial consultation with OEH resulted in a list of 102 Aboriginal stakeholders registered in the area of interest. 23 stakeholder groups expressed their interest in the assessment and 10 stakeholders participated in the survey of the proposed private haul road corridor. Only one new isolated artefact was found, however the dense grass cover in over 95% of the corridor prevented an effective survey. As a consequence of the limited visibility, three of the stakeholders recommended that there should be sub-surface investigation of the route, however Appleton disagrees with their recommendations on the grounds that it is neither a practical option nor viable on the basis that he believes that if any artefactual material that might be present would comprise only one, or very few isolated flakes.

RECOMMENDATIONS

While recognising that GRL are not obliged to allow any further investigation for archaeological sites as a “State Significant” development, Appleton recommends that in the interests of the Worimi people and the Gloucester community generally, that it should consider the following recommendations.
As a consequence of the ineffectiveness of the survey of the proposed private haul road corridor, Appleton recommends that turf stripping in the section of the corridor between Waukivory Creek and Fairbairns Road should be monitored by a representative from each of the registered stakeholders with direct association with Worimi Country or by their chosen representatives.

In addition, Appleton recommends that the three artefacts that will be impacted by construction of the haul road should be salvaged by a representative from each of the registered stakeholders with direct association with Worimi Country or by their chosen representatives.

It is also recommended that at least once a week during the clearing and soil stripping component of the construction of the proposed private haul road there should be a tool-box meeting during which all site workers should be reminded of the possibility that artefactual material might become exposed by earthworks and the obligation of each worker to report any sighting immediately artefactual material becomes exposed. In the event that any artefactual material becomes exposed, it is recommended that the Site Manager should request a qualified archaeologist to attend the site to record details of the find and to record its location, and to lodge a Site Recording Form with the details with OEH for listing on the AHIMS Site Register. The recording of each and every site wherever it might be found is of both cultural and scientific significance in adding to our knowledge of past Aboriginal use and occupation of past environments.
1. INTRODUCTION

Gloucester Resources Limited (GRL) is proposing to develop a coal mine within Exploration Licence (EL) 6523, between 3.5km and 7km southeast of the Gloucester urban area. GRL intends to apply for development consent for the proposed coal mine under Part 4 (Division 4.1) of the Environmental Planning and Assessment Act 1979 (ETA Act) as the project is recognised to be a ‘State Significant Development’.

R.W. Corkery and Co. Pty Limited (RWC) engaged Archaeological Surveys & Reports Pty Ltd (ASR) on behalf of GRL to undertake an Aboriginal cultural heritage assessment to identify any archaeological sites of Aboriginal cultural significance that might represent a potential constraint to the operation of the proposed mine. The archaeological survey and assessment of the Mine Area and the associated power line corridors was undertaken in 2012 and is presented in a report by ASR dated February 2013. A copy of that assessment, focussing solely on the Mine Area for the amended Project and the power line corridors is reproduced as Part 11A of this compendium.

Since 2013, GRL has entered into an agreement with Yancoal (the owner of the Stratford Coal Mine) that will allow coal mined from within the Rocky Hill open cut pits to be transported (after simple sizing) via a sealed internal road (hereafter referred to as the private haul road) to the northern boundary of the Stratford Mining Complex and then via the internal road network to the Stratford Coal Handling and Processing Plant, with product coal despatched via the Stratford Load-out Facility and Rail Loop to the Port of Newcastle.

RWC engaged ASR on behalf of GRL to undertake a survey of the proposed private haul road corridor to identify any archaeological sites of Aboriginal cultural significance that might be impacted upon by construction of the proposed private haul road.

1.1 BACKGROUND

In June 2010, RWC engaged Kayandel Archaeological Services (Kayandel) on behalf of GRL to undertake an archaeological investigation of an area being considered at that time for the proposed Rocky Hill Coal Mine and its related infrastructure with registered Aboriginal stakeholders in accordance with the guidelines and consultation requirements nominated at that time for Part 3A “Major Projects”. During that investigation, Kayandel recorded several Aboriginal sites.

In October 2011, the State Government repealed Part 3A of the Environmental Planning and Assessment Act 1979 No 203, and replaced it with Part 4 (Division 4.1). In order to fulfil the consultation requirements for Part 4 (Division 4.1), RWC engaged ASR to investigate a modified Study Area in consultation with all registered Aboriginal stakeholders.

Part 4, Division 4.1, Section 89J lists the various Acts that do not apply where development consent has been granted (the following details are those relevant to Aboriginal and historic heritage).
“Section 89J - Approvals etc. legislation that does not apply”

1. “The following authorisations are not required for “State significant” development that is authorised by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply; …

   (c) an approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,

   (d) an Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974, ….  

2. Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of “State significant” development that is authorised by a development consent granted after the commencement of this Division.”

In August 2013, GRL lodged a development application accompanied by an Environmental Impact Statement with the then Department of Planning and Infrastructure. That project included the proposal to construct and operate an on-site coal handling and preparation plant (CHPP), an overland conveyor, rail load-out facility and rail loop.

GRL is now proposing to amend the Rocky Hill Coal Project following an agreement with Yancoal (the owner of the Stratford Coal Mine) that will allow:

Coal mined from within the Rocky Hill open cut pits to be transported (after simple sizing) via a sealed internal road to the northern boundary of the Stratford Mining Complex and then via the internal road network to Stratford Coal Handling and Processing Plant, with product coal despatched via the Stratford Load-out Facility and Rail Loop.

GRL will therefore be submitting an Environmental Impact Statement for the amended Rocky Hill Coal Project including the Mine Area and the private haul road from the Rocky Hill Mine Area to the northern boundary of the Stratford Mining Complex.

This report describes the Aboriginal consultation that took place and the Aboriginal involvement in a field investigation of the proposed private haul road corridor led by John Appleton, Consultant Archaeologist (ASR) on 17th March 2016. The report also briefly describes the regional archaeological context; the results of previous surveys of the area; a predictive model for site location; the survey results; provides assessments of Aboriginal cultural significance and of archaeological (scientific) significance of the sites recorded in the Site; identifies the cultural resource management options available to the Applicant and describes the preferred management option.

1.2 OVERVIEW OF THE AMENDED PROJECT AND STUDY AREA

The proposed amended Rocky Hill Coal Project comprises three principal components (see Figure 1).

1. The “Mine Area” incorporating three contiguous open cut pits, a run-of-mine (ROM) pad with a breaker station and sized coal bin, amenity barriers, overburden emplacements and an administration area with site offices, amenities, workshop, water treatment plant and ancillary facilities.
Figure 1: Site Layout
2. The “private haul road”, i.e. a 4.4km sealed road to be used for the transportation of sized coal from the Rocky Hill Mine Area to the Stratford Mining Complex for washing and despatch to the Port of Newcastle. The private haul road extends from the southern boundary of the Rocky Hill Mine Area to the northern boundary of the Stratford Mining Complex, owned by Stratford Coal Pty Limited.

3. Two “power line corridors” incorporating a re-located 132kV power line and a new low voltage (11kV or as nominated by Essential Energy) power line external to the Rocky Hill Mine Area. Each of these components are located in an area referred to as “the Site”.

*Figure 2* displays the proposed 4.4km private haul road comprising a minimum 7m seal on a 10m formation extending between the sized coal bin and the boundary of ML1733, the northern extent of the Stratford Mining Complex. The private haul road would link with a section of new road to be constructed within ML1733 and then into the existing on-site haul road system within the Stratford Mining Complex.

### 1.3 SCOPE, OBJECTIVES AND REPORT FORMAT

Applicants seeking development consent under Part 4 (Division 4.1) for State significant developments need to engage a suitably qualified professional archaeologist to undertake an archaeological assessment in order to provide the relevant documentation to support their application.

Aboriginal cultural assessments and historic heritage assessments must comply to and be undertaken in accordance with:

- Aboriginal Cultural Heritage Consultation Requirements for Proponents (*DECCW 2010a*);
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (*NSW Minerals Council 2010*);
- National Parks and Wildlife Amendment Regulation 2010;
- National Parks and Wildlife Amendment (Archaeological Investigations) Regulation 2010;
- National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010;
- The Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS, 1999); and
- Code of Practice for Archaeological Investigation in NSW (*DECCW 2010b*).

This approach provides for the management of sites located in areas to be disturbed by State significant developments.
Figure 2: Private Haul Road Layout
1.4 CODES OF PRACTICE

In compliance with the codes of practice for archaeological assessment in NSW and the Protection of Aboriginal Objects in NSW, it is necessary for the professional archaeologist to comply with the requirements summarised below.

1. Review and analyse previous archaeological work (including obtaining an AHIMS listing of recorded Aboriginal sites in the local area).

2. Review the landscape context (land unit, topography, soils, vegetation, watercourses, and potential resources).

3. Discuss and summarise the regional character (Develop a Predictive Model for Site Location), and undertake an archaeological survey.

4. Determine whether additional investigation is required in order to interpret the Aboriginal history of the area being investigated, and to inform future planning decisions.

A condition of the regulations and codes referred to previously is that:

i) if it is assessed that further archaeological sub-surface investigation is required, undertake the investigation (during the initial investigation), and document the findings and interpretation of the results in the archaeological report.

While the codes of practice do not specify that there should be Aboriginal consultation in undertaking an “assessment” other than to provide any cultural information associated with the site, in accordance with the ethics of the Australian Association of Consulting Archaeologists Inc., of which John Appleton is a member, all registered Aboriginal stakeholders with an interest in the private haul road corridor were consulted.

1.5 REPORT OBJECTIVES

The objectives of this report are to:

1. describe the consultation procedure;

2. record the consultation process that was followed for the archaeological assessment of the proposed private haul road corridor;

3. record all of the Aboriginal stakeholders with an interest in the area;

4. describe the investigative strategy;

5. record the archaeological relics and sites that were identified;

6. present a discussion of the options open to GRL’s management to resolve any issues arising from the concerns of the Aboriginal stakeholders; and

7. provide a recommendation for the further management of any Aboriginal sites that have been identified as occurring within the Site.

Further, the report documents the participation of the Aboriginal stakeholders in the consultation process, and the investigative strategy. In addition, the report includes a discussion of the results of the investigation in the context of other known sites in the area.
1.6 THE SURVEY CONTEXT

The location of the Site

For the purposes of the proposed application for development consent, the area being considered for the development and operation of the proposed private haul road is located in a 50m wide corridor commencing in the north approximately 200m north of Waukivory Creek and running almost due south for approximately 4.4 km to the northern boundary of the Stratford Mining Complex. The corridor crosses through Lot 129 DP 979859; Lot 10 DP 1112778; Lot 911 DP 748573; Lots 1 & 3 DP 868581; Lot 3 DP 868501; Lot 21 DP 1048749; Lot 293 DP 137520; Lot 78 DP 979859; Fairbairns Road and a Council road reserve within the Parish of Avon.

**Figure 3** shows the relationship of the proposed private haul road between the proposed Rocky Hill Mine Area and the existing Stratford Mining Complex. **Figure 4** shows the private haul road corridor in its local setting and **Figure 5** shows an aerial view of the proposed private haul road corridor.

1.7 THE CULTURAL CONTEXT

The proposed private haul road occurs in Worimi Country, an area extending from Cape Hawke, Tuncurry and Taree in the north to Maitland and the Hunter River in the south. The Worimi are neighbours of the Biripi, Awabakal, Wonnarua and Geawegal peoples (Horton, 1994, p.1198). Directly associated with the Worimi were the Gringai who were a sub-group of the Worimi.
Robert Syron, one of the stakeholders consulted during this investigation, informed Appleton that he is a Worimi and Biripi man, an owner of Worimi Conservation Lands (see Appendix I in which the Office of the Registrar recognises Robert as an Aboriginal owner for Worimi Conservation Lands), and a spiritual and custodial owner of Worimi Lands including Barrington Tops, Rawden Vale, Gloucester, Barrington and Dungog areas.

Robert also stated that the, “Syron, Cook, Springheel, Doyles, Clarke and Brummy families and other Family descendants from the Gringai Clan” were all Gringai People (pers. comm.). The Cook family (Kabook – [Cherry Tree Clan] and Watoo - [Opossum Clan) have lived in the Barrington area for over 189 years. In a brief history of the Cook family association with the area, Robert wrote the:

“Cook family descendants from the Kabook and Watoo people speak the Kattang language and that they were the last of the true custodians and Clan within the boundaries of the Allyn and Williams Rivers upstream to Gummi Falls on the Manning River known as Kummi Kummi (place of many crystal stones), Barrington Tops (Beann Beann), Rawdon Vale, Barrington, Gloucester up to the Manning River down to Cresford, the Karuah River and the Bulliac-Tugrabakh Bora Ground area, some 13km from Gloucester”.

Robert also wrote that both the Worimi and Biripi spoke the Kattang language. “The Biripi took in the area between Tuncurry, Taree and Gloucester. (It is interesting to note that one of the registered stakeholders, Biripi LALC asked Forster LALC if it could take part in the field survey of the proposed private haul road corridor but were told by Forster LALC that it preferred Biripi LALC not to, and so Biripi LALC withdrew. (The information relevant to the amended Project has been extracted from a much larger document in which Robert provides additional personal information substantiating his connection to Worimi Country – see Appendix ii). Robert added that the name Waukivory (or “Big Battle” area) was the main hunting ground of the Worimi, which in legend was supposed to have been won in a battle “between coastal tribes and the Kabook (Cherry Tree Clan) from Gloucester, Barrington District” (R. Syron, pers. comm.).

Robert Syron, in his response to the initial correspondence to all, stated that only Worimi people should be involved in the field survey and consultation, however under the existing guidelines for consultation with registered Aboriginal stakeholders there is no provision for excluding any stakeholders that register their interest on the grounds that they do not have proven association with “Country” and so all stakeholders that registered their interest in the assessment were given the same opportunity to participate in both the field survey and consultation process.

1.8 POTENTIAL IMPACT FROM CONSTRUCTION OF THE PRIVATE HAUL ROAD

There is a potential for any archaeological sites occurring in previously undisturbed contexts anywhere within areas of planned disturbance within the corridor to be destroyed either directly by construction of the road or indirectly from peripheral activities such as road-maintenance.

The total area of disturbance within the private haul road corridor would be approximately 13.8ha comprising:

- 11.2ha for the road;
- 2.6ha for sections of cut-and-fill
Figure 3: Relationship of the proposed Private Haul Road to Rocky Hill Coal Mine and Stratford Coal Mine
Figure 4: The Local Setting
Figure 5:    An Aerial View of the Proposed Haul Road Corridor
2. PREVIOUS SURVEYS

2.1 REGIONAL ARCHAEOLOGICAL CONTEXT

On 27 July 2016, a search was undertaken using of the Aboriginal Heritage Information Management System (AHIMS) for all sites within the map references GDA 56 E. 397000-409000, and N.6445000-6457000; an area of 14km x 14km. This search area was an update to the same area searched by Appleton in March 2012. The results showed that there have been 27 sites recorded in the 196km² search area. Figure 6 displays the general location of 26 out the 27 sites recorded on the AHIMS database (details about one site are restricted). The site features recorded in the AHIMS database are summarised as follows.

- 19 isolated artefacts or artefact scatters.
- Two PADs.
- Four modified trees (carved or scarred trees).
- The site of the former Gloucester corroboree ground.

Eleven sites are located within the Stratford Mining Complex. The ACHA for the Stratford Extension Project indicated that seven of sites would be salvaged with three remaining sites to remain undisturbed. One site (38-1-0031) is recorded as being located within the Stratford Mining Complex, however this isolated stone artefact is recorded as having been salvaged in January 2008 in accordance with Aboriginal Heritage Impact Permit (AHIP) #2858.

No sites identified on the database were located in the proposed private haul road corridor. Five of the 27 recorded sites were identified within the proposed Rocky Hill Mine Area. Two sites identified by Kayandel Archaeological Services (Kayandel) in June 2011 were registered on the AHIMS as Site 38-1-0091 and Site 38-1-0095, while two sites located in 2010 by Mr Robert Yettica are registered on the AHIMS database as Site 38-1-0068 and Site 38-1-0069. A third site, found in 2009 by Mr Rick Bullers, is recorded as PAD1 (Gloucester) and registered on the AHIMS as Site 38-1-0056.

2.2 LOCAL ARCHAEOLOGICAL CONTEXT

There have been five previous archaeological investigations of the proposed Rocky Hill Mine Area and areas in which peripheral activities will impact. These are briefly described below.

Aboriginal Cultural Heritage Assessment Investigation performed in 2010

In 2010, Robert Yettica of Yettica Cultural Consulting Services was engaged by Gloucester Resources Limited to provide an assessment of the Aboriginal Cultural Heritage values of the areas to be disturbed during a proposed coal exploration drilling program. Yettica's brief was to identify whether Aboriginal sites existed in the areas being considered for the drilling program to identify if there were any PADs (Potential Archaeological Deposits) present; and to determine the heritage values and significance of any sites or PADs found during his investigation. Yettica was assisted by Aboriginal representatives Robert and Isaac Paulson. As a result of the investigation, one isolated artefact site and a PAD were recorded on the AHIMS Site Register.
Figure 6: Aboriginal Heritage AHIMS Sites
Aboriginal Cultural Heritage Assessment performed in June 2011

In June 2011, Kayandel were engaged by RWC to undertake an Aboriginal Cultural Heritage Assessment of an area being considered at that time for the mine and its related infrastructure. Kayandel archaeologists Lance Syme, M. Dunk and C. Hubuschmann, were assisted in the investigation by Mick Leon and Barry Bungie of Doo-wa-kee; and Robert Yettica and Isaac Paulson, representing Forster LALC. Prior to the survey Kayandel undertook a search of the AHIMS database within a 490 km² search area. A total of 108 sites had been recorded at that time. The investigation took place in June 2011, and resulted in eight sites being found. Kayandel considered all sites to be isolated artefacts. These sites have been registered on the AHIMS database under six Site IDs (38-1-0091 to 38-1-0096 inclusive). The smaller number of AHIMS Site IDs is considered to be due to the close location of several sites and the question of whether photographs of the “core” identified during the surveys showed the diagnostic features of a core.

Aboriginal Cultural Heritage Assessment performed in March 2012

In March 2012, Appleton of ASR undertook an archaeological investigation of the then proposed Rocky Hill Mine site. Two new sites were recorded comprising an isolated artefact, and an open artefact scatter comprising 10 artefacts. Appleton was only able to relocate two of the five registered AHIMS sites located within the Mine Area during this survey. The results of this investigation are presented in Volume 5, Part 11A of the Specialist Consultant Studies Compendium.

Aboriginal Cultural Heritage Assessment performed in August 2012

In August 2012, Appleton undertook an archaeological investigation of a proposed realignment of an existing 132kV power line which was to be relocated outside the footprint of the proposed Rocky Hill Mine Area. No Aboriginal sites were found. The results of this survey are presented in Volume 5, Part 11A of the Specialist Consultant Studies Compendium.

Aboriginal Sites Officer walk-over of the proposed private haul road corridor in February 2016

In addition to the surveys previously reported, Mick Leon of Gangga Marrang performed a walk-over of the corridor in February 2016 prior to the soil samples being collected from inside the corridor by Soil Scientists, and he recorded two isolated artefacts, details of which are included in the results section of this report.

3. CONSULTATION

3.1 PRIOR TO THE SURVEY

Under the guidelines, “Aboriginal Cultural Heritage Consultation Requirements for Proponents,” (DECCW, 2010b), when there is prior knowledge that an Aboriginal site has previously been recorded in the area being surveyed, there should be full consultation with the registered Aboriginal stakeholders in any subsequent assessment and management plans should be designed with the concurrence of the registered Aboriginal stakeholders. Any subsequent application for an Aboriginal Heritage Impact Permit (AHIP - for Section 90 Consent to Destroy) must include evidence of open Aboriginal consultation with all registered Aboriginal stakeholders.
However, if development consent for a ‘Part 4 (Division 4.1) State significant development’ is given, then an AHIP is not required, as the issues relating to salvage and/or management of artefacts are addressed in an Aboriginal Heritage Management Plan if the proposed development proceeds. In this instance, a single site has previously been recorded within the survey area (the proposed private haul road corridor) and several sites recorded in the vicinity (see Section 2) and so all registered Aboriginal stakeholders were entitled to participate in the survey to relocate sites previously observed by Mick Leon in a walk-over of the proposed route in February 2016, to look for further sites, and to discuss the options for the management of the sites.

In compliance with “Aboriginal Cultural Heritage Consultation Requirements for Proponents” (DECCW, 2010a), on 27th January 2016 letters were sent to Planning and Aboriginal Heritage Section - Northeast (OE&H); National Native Title Tribunal (NNTT); Forster Local Aboriginal Land Council (LALC); Gloucester Shire Council; NTSCorp; NSW & ACT Registry; Hunter and Central Rivers CMA; and Office of the Registrar, ALRA, requesting that they provide lists of registered Aboriginal stakeholders for the area. A copy of an example of the letter is included as Appendix iii.

On 3rd February 2016 an advertisement was published in the “Gloucester Advocate” inviting all Aboriginal stakeholders with an interest in the Study Area to register their interest. A copy of the advertisement is included as Appendix iv. In addition to the lists, Karuah LALC was contacted separately on the recommendation of Mick Leon (Gangga Marang).

In their response to the letter sent on 27 January 2016, the Planning and Aboriginal Heritage Section – Northeast (OE&H) advised that there had been a recent change in the OEH areas of responsibility and that the survey area now came under Hunter Central Coast Region (OEH). Subsequently, the latter was contacted and on 2nd February Hunter Central Coast Region (OEH) provided a list of groups that had registered as Aboriginal parties in the area of interest. The lists provided by OEH identified 102 parties registered in the area of interest (the full lists are provided in Appendix v). During the consultation, Mr Mick Leon and Ms Kellie Syron registered under the group name Gangaa Marang bringing the total number of consulted parties to 103.

Following further consultation with OEH regarding the potential for conflict due to the inclusion of Worimi, Birpi and Wonnarua parties as having interest in the Gloucester area, a final list of 90 parties was compiled for initial consultation. Subsequently, on 17th February 2016 a letter was sent via email to each of the 55 parties that had included an email address in their registration with OEH. Attached to the letter was a copy of a “Site Contract with Aboriginal Stakeholders” (which RWC required to be completed on behalf of GRL). It was stressed that anyone wishing to participate in the survey had to complete the “Site Contract” and have the appropriate insurance cover. Also included was a copy of the proposed survey methodology (see Appendix vi). At the same time, RWC sent hard copies of the three documents to the remaining 35 stakeholders with no email addresses (see Appendix vii). A copy of all three documents sent to each of the 90 stakeholders has been included as Appendix viii.

Of the 90 stakeholders that were consulted, 18 responded that they wished to participate in the survey of the private haul road corridor. Several parties requested that they be provided with a copy of the draft report to review. Examples of this correspondence received from John
Moorehead (Worimi and Cook family descendant), and Garigal Aboriginal Community Inc. is included as Appendix ix.

The field survey took place on 17th March 2016, and an attendance roll of those that met at the GRL Site Office taken at 10.30am shows that ten stakeholders turned up. A list of the attendees is included as Appendix x. A list of 23 Registered Aboriginal Parties for the assessment was compiled from those that registered and attended the field survey, those that registered but could not attend the field survey and those that requested to review a copy of the draft report only.

3.2 DURING THE SURVEY

It had been anticipated prior to the survey that the 50m-wide corridor could be comprehensively surveyed by the 18 stakeholders who said they would participate, together with Nick Warren (Environmental Consultant representing RWC) and Appleton. However, even with only 10 stakeholders, it soon became obvious that the dense grass groundcover within the corridor would prevent an effective survey. Regardless of the groundcover, the ten stakeholders, Nick Warren and Appleton proceeded to walk the proposed private haul road corridor for the purposes of identifying where artefacts might be concealed, if present.

The dense, tall grass soon became so difficult to walk through that five of the stakeholders decided to turn back halfway along the corridor.

During the survey Appleton discussed with the stakeholders and Nick Warren the survey conditions and the impossibility of achieving any meaningful results. Appleton suggested that in the event a development consent be granted he should convey to GRL that in light of the ineffectiveness of the current survey, that during the early stages of construction of the private haul road there should be monitoring of grass stripping in those sections of the corridor in which there was potential for sites to be present.

3.3 FOLLOWING THE SURVEY

At the southern end of the corridor, the surveyors returned to the GRL site office. Once everyone had returned, Appleton discussed the results of the survey with all of the stakeholders and what he was proposing to recommend resolving the problem of more than 95% of the corridor being densely grassed and archaeological visibility being zero. All of the stakeholders provisionally agreed to Appleton’s proposal pending the stakeholders’ review of the draft report of the survey.

3.4 STAKEHOLDER REVIEW OF THE DRAFT ASSESSMENT REPORT

A copy of the draft Aboriginal Cultural Heritage Assessment Report for the private haul road corridor was sent to all Registered Aboriginal Stakeholders on 30 March 2016. Subsequent to receiving some responses from the Registered Aboriginal Stakeholders, GRL requested that a copy of the draft report be sent to each of the 90 parties that had registered their interest in the area. Each party was sent a copy either by email or by Registered Post on 15 April 2016. A covering letter was sent to each party with a distinction between those who were Registered
Aboriginal Parties for the assessment (Appendix xi) and the remaining parties that had registered their interest in the area (Appendix xii).

Responses to the draft report were received from eight of the 10 stakeholder groups that had participated in the field work and two of the groups that were only sent a copy of the draft report. These have been included as Appendix xiii, and are discussed in the section titled “Recommendations”. In his response to the draft report Mr Bob Syron provided information for inclusion in the Cultural Context section of the report and requested this be updated (see Section 1.7).

This report was finalised on 16 May 2016, i.e. more than 28 days having elapsed since the second posting of the draft report, in accordance with the Guidelines for Consultation (DECCW, 2010b).

4. THE INVESTIGATIVE STRATEGY

The chosen survey strategy was based on the known archaeological record and to factors such as stone material availability, slope, current and past land use, the availability of a reliable water supply, archaeological visibility, the effectiveness of the survey strategy, the efficiency and abilities of the investigators, and weather conditions.

In order to design an investigative strategy, it is firstly necessary to develop a predictive model for site location. This is not to determine where the investigation should be conducted, but to establish a theoretical model for the distribution of archaeological material against which the effectiveness and subsequent analysis of the survey results can be tested, compared and reasoned. The basis upon which the predictive model is derived must, however, be one of consideration of what archaeological material might realistically be expected to not only be present, but also detectable.

4.1 DEVELOPING A PREDICTIVE MODEL FOR SITE LOCATION

The first objective of any archaeological investigation must be to observe and record sufficient of the archaeological record that is present to be able to propose that it is representative of the record as a whole. The investigative strategy is therefore directed and designed to detect that which is representative of the record in the particular Study Area, and naturally, as different Study Areas will comprise variations in environment, vegetation, topography, etc., so the investigative strategy must be designed to best suit the circumstances. The objective must be to detect material evidence, and so it is necessary to consider the extent to which artefactual material may be present, and the degree to which it is visible or might be discovered. There are several factors which are likely to affect, firstly, where Aboriginal people are most likely to have been, secondly, where they have left evidence of their activities, and thirdly, the degree to which that evidence is observable in the present record.

Aboriginal people visited places mainly to obtain resources, and in general places that were richest in resources were more likely to have been visited by people than those places with fewer resources. Important resources were permanent water, reliable ephemeral water, food resources, stone raw material sources, shelter (from sun, wind, and rain) and perhaps suitable surfaces for rock art, and proximity to mythological natural features. Those resources may also
have been a factor in the suitability of a location for particular ceremonial activities but cultural boundaries also influenced the choice of ceremonial grounds. Sites also frequently occurred along preferred access routes and particularly where that route coincided with a watercourse. However, the attractions of such an environment frequently resulted in the archaeological record becoming discontinuous or significantly disturbed, as stock and vehicles impacted upon it in the post-European contact phase.

Frequency of visits and use of particular locations was also determined by the ‘accessibility’ or freedom from environmental constraints in the area. For example, whether there were alternative, preferred or easier ways to travel around or over natural barriers, be they geological, geographical, cultural, or imposed by fauna or flora, or whether they were only seasonally accessible, such as mounds on flood terraces, or the availability of water during periods of drought, or whether or not floods, fire or snow hindered access.

Few past Aboriginal activities are represented by surviving material evidence. This in part is because many activities did not leave material evidence (e.g. tools were reused), but it is also because very little cultural material survived. An exception to this was shellfish, the shells of which were very durable.

The survival of material that is durable was also affected by recent European land use. Cultivation has destroyed many archaeological sites. However, cultivation can also help expose sites that might otherwise be covered. This brings us to the other important point about site distribution, which is that to a great extent site distribution recorded by archaeologists reflects the distribution of places where the ground surface is sufficiently eroded to expose artefactual material.

By far, the majority of recorded sites have been stone artefact scatters or isolated stone artefacts, and in the vast majority of sites they were found in one or more of the following contexts:

i) On or adjacent to deposits containing quartz, quartzite, jasper, silcrete, chert, chalcedony, metamorphosed greywacke, and other indurated or siliceous sedimentary rocks, or redeposited fine-grained volcanics, or

ii) On river banks or adjacent to river banks where the watercourse contains river pebbles of quartz, quartzite, jasper, silcrete, chert, fine-grained volcanics, basalts, etc., and particularly at the junctions of watercourses, or

iii) On ridges and spurs overlooking watercourses or on high vantage points affording uninterrupted views of swamps, water holes, saddles, passes, and any other likely access path into the observer's area, or

iv) In the vicinity of outcrops of suitable raw material such as basalt, silcrete, chert, or other highly silicified sedimentary rock.

Other site types do occur and, perhaps because of their lower and less predictable profile, are present in far greater numbers than we are aware of. People die but there are few recorded burials. One reason may be that in many instances the soils are too acid for the preservation of bone, but a far more likely reason is simply that burial frequently entailed subsurface internment, and a surface survey will only discover a burial where there has been erosion of or significant disturbance to the surface deposits. As a consequence, many burials have only been discovered when exposed by erosion of a sand body or river terrace.
As a general observation, sites are seldom found on slopes greater than 5° unless they are quarries, scarred trees or shelters, and generally artefacts are not found on slopes unless they have been washed downslope by run-off.

Other site types such as carved trees, scarred trees, stone arrangements, Bora rings, etc., may once have been present, but are unlikely to have survived in easily accessible country from the attention of non-Aboriginal people. Thus, much of what might have existed is now lost or destroyed, and the archaeological record has become biased by the post-contact utilisation of resources, and by the selective exploitation and preservation of particular environments.

Other factors which affect the degree to which sites are recorded during an investigation include the time of year at which the fieldwork is performed (the seasonality of some vegetation growth) and the conditions under which the survey is performed – (wet, dry, cold, windy, poor light, etc.).

A brief description of site types such as isolated artefacts, open scatters, camp sites, knapping floors, quarries, middens, mounds, hearths, carved trees, scarred trees, stone arrangements, Bora rings, burials, engravings, paintings, grinding grooves, occupation deposits (and PADs), and ceremonial and mythological sites is included as Appendix xii.

4.1.1 General Geology and Topography

The proposed Mine occurs within the northeastern section of the Gloucester Basin, a lozenge shaped, north/south trending structure extending from just north of Gloucester southwards to north of Stroud Road. The structure incorporates “continental-type sedimentation in structural and erosional depressions”, and comprises sandstone, shale, conglomerate, coal and tuff (Dept. of Mineral Resources 1992).

The Basin corresponds with the valley of the Gloucester and Barrington Rivers, bracketed by north/south trending steep ridges. The ridges to either side of the valley comprise material of “Calc-alkaline volcanism” which includes, “andesitic tuff and breccia, basalt and andesitic flows, rhyolite, rhyodacite, dacite, sandstone and siltstone” (Dept. of Mineral Resources 1980).

As described in the geology of the area, the only potential stone resources were the basalt, rhyolite and siltstone of the calc-alkaline volcanism on the slope units, and from a narrow unit which included conglomerates of the Conger Formation, upslope of the calc-alkaline volcanism. However, none of these were observed during the field survey, and so the most likely source of stone for knapping into tools and weapons would have been Waukivory Creek, or sources beyond the private haul road corridor.

Elevations along the proposed private haul road corridor vary from 100m AHD on the banks of Waukivory Creek up to approximately 170m AHD (to the east of the “Rochelle” spot height of 172m) with the proposed haul road crossing a series of undulating spur-slopes before descending to approximately 140m AHD at the boundary with Stratford Mining Complex.

4.1.2 Vegetation

The proposed private haul road corridor begins in cleared paddock north of the sparse ribbon of riparian vegetation along Waukivory Creek, and from there crosses the steeply sloping mown lawns of a homestead south of Fairbairns Road. South of the homestead, there is mostly cleared grazing land with the exception of a sparse ribbon of riparian vegetation along
the steep banks of an unnamed creek midway along the corridor. At the time of the field investigations, all of the cleared areas had only been subject to low-intensity grazing for some time and in many places the grasses are up to 1.5m high. The condition of the vegetation is considered to also be a result of the general climatic conditions of the local setting which features periods of prolonged drought and infrequent, high intensity rainfall events.

4.1.3 Water Resources

The proposed private haul road corridor begins 200m to the north of Waukivory Creek, but from Waukivory Creek to the southern end of the corridor there are no other sources of water, the creek beds over which the corridor passes being too steep to retain any surface water which would be rapidly discharged within an hour or so of any rainfall. However, there may have been springs upslope to the east of the corridor which, prior to land clearing, would have been a brief source of clean drinking water after heavy rain. The presence of dams along the footslopes adjacent to the haul road corridor suggest that there may be springs along the slopes following heavy rain.

4.1.4 Stone Resources

As described in the geology of the area, the only potential stone resources were the basalt and rhyolite of the calc-alkaline volcanism on the slopes units, and from a narrow unit which included conglomerates of the Conger Formation, upslope of the calc-alkaline volcanism. While none of these were observed during the field survey, there were pebble banks in Waukivory Creek that would include these materials – and so the most likely source of stone for knapping into tools and weapons would have been the creek, or areas elsewhere beyond the survey area.

4.1.5 Previous Impacts

As Figures 4 and 5 show, the bulk of the corridor for the private haul road has been cleared all but for a few remnant strips in riparian zones, along easements, and around the residence south of Fairbairns Road. The Australian Agricultural Company cleared much of the valley for cattle grazing in 1825/6, and by the end of 1826 the Gloucester Estate was running 1,000 cattle, and at least 2,000 sheep – probably using a number of dams for the stock. Since then, cattle have ensured that there has been no regrowth, and their dung and the soils loosened by tree clearing has silted up the watercourses. In addition to the stock, there are two large dams and several smaller dams immediately downslope of the proposed haul road corridor.

“Secondary impacts" to an already significantly disturbed landscape are cattle pads in gate ways and vehicle tracks.

4.2 A PREDICTIVE MODEL FOR SITE LOCATION

Based on all of the above, the following model for site distribution was proposed for the proposed private haul road corridor, in which there was only one reliable water source (Waukivory Creek) but no exposures of sandstone bedrock in the creek lines or sandstone exposures that might be the site of engravings or axe-grinding grooves, no shelters or
overhangs that might contain painted art or occupation deposits, and in which there were unlikely to be any surviving Bora Rings or stone arrangements.

- Isolated artefacts may be present and visible in erosion features on ridges, spur tops or along creek banks.

- Low-density artefact scatters may be present and visible in erosion features on ridges, spur tops or along creek banks, but it is unlikely that any debitage will be visible.

- There is a very little potential for the few trees in the riparian zones that might have exhibited scars to be more than 150 years old.

- There is a very little potential for the few trees in the riparian zones that might have exhibited carved bark scars to be more than 150 years old.

- There is no potential for paintings, engravings, and/or grinding grooves to be present.

- There is little potential for PADs to be present.

- There are no shelters that might contain undisturbed occupation deposits (at depth).

- There will be no stone quarries.

- There will be no shell middens.

- There will be no visible evidence of burials.

- There will be no surviving Bora rings.

- There will be no stone arrangements.

- There are no known direct cultural associations with specific features in the survey area – but see Robert Syron’s reference to a hunting ground (Appendix ii).

In summary, the only sites likely to be present, if at all, are isolated artefacts or very low density artefact scatters - see Table 1.

Table 1 is constructed on ‘before’ and ‘after’ information. The “site type likely to be present’ column was based on the Predictive Model for site location before the field investigation and was based on the likely resources. The ‘found’ column represents the results of the field investigation. The column headed “Presence of potential context” refers to whether the likely location for a particular site type exists; for example, a shelter will not be found on a rock-free river terrace; and an in-ground burial will not be found on granite; but artefact scatters are likely to be found in the vicinity of a waterhole.

Clearly, some site types do not depend on the nearby presence of a natural resource, for example stone artefacts, burials, Bora rings, burials and middens; while other site types do, for example shelters, engravings, PADs, scarred and carved trees.

Predictive models for site location are based on the information taken from topographic maps, geology maps, aerial photographs and the knowledge of the site type that might be present within such environments, but what those information sources cannot show are features less than 10m high or 10m across, and many site types are far less than 10m high or 10m across.
As referred to above, 95% of the corridor was densely grassed, however there was some archaeological visibility along the approach road to the homestead on the summit of the first rise south of Waukivory Creek and beneath bushes and trees in the mown lawns of the homestead. Up to the point at which the lawns gave way to densely grassed paddocks, the survey team was spread out to cover the 50m-wide corridor, however once past the lawns the surveyors bunched up in order to get through the dense grass. At that point, it became obvious that the survey would be ineffective other than for familiarising the stakeholders and Appleton with the topography of the corridor. The previously proposed survey methodology was therefore abandoned.

Table 1

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Presence of Potential Context</th>
<th>Site Type Likely to be Present</th>
<th>Surveyed for</th>
<th>Found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated artefact</td>
<td>Yes</td>
<td>Possible</td>
<td>Yes</td>
<td>2</td>
</tr>
<tr>
<td>Artefact scatter</td>
<td>Yes</td>
<td>Possible</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Scarred tree</td>
<td>Yes</td>
<td>Unlikely</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Carved tree</td>
<td>Yes</td>
<td>Unlikely</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Midden</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Burial</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Mound</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Shelter</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Natural well</td>
<td>No</td>
<td>Unlikely</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Quarry</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Grinding grooves</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Engravings</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Stone arrangement</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Hearth/fireplace</td>
<td>Yes</td>
<td>Possible</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Bora ring</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Pad</td>
<td>Yes</td>
<td>Possible</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

5. SURVEY RESULTS

As a consequence of the survey undertaken by Mick Leon during soil testing, two sites were recorded. An additional isolated artefact was recorded during the survey of the proposed private haul road corridor. Site Recording Forms for all three sites will be lodged with OEH for recording on the AHIMS Site Register.

Site name: GHRAFT-1 (Site first recorded by Mick Leon of Gangga Marrang)
Location: E.404663 N.6449997 (GDA) Map “Gloucester 9233-1N” 1:25,000 Topo
Site type: Isolated artefact
Site condition: artefact occurs in a mown area adjacent to the residence approach road. Unlikely to be in its original depositional location
Site name: Fairbairns Road ISO 1 (Recorded during the 17 March 2016 survey)
Location: E.404700 N.6449900 (GDA) Map “Gloucester 9233-1N” 1:25,000 Topo
Site type: Isolated artefact
Site condition: artefact occurs in an erosion feature in a mown area downslope of the homestead. Extremely unlikely that it is in its original depositional location.

Site name: GH RAFT-2 (Site first recorded by Mick Leon of Gangga Marrang)
Location: E.404724 N.6449047 (GDA) Map “Gloucester 9233-1N” 1:25,000 Topo
Site type: Isolated artefact
Site condition: artefact occurs in a used cattle path beneath vegetation adjacent to a drainage line that eventually meets a dam to the east of the private haul road corridor.

The third site (GH RAFT-2) recorded by Mick Leon was downslope and outside the proposed private haul road corridor but has been included in the recommendations for salvage on the grounds that it is immediately downslope of the haul road corridor, and could be impacted by slopewash when the groundcover is removed, or buried in slopewash born sediments.

The following images show the second site (Fairbairns Road ISO1) together various aspects of the private haul road corridor.

Plate 1: Waukivory Creek
Plate 2: Rob Yettica is bending over the erosion feature in which the artefact in “Fairbairns road ISO 1” was found
Plate 3: Looking southwards along the route of the proposed private haul road in the northern section

Plate 4: Looking southwards along the route in the mid-section of the proposed private haul road

Plate 5: Looking southwards along the route of the proposed private haul road, from north of the large dam in the southern section

Plate 6: Looking northwards back along the route with the big dam on the left
6. POTENTIAL IMPACTS ON ABORIGINAL HERITAGE

The construction of the proposed private haul road will directly impact on two of the three sites recorded. While this will mean that those two sites will be destroyed, Appleton’s provisional assessment is that while the two sites represent locations which an Aboriginal person/or people utilised in the past, they are of low Scientific significance. However, one of the stakeholders stated that all artefacts are “of cultural value and significance for Aboriginal people” (see the email from Todd Heard, Gringai Traditional Owners in Appendix xiii).

Given that the proposed development of the Rocky Hill Coal Mine is of “State Significance”, the proposed private haul road will be constructed and the two sites destroyed, thereby overriding any cultural assessment that might otherwise have protected the sites. However, salvage of the artefacts will mean that they can be preserved, and this report and the listing of the sites on the AHIMS Site Register will be a permanent record that the sites existed.
7. MANAGEMENT, IMPACT MITIGATION & CONTINGENCY MEASURES

7.1 MANAGEMENT MEASURES

This proposed development has been determined to be of “State Significance”. Should development consent be granted and the private haul road constructed, both sites in which the isolated artefacts occur will be destroyed. However, GRL has agreed that the artefacts should be salvaged. As discussed in Section 5, it is also recommended that the artefact from the third site (GHRAFT-2) should also be salvaged.

7.2 MITIGATION MEASURES

With regards to the two isolated artefact sites, no mitigation measures are practical, however refer to the recommendations for the monitoring of turf stripping in specific locations in which the Predictive Modelling would indicate sites are most likely to occur, if present.

7.3 CONTINGENCY MEASURES

The NSW Minerals Industry “Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW” was prepared by the New South Wales Minerals Council. The code complies with all the requirements of the Minimum Standards for Codes of Practice for the Protection of Aboriginal Objects in NSW gazetted on 10th September 2010 by the Department of Environment, Climate Change and Water NSW (now known as Office of Environment & Heritage). All mining activity in New South Wales is subject to the code.

The code sets out the obligations of all mining companies in New South Wales, and the penalties should a company or its employees breach the code. It is therefore in GRL’s interests that all mine workers are made aware of their obligations and responsibilities under the code at the ‘site induction’ stage.

The penalties for knowingly ‘harming’ an Aboriginal place or object are:

- For an individual, $550,000 or $275,000 (depending on whether there are aggravating circumstances) and 1 or 2 years’ jail.
- For a corporation the maximum penalty for the knowing offence is $1.1 million.

The issue then becomes one of how to ensure that later arrivals in the workforce are fully informed of their responsibilities and obligations under the “Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW”. Appleton has observed from other similar projects that this can be done effectively as part of the site induction procedure and “tool box” briefings, in much the same way as inductees are informed as the locations of the First Aid Station, or the Evacuation Areas. Ignorance of the procedures once having been instructed as to what they are would not be a defence against prosecution.
8. **ASSESSMENT OF RESIDUAL IMPACTS**

This section addresses the impacts to the artefactual material from the proposed areas of disturbance associated with the construction of the private haul road, and what happens to the collated information, and who facilitates long term management.

### 8.1 ASSESSMENT OF SIGNIFICANCE

The NSW OE&H policy to safeguard all sites, Aboriginal places, and archaeological material of significance wherever possible requires that some means of assessing the significance of the sites is necessary. This is not only for the purpose of determining whether the proposed development can proceed as proposed but also to provide Cultural Resource Managers with the information for future management of the area so that an Aboriginal Cultural Heritage Management Plan (ACHMP) for the amended Project can be in place before commencement of activities that directly impact on recorded Aboriginal cultural heritage.

#### 8.1.1 Cultural significance

The Aboriginal or cultural significance of Aboriginal relics and sites can only be assessed by the Aboriginal community, and in particular, the Elders. It is the responsibility of the archaeologist to ensure that the Elders or elected representatives of the Aboriginal community are advised of the survey results, and are consulted as to their knowledge and opinion of the significance of the area, and to transcribe and present those expressions in report form. In addition, Aboriginal stakeholders may also contribute anecdotal or factual accounts of the recorded cultural heritage, for inclusion in the final report.

Two of the respondents to the draft report addressed the cultural significance of the results of the survey and draft report on the assessment of the proposed private haul road corridor.

Robert Syron stressed the cultural association the Worimi people, and particularly the Gringai Clan and the Cook family and descendants, had with the Waukivory Creek area, and how significant it was to all Worimi people. He wrote of the importance of Waukivory as a hunting ground won by the Kabook (Cherry Tree Clan of the Worimi) in an “affray” from a coastal tribe (refer to the abbreviated history in an extract from Robert Syron’s email in Appendix i).

A second reference to cultural significance was provided by Todd Heard of the Gringai Traditional Owners. Todd stated that all artefacts, “... are of cultural value and significance for Aboriginal people”. He also referred to how the impact from the haul road, “... will represent a change (to) the aesthetics of the land from a cultural perspective and this factor is of great importance to Aboriginal people” (see Appendix xiii).

#### 8.1.2 Research Potential

All three artefacts observed in or adjacent to the proposed private haul road road corridor were of amorphous waste stone items with very little potential research value.
8.1.3 Educational Potential

The fact that there are so few artefacts and that the locations of the artefacts will be destroyed leaves very little that could have educational potential.

However, if the artefacts are salvaged they will be placed in the care and control of Gloucester LALC and perform an educational role. In addition, copies of the archaeological reports for this development will be placed in the Gloucester Town Library and in the Gloucester High School Library for educational purposes. Another copy will be placed with Forster LALC as an educational resource for Worimi children.

It is recommended that GRL should provide or pay for an interpretive display case in which the salvaged artefacts can be displayed, and that the archaeologist and the Aboriginal stakeholders should combine to provide a simple pamphlet describing and interpreting the artefacts, and providing an Aboriginal cultural context for where they were salvaged.

8.1.4 Aesthetic Value

Neither the sites nor the artefacts are of aesthetic value.

8.1.5 Uniqueness and/or Rarity

Neither the sites nor the artefacts are unique or rare. There are numerous other sites in the region, many of which comprise stone artefacts. The artefacts recorded during this survey are unremarkable, and are neither unique nor rare.

8.2 ASSESSMENT OF IMPACT TO SITES

The conclusions from the investigation of the locations on which the three artefacts occur is that all three are in highly disturbed contexts. The first artefact recorded by Mick Leon occurs in an eroded area on a sloping tightly mown lawn adjacent to a residential driveway. It is extremely unlikely that the artefact is in its depositional context (i.e. where it was left by the Aboriginal user). The second artefact was found during the current survey by Robert Yettica in an erosion feature downslope of a garden shrub in a sloping tightly mown lawn area. It is unlikely that it was found in its depositional location. The third artefact (found by Mick Leon), was in an erosion feature immediately downslope of a plough-zone at the base of a steeply sloping feed paddock. This artefact has probably moved downslope as a consequence of ploughing, slopewash, and/or cattle treadage and, as such, was unlikely to be in its deposited location.

Salvaging the artefacts will effectively destroy the sites. However, their salvage will ensure the safety of the artefactual material which, if retained in secure premises such as a museum of the Local Aboriginal Land Council Office, will become far more accessible than they would be if not salvaged but destroyed.

In the event a development consent is granted, and the Aboriginal Cultural Heritage Management Plan is approved, the archaeologist and Aboriginal stakeholders should re-visit the sites to recover the artefacts and to remove any other artefacts at those locations that might have become exposed in the meantime.
Once the artefacts have been removed, there will be no constraints to development other than the standard provision as to what GRL and its contractors must do in the event that other archaeological material becomes exposed during site works.

A report of the consultation and salvage strategy, as well as a detailed analysis of the salvaged material would then be provided to OEH.

8.3 IMPACT ASSESSMENT IN A REGIONAL CONTEXT: CUMULATIVE IMPACT

One of the issues that must be addressed when considering whether or not to salvage artefacts is to what extent does removal of the artefacts have as a cumulative impact on the archaeological record, given that other sites in the region may have been destroyed.

There are 27 sites recorded on the AHIMS site register in the 196km² search area reviewed during this investigation. Potential cumulative impacts would include the salvage of the three artefacts recorded during the survey of the proposed private haul road corridor together with the salvage of six sites within the Mine Area and eight sites within the Stratford Mining Complex that will be salvaged within the 196km² search area.

The number and location of sites recorded in the AHIMS database and identified during field surveys of the Mine Area and private haul road corridor is a result of the intense archaeological assessment undertaken for these projects and would not be representative of areas of the landscape that have not had the same level of archaeological scrutiny. When considering cumulative impacts on a broader scale, i.e. throughout the Gloucester Valley, it is recognised that the valley has been subject to a long history of agricultural activities. When Kayandel Archaeological Services undertook a search of the AHIMS database in May 2011, 108 sites had been recorded within a 490 km² search area. In the context of an area over twice the size of that reviewed for this report and the history of agricultural activities in this area, the amended Project would not significantly increase cumulative impacts to Aboriginal cultural heritage.

Another factor to consider is how would removal of those three artefacts impact upon the accessibility of the sites to the public? The fact is that the proposed private haul road is on private property and like all property owners they must protect themselves from the risk of someone being injured, maimed or killed on their property. Coal mines are high risk areas even for the mine workers, and so anyone else wanting to visits those Aboriginal sites could not do so simply because of the potentially high hazard risk.

9. MONITORING

As referred to previously, the 17 March 2016 survey was all but completely ineffective due to the extensive ground cover. However, given that the majority of the route occurs on slopes greater than 5°, the three isolated artefacts may be representative of the archaeological record along the proposed private haul road.

In the past, archaeologists have frequently recommended in their reports of investigations undertaken elsewhere that all grass stripping should be monitored by Aboriginal representatives. However, having witnessed the ineffectiveness of this method primarily because of the inexperience of the monitors, Appleton considers this not to be a viable,
practical or productive strategy. Rather, ASR proposes that in accordance with the predictive Model for site location espoused earlier, monitoring should only be recommended for specific locations.

To identify the locations in which monitoring should occur if permitted by GRL, it is easier to eliminate those sections of the corridor not warranting monitoring.

From many years of experience, Appleton has found that other than quarries and shelters, sites seldom occur on slopes of 5° or more; very seldom on slopes generally, and where they occur on ground that is less than 3° the sites are invariably between 15 and 30m back from the break in slopes between the preferred ground and steeper ground. Thus the section of the corridor route south of the homestead on Fairbairns Road to the southern end of the corridor is assessed to be of very low archaeological potential. Equally, sites are unlikely to occur between north of the homestead south of Fairbairns Road and the road. However, while Appleton believes the area between Fairbairns Road and Waukivory Creek is too disturbed to contain artefactual material, the predictive model described in section 4.2 indicates that due to the nature of the slopes and proximity to a creek it is otherwise an ideal environment in which artefacts might be found.

10. RECOMMENDATIONS

While recognising that GRL are not obliged to conduct any further investigations for archaeological sites as a “State Significant” development, Appleton recommends that in the interests of the Worimi people and the Gloucester community generally, that it should consider the following recommendations.

As a consequence of the ineffectiveness of the survey of the proposed private haul road corridor, Appleton recommends that turf stripping in the section of the corridor between Waukivory Creek and Fairbairns Road should be monitored by a representative from each of the registered stakeholders with direct association with Worimi Country or by their chosen representatives.

In addition, Appleton recommends that the two artefacts that will be directly impacted by construction of the haul road, and the third artefact immediately adjacent and downslope of the corridor should be salvaged by a representative from each of the registered stakeholders with direct association with Worimi Country or by their chosen representatives.

It is also recommended that at least once a week during the construction of the proposed private haul road, there should be a tool-box meeting during which all site workers should be reminded of the possibility that artefactual material might become exposed by earthworks and the obligations of each worker to report any sighting immediately artefactual material becomes exposed. In the event that any artefactual material becomes exposed it is recommended that the Site Manager should request a qualified archaeologist to attend the site to record details of the find and to record its location, and to lodge a Site Recording Form with the details with OEH for listing on the AHIMS Site Register. The recording of each and every site wherever it might be found is of both cultural and scientific significance in adding to our knowledge of past Aboriginal use and occupation of past environments.
In addition, GRL is advised of the following provision which applies to all development projects in NSW: These provisions or recommendations apply to all earthworks for construction of the private haul road.

1. If Aboriginal cultural objects are uncovered due to the development activities, all works must halt in the immediate area to prevent any further impacts to the object(s). A suitably qualified archaeologist and Aboriginal community representatives must be contacted to determine the significance of the object(s). The site is to be registered in the AHIMS (managed by NSW OE&H) and the management outcome for the site included in the information provided to the AHIMS. It is recommended that the Aboriginal community representatives are consulted in developing and implementing management strategies for all sites, with all information required for informed consent being given to the representatives for this purpose.

2. If human remains are located during the project, all works must halt in the immediate area to prevent any further impacts to the remains. The NSW Police, the Aboriginal community and NSW OE&H are to be notified. If the remains are found to be of Aboriginal origin and the police consider the site not an investigation site for criminal activities, OE&H should be contacted and notified of the situation and works are not to resume in the designated area until approval in writing is provided by NSW OE&H. In the event that a criminal investigation ensues, works are not to resume in the designated area until approval in writing (has been received) from NSW Police and NSW OE&H.

3. All reasonable efforts must be made to avoid impact to Aboriginal cultural heritage values at all stages of the development works. If impacts are unavoidable, mitigation measures are to be negotiated with the Aboriginal community and NSW OE&H as per OEH regulations.
GENERAL GLOSSARY:

The definitions that follow are for terms used in this and other reports written by the author, and do not necessarily apply to their use in different contexts.

ADZE: A modified flake with at least one steeply-retouched working edge. While all adzes are generally considered to be wood-working tools it is probable that some also served as cores and others as scrapers. Adzes with a uniform butt were frequently hafted to make a chisel-like tool, but the intended use of the adze determined the size of the adze and whether it was hafted (Flenniken and White, 1985).

ARCHAEOLOGICAL DEPOSIT: Sediments which contain evidence of past Aboriginal use of the place, such as artefacts, hearths, burials etc.

ARTEFACT: Any object that has attributes as a consequence of human activity (Dunnell, 1971). In this report ‘artefacts’ has been used generally to describe pieces of stone that have been modified to produce flakes, flaked pieces, cores, hammerstones, or axes.

BACKED BLADE: A stone tool manufactured from a flake on which one margin has been modified by the removal of small flakes to blunt the edge or margin opposite the cutting edge.

BORA GROUND: A ceremonial site comprising of one or two connected circles composed of compacted or mounded earth, or defined by an arrangement of stones, of 2 to 30m diameter, generally used in male initiation rites.

CAMPSITE: A place at which the density of artefacts and the variety of material indicates that people ‘frequently’ used the place as a stopping or resting place. Such places are also likely to contain or be close to water resources, food resources, or stone material resources. In this report a campsite is used to describe artefact scatters that are associated with hearths or fireplaces, as distinct from scatters that are not associated with hearths or fireplaces, which are described as Open Scatters.

CHALCEDONY: A form of silica (partially translucent), which occurs as linings in cavities in rocks. When banded it is known as AGATE (Department of Mines, 1973). Chalcedony is uniformly coloured and agate has curved bands or zones of varying colour (Cook & Kirk, 1991).

CHERT: Another name for sedimentary chalcedony. It occurs most frequently in limestones, or in marine sedimentary rock, or as pebbles in sedimentary rock. In its depositional context it is often concentrated in bedding planes. Chert found in deep-water limestones is formed from radiolaria and diatoms (siliceous planktonic micro-organisms) (Cook & Kirk, 1991).

Chert is a form of amorphous or extremely fine-grained silica, partially hydrous, found in concentrations and beds. It is classified as a chemical sedimentary rock although it may be precipitated both organically and inorganically (Department of Mineral Resources, n.d.).

CONGLOMERATE: Naturally cemented gravel. Conglomerate is a coarse-grained clastic sedimentary rock composed of generally rounded fragments of other rock types larger than 2 mm in diameter, set in a fine-grained matrix of sand, silt, or any of the common natural cementing materials (Department of Mineral Resources, n.d.).

CORE: A piece of stone from which flakes have been removed, that cannot otherwise be described as a retouched or modified artefact.

CORTEX: The naturally altered surface of stone – e.g. the water-worn surface of river pebbles.
DEBITAGE: The small waste material observed in knapping floors. Generally, waste material is described as all those fragments having a maximum dimension of less than 10mm.

FLAKE: A fragment of stone exhibiting features indicating that it has been deliberately removed from a core piece. These features are evident as:

i) Platform: Plane or point at which a blow was delivered to remove the flake.
ii) Bulb of Percussion: Convex surface that occurs on the face or ventral surface of a flake, radiating from the point of impact, produced as a consequence of the force pattern.
iii) Eraillure: see below.

Other terms:

i) Dorsal: The back or outer face of a flake as it would have been prior to removal from a core. Frequently either ridged or exhibiting negative flake scars when removed in secondary flaking, with a natural weathered cortex when removed in primary flaking.
ii) Ventral: The ‘chest’ or inner face of a flake as it would have been prior to removal from the core. The surface upon which the Bulb of Percussion occurs.
iii) Platform Preparation: The removal of flakes from a surface to produce a level platform. May be evidenced by retouch scars to the platform.
iv) Retouch: The removal of small flakes from an edge or margin of an artefact to modify its shape or sharpen its edge.
v) Proximal: The end of a flake closest to the striking platform.
vi) Distal: The end of a flake furthest from the striking platform.
vii) Margin: The edge of an artefact.
viii) Eraillure: A small circular to elliptical negative flake scar occurring on the surface of the bulb of percussion on flakes of very fine-grained or highly silicified material. It occurs ‘naturally’ as a consequence of internal forces generated at the time of flake removal.
ix) Split Cone: Occurs when the flake splits down its axis frequently removing part of the striking platform. Generally believed to be produced by faulty knapping technique, but is also probably a consequence of flawed material.
x) Transverse Snap: Occurs when a flake snaps across its axis. Generally believed to be caused by post-depositional impacts such as human or stock treadage, or vehicular traffic.

FLAKED PIECE: A fragment of stone exhibiting flake scars indicating that it is an artefact, but not displaying diagnostic features, such as a Bulb of Percussion, Striking Platform, or an Eraillure.

GREYWACKE: A type of sandstone, grey or greenish-grey in colour, tough and well indurated and typically poorly sorted (Clark & Cook, 1986).

A generally poorly sorted, dark sandstone containing feldspar and sand-sized rock fragments of metamorphic or volcanic rocks (Department of Mineral Resources, n.d.).

Usually a dark and coarse-grained rock compared to mudstones and siltstones that are much finer-grained and better sorted.

HOLOCENE PERIOD: The period from 10,000 years ago to the present.

IGNEOUS ROCK: Rock formed by the cooling and solidification of magma on or below the earth’s surface (Geography Dictionary, 1985).

In situ: In its original place – as deposited.

ISOLATED ARTEFACT: A solitary stone artefact, at least 50m from its nearest neighbour. This is based on NPWS policy that two artefacts within 50m of each other constitute a site.

KNAPPING FLOOR: A discrete scatter of artefacts in which at least two artefacts are recognisably of the same material, and derive from the same piece of stone. Also described as a stone tool manufacturing site or floor.
LOCATION: The place at which an artefact is found, or a place identified as having either archaeological or Aboriginal significance.

MEASUREMENT:

I) Flake:
   i) Length: Measured along the percussion axis at right angles to the platform.
   ii) Width: The greatest width measured at right angles to the percussion axis.
   iii) Thickness: The greatest thickness measured at right angles to the percussion axis.

II) Flaked piece:
   i) Length: The longest dimension
   ii) Width: The greatest width measured perpendicular to the length.
   iii) Thickness: The greatest thickness measured perpendicular to the length.

III) Core:
   i) Length: The longest dimension.
   ii) Width: The greatest width measured perpendicular to the length.
   iii) Thickness: The greatest thickness measured perpendicular to the length.

MIDDEN: A refuse heap or stratum of food remains, such as mollusc shells, and other occupational debris (Dortch, 1984 – see also Meehan, 1982).

MUDSTONE: A fine-grained detrital rock, usually quite massive and well consolidated. May be black through grey to off-white, browns, reds and dark blues/greens. Frequently found in association with sandstones (Cook & Kirk, 1991).

Identification is often aided by colour variations in layering. A source for stone material tool manufacturing material found as river pebbles in creek beds, and artefacts often display a water-worn cortex.

NEGATIVE FLAKE SCAR: A concave surface resulting from the removal of a flake, occurring on the surface of the rock from which a flake has been removed.

PLEISTOCENE PERIOD: The period from about 10,000 years ago to 2 million years ago.

POTENTIAL ARCHAEOLOGICAL DEPOSIT (PAD): Synonymous with Potentially Archaeologically Sensitive: Having the potential to contain archaeological material although none is visible.

QUARTZITE: Quartzites are formed by the regional or contact metamorphism of quartz arenites, siltstones, and flints (cherts). They are composed essentially of quartz, and usually have a fine-grained granoblastic (grains are roughly the same size) texture. Generally massive, but may sometimes show sedimentary structures (Cook & Kirk, 1991).

ROTATION: The removal of flakes from a core by blows directed at different angles, to different platforms. May be evident on the dorsal surface of a flake as negative flake scars, which do not follow the same direction as the percussion axis of the flake. This may be confused with scars produced during core preparation.

SCAT: The solid waste material produced by an animal – dung, droppings, manure (Triggs, 1985).

SCATTER: Two or more artefacts occurring within 50 metres. Scatter may also be used in the context of ‘background scatter’, meaning the general distribution of artefacts across the landscape that cannot be recognised as discrete concentrations.

SILCRETE: A near surface or surface siliceous induration (Desen & Peterson, 1992).

A conglomerate consisting of surficial sand and gravel cemented into a hard mass by silica.

A siliceous duricrust (Bates & Jackson, 1980).
Crusts may form as a result of low, infrequent rainfall, on reasonably flat surfaces. These are known as duricrusts – those cemented by silica are known as silcretes (Clark & Cook, 1986), sometimes referred to locally as ‘billy’ (Gentilli, 1968), or ‘grey billy’.

Silcrete on the northern tablelands of NSW forms at the surface contact between sediments of the Sandon Beds and the Armidale Beds with overlying basalt, where groundwater (more rich in silica than surficial water) interacts with surficial water and precipitates new quartz as the matrix to the sediments (N.D.J. Cook, Dept. of Geophysics, UNE, pers. Comm.).

In softer formations of quartz sands, groundwater has apparently been responsible for the formation of concretionary layers of silcrete. Under altered climatic conditions, the less competent beds erode away leaving concretions. Since they are often the size of old-fashioned woolsacks and are greyish and white, they are popularly known as gray billy (slang for billy goat) (Fairbridge, 1968).

**SITE**

A discrete area or concentration of artefactual material, place of past Aboriginal activity, or place of significance to Aboriginal people.

**SCIENCE TERMS** (taken from Banks 1995, and others as referenced).

**BEDROCK**

Outcrop of *in situ* rock material below the soil profile.

**BENCH**

A strip of relatively level earth or rock breaking the continuity of a slope.

**BLOWOUT**

A closed depression formed in the land surface by wind eroding sands and depositing them on adjacent land.

**CLAYPAN**

A depression caused by the aeolian deflation of sediments, or by the presence of a prior lake.

**DUNE**

A ridge built up by wind action composed of sands, silts, or sand-sized aggregates of clay.

**FLOODPLAIN**

A large flat area, adjacent to a watercourse, characterised by frequent active erosion and aggradation by channelled and overbank stream flow.

**GIBBER**

A level surface covered by a thick deposit of gravel or broken siliceous pebbles, occurring in the more arid parts of the continent, thought to have been formed from the break-up of a siliceous (silcrete) surface crust, and termed gibber plains (Whittow, 1984) – see also silcrete.

**GILGAI**

Surface microrelief associated with soils containing shrink-swell clays. Gilgai consists of mounds and depressions, or irregularly distributed small mounds and subcircular depressions varying in size and spacing. Vertical interval usually <0.3m; horizontal interval usually 3-10m, and surface almost level. Sometimes called ‘crab-hole’ soils.

**GULLY**

An open incised channel in the landscape generally greater than 30cm deep and characterised by moderately to very gently inclined floors and steep walls.

**HUMMOCK**

A small raised feature above the general ground surface.

**LANDFORM ELEMENTS**

- **Crest**
  Landform element standing above all points in the adjacent terrain.

- **Flat**
  Neither a crest or a depression <3% slope.

- **Upper slope**
  Adjacent to and below a crest or flat but not a depression.

- **Midslope**
  Not adjacent to a crest, a flat or a depression.

- **Lower slope**
  Adjacent to and above a flat or a depression but not a crest.
LITHOSOLS: Shallow soils showing minimal profile development and dominated by the presence of weathering rock and rock fragments.

RILL: A small channel cut by concentrated runoff through which water flows during and immediately after rain.

RUNOFF: That portion of precipitation not immediately absorbed into or detained upon the soil and which thus becomes surface flow.

SCARP/CLIFF: A steep slope terminating a plateau or any level upland surface.

SCRUB: Vegetation structure consisting of shrubs 2-8m tall.

SHEET EROSION: The removal of the upper layers of soil by raindrop splash and/or runoff.

SOIL PROFILE:

"A HORIZON": The top layer of mineral soil. This may consist of two parts:

A₁ HORIZON: Surface soil and generally referred to as the topsoil.
A₂ HORIZON: Similar in texture, but paler in colour, poorer in structure, and less fertile.

"B HORIZON": The layer below the A Horizon. This consists of 2 parts:

B₁ HORIZON: A transitional horizon dominated by properties characteristic of the underlying B₂ horizon.
B₂ HORIZON: Typically contains concentrations of silicate clay and/or iron, and/or aluminium and/or translocated organic material.

"C HORIZON": The parent rock. Recognised by its lack of pedological development, and by the presence of remnants of geologic organization.

"R HORIZON": Hardrock that is continuous (Charman & Murphy, 1993; 350-1).

SPUR: A ridge which projects downwards from the crest of a mountain as a water-parting (Whittow, 1984).

SUBSOIL: Sub-surface material comprising the B and C Horizons of soil with distinct profiles; often having brighter colours and higher clay contrasts.

SURFACE CONDITION:

Gravelly: Over 60% of the surface consists of gravel (2-69mm).
Hardsetting: Soil is compact and hard.
Loose: Soil that is not cohesive.
Friable: Easily crumbled or cultivated.
Self-mulching: A loose surface mulch of very small peds forms when the soil dries out.

SWALE: A linear level-floored open depression excavated by wind or formed by the build-up of two adjacent ridges.

SWAMP: Watertable at or above the ground surface for most of the year.

TERRACE: A flat or gently inclined surface bounded by a steeper ascending slope on its inner margin and a steeper descending slope on its outer margin (Whittow, 1984).
TOPSOIL: A part of the soil profile, typically the A₁ horizon, containing material that is usually darker, more fertile and better structured than the underlying layers.

UNDERSTOREY: A layer of vegetation below the main canopy layer.

VEGETATION: Forest types.

- Closed forest: Canopy provides complete cover – these areas are often called rainforests.
- Tall open (wet eucalypt) forest: Canopy cover is reduced – understorey of trees and shrubs.
- Open forest (dry eucalypt) Canopy is lower and more open – understorey of hard-leaved shrubs and grasses.
- Woodland: Trees are more widely spaced – understorey is grass rather than shrubs.
- Hardwood: A group of trees called angiosperms, or flowering plants, also called broadleaved plants. Most common is eucalypt.
- Softwood: A group of trees called gymnosperms or conifers. Includes pine trees, spruces and firs, cypress pine. Used as timber.

Forests can be described as: open or closed; tall or short; wet or dry; softwood or hardwood.

Varieties: rainforest; wet eucalypt forest; mixed eucalypt forests; dry eucalypts forests; cypress pine forests.

Old growth forests are forests that have not been disturbed for 200 years (Underwood S & G, 1995).
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