THE ENVIRONS OF THE STUDY AREA, GUNNEDAH NSW.

ABORIGINAL HERITAGE ASSESSMENT

GUNNEDAH SECOND ROAD OVER RAIL BRIDGE

GUNNEDAH LOCAL GOVERNMENT AREA

APRIL 2013

Report Prepared by
OzArk Environmental & Heritage Management Pty Ltd
for Kellogg Brown & Root Pty Ltd
on behalf of the
Roads and Maritime Services Grafton

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EXECUTIVE SUMMARY

OzArk Environmental Heritage & Management (OzArk) has been commissioned by Kellogg Brown & Root Pty Ltd (KBR; the Client) on behalf of the NSW Roads and Maritime Services (RMS; the Proponent) to undertake an Aboriginal heritage assessment of the proposed Study Area for the an overrail bridge in Gunnedah, NSW. The Proponent seeks to develop of a series of concept options for the construction of a second road over rail overbridge in the township of Gunnedah in order to offset the impact of more frequent railway traffic upon residents resulting from increased coal mining in the Gunnedah basin.

No Aboriginal sites or objects were recorded as a result of the assessment of the route options survey area within the overall Study Area (**Figure 1-3**).

Furthermore, no area within the assessed area was determined as being likely to contain intact sub-surface Aboriginal deposits.

The results of the assessment confirm the predictive model that suggested a low potential for any intact Aboriginal sites to remain extant due to the high degree of disturbance over the Study Area.

As no Aboriginal objects or sites were identified during the current field assessment, no further archaeological assessment is required and as such Aboriginal heritage presents no constraint to the proposed works.

Should any Aboriginal heritage features be identified during the course of construction, work in that area should cease and subsequent actions should be guided by the *RMS Standard Management Procedure: Unexpected Archaeological Finds* July 2012, found at www.rta.nsw.gov.au/environment/downloads/unexpected_archaeological_finds_procedure.pdf.

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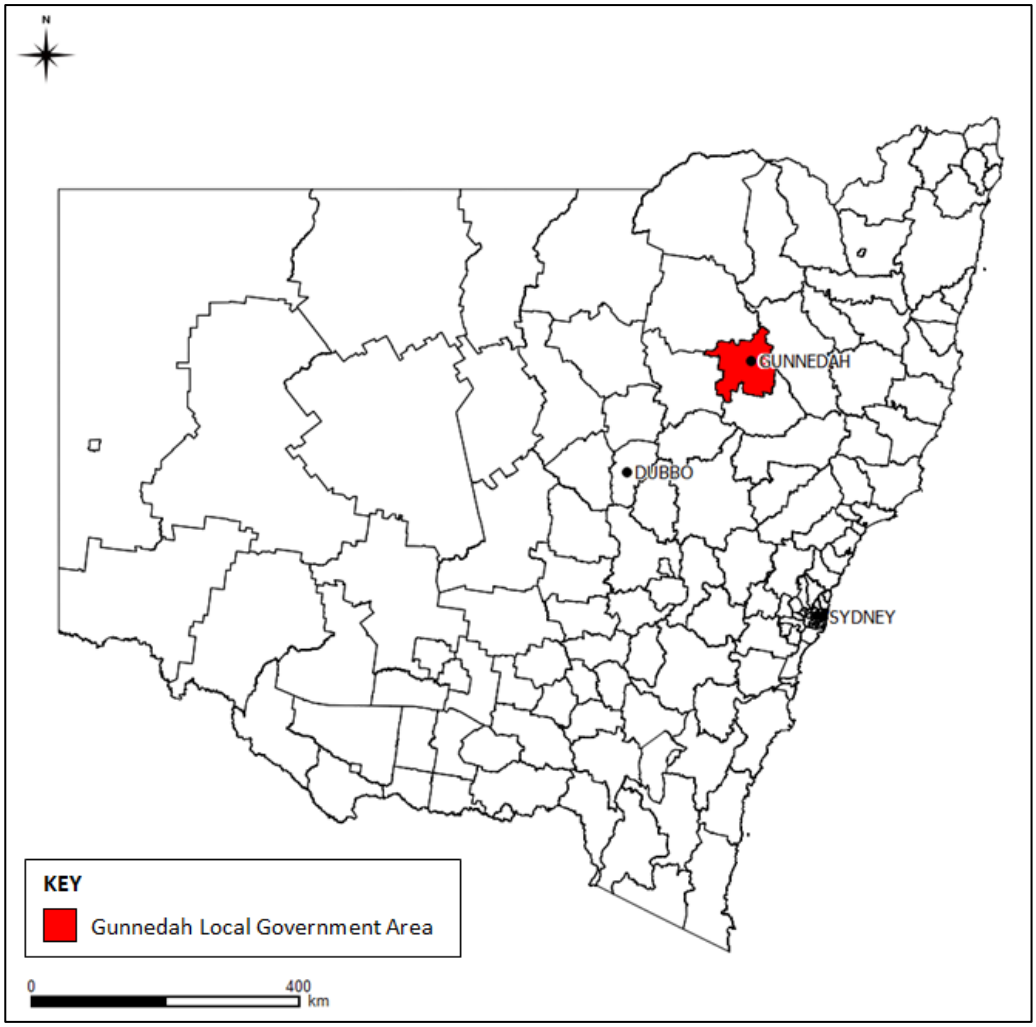
1 INTRODUCTION

1.1 BRIEF DESCRIPTION OF THE PROPOSAL

OzArk Environmental Heritage & Management (OzArk) has been commissioned by Kellogg Brown & Root Pty Ltd (KBR; the Client) on behalf of the NSW Roads and Maritime Services (RMS; the Proponent) to undertake an Aboriginal heritage assessment of the proposed Study Area as shown in **Figures 1-1** and **1-2**. The Proponent seeks to develop of a series of concept options for the construction of a second road over rail overbridge in the township of Gunnedah in order to offset the impact of more frequent railway traffic upon residents resulting from increased coal mining in the Gunnedah basin.

Figure 1-1: Location Map: NSW Context.



1.2 PROPOSED WORKS

Increased coal mining activities in the Gunnedah basin has resulted in an increase of Higher Mass Limit (HML) rail loadings for which the current Abbott Street Bridge rail crossing is unsuitable. As such, the current route for HML loadings utilizes a level crossing at New Street (**Figure 1-3**) resulting in considerable traffic congestion for motorists from residential areas on

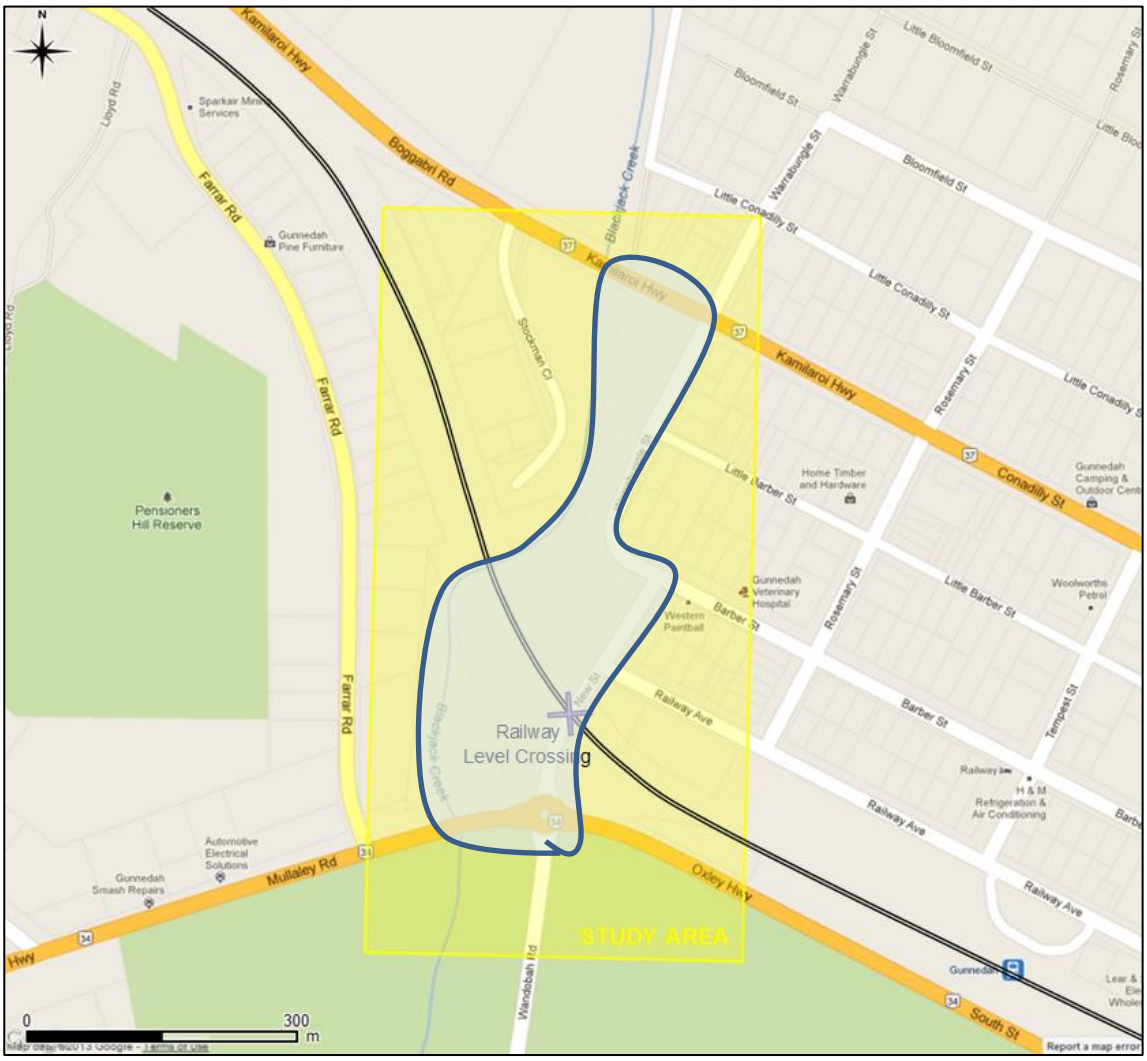
the southern side of the railway seeking to access the CBD to the north, as level crossings are closed for train passage more frequently. The proposal involves the development of a series of concept options for the construction of a second road over rail overbridge in the vicinity of the existing New Street railway level crossing in order to offset the impact of increased railway traffic upon residents.

Figure 1-2: Location Map: Gunnedah Township and the Study Area.

1.3 SUBJECT AREA

Gunnedah is located in northern NSW, 70 kilometres northwest of Tamworth. The Study Area covers approximately 45.4 hectares, incorporating residential, park, and council lands. The Study Area is dominated by the extant railway line, hydrological feature, Blackjack Creek, and heritage building, Meggitts Flour Mill (formerly Brunton's Flour Mill) (**Figures 1-2, 1-3**). The current assessment was focused on potential route options that lie within the blue shaded area on **Figure 3**.

Figure 1-3: Location Map: Study Area (yellow); assessed area (blue).



2 THE PROJECT

2.1 PURPOSE AND OBJECTIVES OF THE ARCHAEOLOGICAL INVESTIGATION

The purpose of the current assessment is to identify and assess Aboriginal heritage constraints relevant to the proposed route options.

The objectives of the current study are to:

Objective One: Identify and record Aboriginal objects, sites and sensitive landforms within the Study Area;

Objective Two: Present management avenues based on the likely impacts of the proposed options to any recorded sites within the blue shaded are as shown on **Figure 1-3**.

2.2 DATE OF HERITAGE ASSESSMENT

The fieldwork component of this assessment was undertaken by OzArk EHM from the on 12th to 13th March 2013.

2.3 ABORIGINAL COMMUNITY INVOLVEMENT

All Aboriginal community consultation has been be conducted by Mr Graham Purcell, RMS Aboriginal Cultural Heritage Advisor Northern Region, following the NSW Roads and Maritime Services '*Procedure for Aboriginal Cultural Heritage Consultation and Investigation'* (PACHCI).

2.4 OZARK EHM INVOLVEMENT

2.4.1 Field Assessment

The fieldwork component of the current project was undertaken by:

- Fieldwork Director: Dr Jodie Benton (BA (Hons), PhD [University of Sydney]).

2.4.2 Reporting

The reporting component of the current project was undertaken by:

- Report Author: Morgan Wilcox (BArch Hons [La Trobe University]); and
- Reviewer: Dr Jodie Benton.

2.5 DESKTOP DATABASE SEARCHES CONDUCTED

A desktop search was conducted on the following databases to identify any potential issues. The results of this search are summarised here in **Table 2-1** and presented in detail in **Appendix 1**.

Table 2-1: Desktop-Database Search Results.

Name of Database Searched	Date of Search	Type of Search	Comment
Australian Heritage Database http://www.environment.gov.au/heritage/ahdb/	05.04.2013	Gunnedah NSW	No places on the search are within the Study Area
NSW Heritage Office State Heritage Register and State Heritage Inventory http://www.heritage.nsw.gov.au/	05.04.2013	Gunnedah LGA	One place (Meggitt Ltd Flour Mill) is within the Study Area.
National Native Title Claims Search http://www.nntt.gov.au/Applications-And-Determinations/Search-Applications/Pages/Search.aspx	05.04.2013	Gunnedah LGA	Native Title Claim of the Gomeroi People (Tribunal File No: NC2011/006) currently covers a large portion of north-western NSW, including the township of Gunnedah.
Department of Sustainability, Environment, Water, Population and Communities (SEWPC) Protected Matters (EPBC Act) Database; http://www.environment.gov.au/erin/ert/epbc/index.html	05.04.2013	Gunnedah LGA	None of the Aboriginal places on the RNE occur near the Study Area.
Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS);	05-09-2012	Lat, Long From : 150.218, -31.00145 - Lat, Long To : -30.96434, 150.27997 with a Buffer of 1000 metres centred on the Study Area	21 AHIMS sites within the search area (**Appendix 1**).
Local Environment Plan	05.04.2013	Gunnedah LEP of 2012	One place (Meggitt Ltd Flour Mill) listed in Schedule 5 of the LEP is within the Study Area.
S170 RTA Heritage and Conservation Register http://www.rta.nsw.gov.au/environment/heritage/heritageconservreg/index.html?elid=2	05.04.2013	Northern Region	No places on the search are within the Study Area

2.6 PROJECT CONSTRAINTS

The most significant constraint associated with the current field assessment was low levels of ground surface visibility (GSV). The impact of GSV on the assessment is discussed in **Section 5.1**. Weather conditions throughout fieldwork were fine

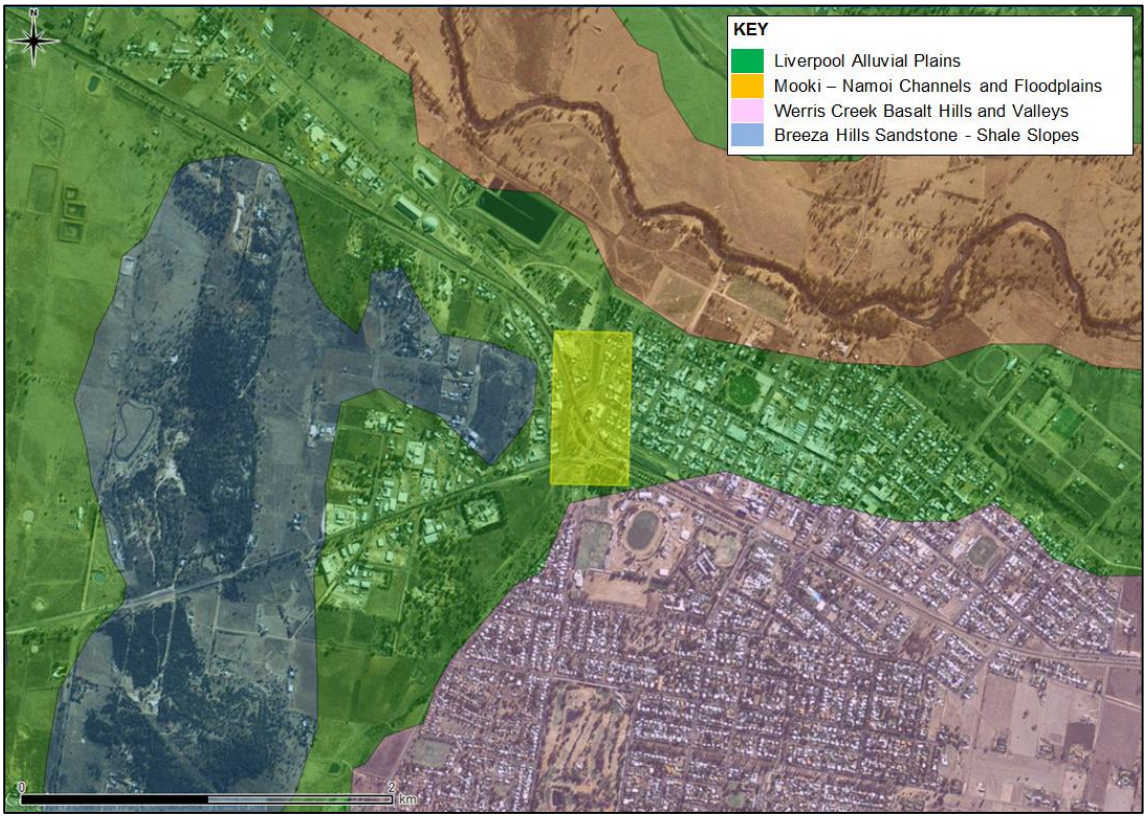
3 LANDSCAPE CONTEXT

An understanding of the environmental contexts of a Subject 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.

3.1 TOPOGRAPHY

The Subject Areas fall within the Brigalow Belt South (BBS) Bioregion. The Subject Area is classified as the Liverpool Alluvial Plains landscape unit (**Figure 3-1**). The Liverpool Alluvial Plains landscape unit is characterised by undulating hills and sloping plains with alluvial channels and floodplains (Mitchell 2002: 9). General elevation across the landscape ranges from 300 to 350 metres, with a local relief of up to 10 metres. Geologically, the Brigalow Belt South Bioregion comprises horizontally bedded Jurassic and Triassic quartz, sandstone and shale with limited areas of conglomerate or basalts (OEH 2013a). The Liverpool Alluvial Plains landscape unit reflects this profile, comprised of Quaternary alluvial plains and outwash fans derived from Tertiary basalts, in addition to Permian and Triassic quartz and sandstones (Mitchell 2002: 9).

Figure 3-1: Mitchell Landscapes including delineated Study Area.



3.2 HYDROLOGY

The Study Area is situated within the Namoi Catchment Management Authority (CMA), specifically within the Liverpool Plains (Part B) subregion. The Study Area is intersected by Blackjack Creek, an ephemeral creek, today with intermittent flows mainly from urban stormwater (**refer to Figure 1-3**).

3.3 VEGETATION

On the 'Liverpool Alluvial Plains' landscape vegetation can be expected to be comprised of open grasslands of Plains Grass (*Austrostipa aristiglumis*), *Panicum* sp., Windmill Grass (*Chloris truncata*) and Blue Grass (*Dichanthium sericeum*) on black earths with occasional Myall (*Acacia pendula*), White Box *(Eucalyptus albens*), Yellow Box *(Eucalyptus melliodora*), Bimble Box *(Eucalyptus populnea*) and Wilga (*Geijera parviflora*). River Red Rum *(Eucalyptus camaldulensis*) occurs along the Namoi River.

In more fertile areas of the Liverpool Plain, such as the Study Area, 68% of the land was used for cropping and another 22% for grazing by the late 1970's. This has resulted in a prevalence of disturbed and/or cleared areas on the lower slopes and flats. In the valley floors and plains there is little native vegetation remaining, and most is confined to small remnants. Historical documents and on site observations demonstrate that the Study Area has since settlement been subject to such kinds of disturbance, primarily land clearance. Whilst native species of Eucalyptus have been identified, the oldest of these specimens are approximately 40 years.

3.4 CLIMATE

According to the Köppen climate classification the Study Area falls within a climate zone characterised by a temperate climate with a moderately dry winter and a warm to hot summer. The nearest official Australian Bureau of Meteorology (BOM) recoding station is located at Gunnedah Resource Centre. The Gunnedah region experiences warm to hot summers with an average annual rainfall of 642.1 millimetres. The hottest month is January with a mean temperature range of 18.8 ºCelsius to 31.9 ºCelsius. The mean temperature range in coldest month (July) is 4.7 ºC to 16.1 ºCelsius (BOM 2013).

3.5 LAND–USE HISTORY

Disturbance, historical or natural, potentially alters the archaeologically record. It can do this in a variety of ways, directly or indirectly. Land clearing, for example, directly removes a particular site type - usually scarred trees or stone arrangements. Indirectly, clearing accelerates soil erosion, potentially resulting in previously buried occupation / activity sites becoming exposed and altered / damaged

3.5.1 Existing Levels of Disturbance

The majority of the Study Area has been heavily impacted by aspects of urban development (roads, rail, and flood protection/water management), agricultural activities and vegetation clearing. Land use has resulted in extensive areas of native vegetation being highly modified and fragmented, resulting in minimal-no remnants remaining in a near natural state. The Study Area is predominately covered by exotic grasses that are regularly mown. Mowing was also noted as occurring within the creek bed. Natural drainage patterns within the Study Area and elsewhere on surrounding land have been previously modified through the installation of levee banks, contour/diversion banks and sediment retention structures, in addition to the dredging of the creek, although the overall drainage pattern remains the same.

3.6 CONCLUSION

Due to the high degree of disturbance over the Study Area, including both land clearance and landscape modifications, there is a low potential for any intact Aboriginal sites to remain extant.

4 ABORIGINAL HERITAGE ASSESSMENT: BACKGROUND

4.1 ETHNO-HISTORIC SOURCES OF REGIONAL ABORIGINAL CULTURE

Gunnedah and its surrounding areas were originally inhabited by Aboriginal tribes of the Kamilaroi (Gamilaraay) language group.

The name Gunnedah is derived from an Aboriginal word, meaning 'place of many white stones' and in the past the town had a sizeable outcrop of white stone where the public school now stands in Bloomfield St. At the end of the eighteenth century, the Gunn-e-darr people of the Kamilaroi tribe were led by a legendary warrior named Cumbo Gunnerah (Idriess 1953). He was also known as the 'Red Chief', who eventually became immortalised through being the subject of a 1953 novel by Ion Idriess.

4.2 REGIONAL ARCHAEOLOGICAL CONTEXT

On a broader perspective (Liverpool Plains Province) the available data points to a variable use of the local landforms as known sites indicate ephemeral, casual or limited use, and other sites showing more intensive or repeated use. The most frequent site type recorded in the broader region is the small open camp site, which is most often found on level, well drained terrain close to permanent water. Artefacts on these sites usually number less than 50, although the site size appears to be greatly affected by ground surface visibility conditions at the time of recording. Some sites are associated with grinding grooves and/or modified trees. Relevant studies within the broader region will be briefly reviewed below.

In 1981 the area known as ‘Authorisation 138’ at ‘Springfield’ was surveyed by Paul Gorecki (1981). Seventeen (17) locations with artefacts were recorded on AHIMS as three (3) sites. The number of artefacts at each site varied, with some locations containing single stone artefacts and others containing clusters. All were found adjacent to Springfield Knob, all relatively close to minor drainage features. It is important to note that no artefacts were found either up slope in the surrounding hills or down slope on the plains. Gorecki argued that these artefacts were located in secondary contexts as agriculture / pastoralism, erosion and construction of contour banks had disturbed their original locations (Gorecki 1981).

Haglund (1984a and 1984b) undertook two (2) studies during 1984 in the vicinity of Gunnedah. The first study (Haglund 1984a) consisted of a survey of the proposed Red Hill – Top Rocks – Trunk Road 72 coal haulage route. In this study, Haglund refers to sites previously located at Greenwood Creek (Thompson 1981) and Top Rocks (Haglund 1982), with particular emphasis on twenty (20) axe grinding grooves and an extensive archaeological deposit at Top Rocks. The grinding grooves were situated in the vicinity of sandstone outcrops at the water’s edge. The archaeological deposit consisted of stone tools and evidence of manufacturing. Haglund (1984b) also examined the proposed location for a coal loader, situated between the North

Western Railway and Trunk Road 72, 3 kilometres west of Gunnedah. This study, covering 87 hecatres of cultivated / cleared land, located no archaeological deposits.

In 1985, Haglund conducted a survey of all previous studies relating to the area immediately north of Gunnedah and the Namoi River. This survey concluded that the archaeology of the area is concentrated along rivers and other permanent waterways. This concentration is a result of both prehistoric land use patterns, in which such locations arguably constituted more permanent camps, and historical land use patterns, such as agriculture, which may have disturbed and/or destroyed the archaeology present in areas away from these waterways (Haglund 1985).

Haglund returned to Gunnedah in 1986 to conduct two (2) test excavations of sites requiring ground truthing (Haglund 1987). These sites were located on opposite sides of the Namoi River and one was a portion of the extensive Namoi River/C.W.R. site. Artefacts were recovered at these sites, however Haglund noted that the artefacts were largely too dispersed to be considered archaeologically significant and were situated in secondary contexts created by vehicle movement and water flows (Haglund 1987).

Suzanne Hudson (2004) undertook an assessment of 'Porky's Cave' at Porcupine Hill, Gunnedah, for Red Chief LALC. The cave contained rock engravings, a bat population, and an ironstone cobble; Appleton refers to the cave as a 'Dreaming site' (2007). Hudson recommended that access be restricted on cultural grounds (the cave is of ceremonial significance to the community), safety (due to loose scree), ecological grounds (fires were affecting the resident bat community), and archaeological grounds (trampling and vandalism were gradually destroying the rock engravings). She also recommended the removal of the ironstone cobble and its storage at the Red Chief museum (Hudson 2004).

John Appleton (2007) surveyed Lot 2, DP 848920, Lincoln St, Gunnedah in response to a proposal to subdivide the site into residential blocks. This area is located on the southern edge of the Gunnedah township, and is bounded to the north by Lincoln St. No artefacts were located during this study, however Appleton does refer to an isolated artefact and nine grinding grooves located by himself in 2006 in the vicinity of Wandobah Road. His conclusion was that this area was most likely a transit zone between desirable campsites. Appleton noted that Red Chief LALC considered the 2007 study area of cultural significance, as the nearby Porcupine Hill was closely associated with the legendary figure, Red Chief (Appleton 2007).

Appleton (2008) returned to the area to conduct salvage operations at Rocglen Coal Mine, following his 2002 survey of the site of the proposed Belmont Coal Mine. The salvage area consisted of three locations situated 25 kilometres north of Gunnedah, between Vickery State Forest and Wean Road. Appleton (2002) had previously noted artefacts, including a silcrete core at Site "B1", a micro-debitage scatter of eight (8) small silcrete flakes at Site "B2", and an

extended artefact scatter (over 40 artefacts consisting of three (3) cores, with the remainder flaked pieces and flakes) at Site “B3”. The salvage operation noted significant disturbance between 2002 and 2008, caused by agricultural activity or storms and slope-wash. Additional artefacts were recovered at “B1” (eight stone artefacts, no cores), at “B2” (13 stone artefacts), and at “B3” (67 artefacts, including three cores). Appleton interpreted the ‘Rocglen Assemblage’ as a camping area to which various groups returned over an extended period of time.

The collective archaeological / scientific evidence from the region suggests that occupation during the late Holocene was centred around small family groups (10 to 15 people) making use of terraces, palaeochannels and floodplains as temporary camps as they moved throughout the territory (Purcell 2002; Appleton 2008).

An understanding of the types of sites present or likely to be present within this area are limited. While Purcell (2002) noted 307 recorded sites in the greater Liverpool Plains, there are only 21 AHIMS recorded sites within an area of approximately ten (10) square kilometres centred on the Study Area (**Figure 4-1**). Of those sites, none occur within 3 kilometres of the Study Area.

4.3 LOCAL ARCHAEOLOGICAL CONTEXT

A search of the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) returned 21 records for Aboriginal heritage sites within the designated search area (approximately 10 square kilometres centred on the Subject Area, refer to **Table 4-1**; **Figure 4-1**).

Table 4-1 indicates the type, number and frequency of recorded Aboriginal sites within the area searched on the AHIMS database. When considered with relation to their placement within the landscape, it is apparent that in excess of 50% of the 21 previously recorded sites are situated in very close relative proximity to watercourses (i.e. less than 100 metres). Site types are variable, however open site artefact scatters and grinding groove sites present in the highest frequencies.

Table 4-1: Frequency of AHIMS Registered Site Types within the Searched Area.

Site Type	Number	Frequency %
Burial(s) / Carved Tree	1	5
Carved/Scarred Tree	5	25
Artefact Scatter	7	35
Grinding Grooves	7	35
Total*	20	100

* Total does not include AHIMS site (ID 20-4-0164) which has a restricted information listing. It has however been confirmed that this site does not occur within or in the immediate vicinity of the Study Area.

Figure 4-1: AHIMS Sites including delineated Study Area.

4.4 PREDICTIVE MODEL FOR SITE LOCATION

The following model is general in applicability, although it has undergone limited revision and focus through examination of the local and regional context.

Proximity to a permanent water supply appears to be the primary factor appearing for the location of Aboriginal campsites. Results of an integrated series of studies including a serious excavation component, suggests a high correlation between the permanence of a water source and the permanence and/or complexity of areas of Aboriginal occupation (McDonald 1997). This was further reflected in the lithic assemblages from sites close to permanent water, which suggested that a greater range of activities were represented (e.g. tool use, manufacture and maintenance, food processing and quarrying). Sites near ephemeral water sources had evidence for one-off occupation (e.g. isolated knapping floors or tool discard), and creek junctions were also proven to be foci for site activity.

Using the concept of stream ordering, the following general predictions can be made regarding the nature of sites and their location in the current study area (not taking into account factors of site preservation):

- The area surrounding first order streams and headwaters is most likely to contain evidence of sporadic occupation and may consist of little more than a background scatter of artefactual material.;
- In the vicinity of first to second order creeks, archaeological evidence may be sparse, but may indicate focussed activity (one-off camp sites and knapping events);
- In the lower reaches of tributary creeks (second to third order), archaeological evidence will be more frequent and intense, indicating more permanent or repeated occupation by small groups and may show evidence of concentrated activities;
- On major creek lines and rivers (third to fourth order) more permanent and repeated occupation may be evidenced by a more diverse stone tool assemblage indicating a greater range of lithic activities. Sites in this location may even be stratified;
- Creek junctions may provide a popular location for occupation and the size of the confluence (in terms of stream ranking nodes) may influence the size of the site;
- Ridgetop locations between drainage lines are likely to contain limited archaeological evidence in the form of one-off activities; and
- Slopes or plains more distant from water are likely to bear few traces of Indigenous occupation or land-use unless they possess specific resource elements (i.e. outcropping stone for tools; stone overhangs etc.).

From the range of potential Indigenous sites, it is possible to say that the most likely sites to be encountered in the Study Area are:

- Open sites, close to permanent / temporary water;
- Isolated finds may occur anywhere, especially in disturbed locations near water sources on red soil or in areas close to ephemeral water – i.e. headwaters;
- Scarred or carved trees; and
- Grinding grooves may be found wherever appropriate sandstone is present.

However, due to the high degree of disturbance over the Study Area, including both land clearance and landscape modifications, there is a low potential for any intact Aboriginal sites to remain extant.

4.5 SAMPLING STRATEGY AND FIELD METHODS

Standard archaeological field survey and recording methods were employed in this study (Burke & Smith 2004). The small size of the Study Area allowed for pedestrian survey of the site in its entirety.

5 RESULTS OF ABORIGINAL HERITAGE ASSESSMENT

5.1 EFFECTIVE SURVEY COVERAGE

Two of the key factors influencing the effectiveness of archaeological survey are ground surface visibility and exposure. 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 study, these terms are used in accordance with the definitions provided in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales: Part 6 National Parks and Wildlife Act 1974* (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 lead litter, loose sand, stone ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals' (DECCW 2010: 39).*

Exposure 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).*

GSV and exposures across the Study Area was consistently low, ranging from 0 – 10% (**Plate 1**).

Table 5-1: Survey Coverage Data.

Survey Unit	Landform	Survey Unit Area (sq m)	Visibility %	Exposure %	Effective Coverage Area (sq m) (= Survey Unit Area x Visibility % x Exposure %)	Effective Coverage % (= Effective Coverage Area / Survey Unit Area x 100)
1	Floodplain / creek bank	254,000	10	10	2,400	0.94

Table 5-2: 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
1	254,000	2,400	0.94	0	0

Figure 5-1: Pedestrian Survey Coverage.

5.2 ABORIGINAL SITES RECORDED

No Aboriginal sites or objects were recorded as a result of the assessment of the Study Area.

Furthermore, no area within the Study Area was assessed as being likely to contain further, undetected Aboriginal sites and objects.

5.3 ABORIGINAL SITES RE-LOCATED

No attempt was made to re-locate any previously recorded AHIMS sites as all were identified as being located in excess of three (3) kilometres from the Study Area.

5.4 DISCUSSION

The results of the assessment confirm the predictive model that suggested a low potential for any intact Aboriginal sites to remain extant due to the high degree of disturbance over the Study Area. The southern vegetated area, near the Oxley Highway roundabout and Blackjack Creek, which was, at desktop level, thought to have had the highest archaeological potential of the Study Area, proved to be very low lying and likely subject to inundation in prehistory and hence

unsuitable for occupation; further to having been substantially modified since European settlement.

5.5 ASSESSMENT OF HERITAGE SIGNIFICANCE

As no Aboriginal sites or objects were recorded within the Study Area, this section is not applicable.

It is noteworthy that the RMS Aboriginal Cultural Heritage Advisor (ACHA, Northeast branch) Mr Graham Purcell has prepared a letter of clearance for this project.

5.6 LIKELY IMPACTS TO ABORIGINAL HERITAGE FROM THE PROPOSAL

No known, or predicted, Aboriginal site or object will be impacted by the proposed works.

6 MANAGEMENT AND MITIGATION: ABORIGINAL HERITAGE

No sites or areas of Aboriginal heritage potential were recorded as a result of the current study, hence there are no specific Aboriginal heritage management measures they need to be applied in reference to the various specific route options assessed (i.e. those within the blue shaded area on **Figure 1-3**).

It is nonetheless appropriate to note that should an unexpected archaeological find be made during the project, actions should be guided by the RMS *Standard Management Procedure: Unexpected Archaeological Finds* July 2012, which can be found at www.rta.nsw.gov.au/environment/downloads/unexpected_archaeological_finds_procedure.pdf.

6.1 RELEVANT LEGISLATION

6.1.1 Commonwealth Legislation

Environment Protection & Biodiversity Conservation Act 1999 (EPBC Act)

The Commonwealth Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) provides a national framework for the protection of matters of national environmental significance and the conservation of Australia's biodiversity. Under the EPBC Act, "environment" includes: ecosystems and their constituent parts, including people and communities; natural and physical resources; the qualities and characteristics of locations, places and areas; heritage values of places; and social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c).

Recently, Australia has changed the legislation that protects its national heritage places. Three new laws came into effect on January 2004, which provide changes that offer greater legal protection under the existing Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and repeal the Australian Heritage Commission Act 1975 .

The Environment and Heritage Legislation Amendment Act (No.1) 2003

This Act amended the EPBC Act to include 'national heritage' and protect listed places to the fullest extent under the Australian Constitution. Under the new system, National Heritage joins six other important 'matters of national environmental significance' (NES matters) already protected by the EPBC Act. The Environment and Heritage Legislation Amendment Act (no.1) 2003 also establishes the National Heritage List which records places with outstanding natural and cultural heritage values that contribute to Australia's National identity; and the Commonwealth Heritage List which comprises the natural, Aboriginal and historic places owned or managed by the Commonwealth.

6.1.2 State Legislation

The Environmental Planning and Assessment Amendment Act 2005

The EP&AA Act 2005 is founded on the Environmental Planning and Assessment Act 1979 that requires environmental impacts, including cultural heritage, are considered at a land-use planning and decision making level. Under this Act Aboriginal heritage is protected in three different ways:

1. Through planning instruments such as Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs). Such plans outline permissible land use as well as identifying potential constraints. Section 112 (1) of the EP & A Act delineates that no approval for either prescribed developments or developments likely significantly affect the environment, may be granted without prior appropriate environmental impact assessment.
2. Section 90 of the Act (Part 4, Division 5) lists impacts to the environmental resource, including cultural heritage, which must be considered before development approval is granted.
3. All State Government agencies acting as determining authorities on environmental issues must consider a range of community and cultural factors, including Aboriginal heritage, in their decision-making process. The factors to be considered in such assessments are set out in the EP&A Regulations (1980), Part VII.

National Parks and Wildlife Act 1974

Amended during 2010, the *National Parks and Wildlife Act 1974* provides for the protection of Aboriginal objects (sites, objects and cultural material) and Aboriginal places. Under the Act (S.5), 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 New South Wales, 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 *National Parks and Wildlife Act 1974* 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 *National Parks and Wildlife Act 1974* 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, viz.:

- 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 OEH Director-General of the location of an Aboriginal object. Identified Aboriginal items and sites are registered with the NSW OEH on the Aboriginal Heritage Information Management System (AHIMS).

7 RECOMMENDATIONS

The following recommendations are made on the basis of:

- *National Parks and Wildlife Act of 1974* (as amended) whereby it is illegal to harm or desecrate an Aboriginal object or place without the prior written consent of the Director, OEH; and
- The findings of the current investigations undertaken within the Study Area.

It is recommended that:

1. As no Aboriginal objects or sites were identified during the current field assessment, no further archaeological assessment is required and as such Aboriginal heritage presents no constraint to the proposed works.
2. Proposed works should be limited to the Study Area as assessed in the current report (**Figure 1-3**) so as to limit the possibility of encountering Aboriginal heritage features in unassessed areas. Should impacts be required beyond the areas assessed for this report, then additional archaeological assessment may be necessary.
3. Should any Aboriginal heritage features be identified during the course of construction, work in that area should cease and subsequent actions should be guided by the *RMS Standard Management Procedure: Unexpected Archaeological Finds* July 2012, (www.rta.nsw.gov.au/environment/downloads/unexpected_archaeological_finds_procedure.pdf).
4. An electronic copy of this report should be sent to:

   Office of Environmental and Heritage
   AHIMS Registrar
   PO Box 1967
   Hurstville NSW 1481

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PLATES

Plate 1: Study Area GSV and Exposure.






Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : Gunnedah_search1

Client Service ID : 79202

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
29-1-0044	DTG/IF1 - Moold River 1	AGD	56	240600	6565870	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Stephanie Garling					Permits		
29-4-0040	Nardoo;	AGD	56	241140	6567630	Open site	Valid	Artefact : -	Open Camp Site	1169
	Contact	Recorders	Ms.Lalla Haglund					Permits		
29-4-0041	Nardoo;	AGD	56	241000	6567600	Open site	Valid	Artefact : -	Open Camp Site	1169
	Contact	Recorders	Ms.Lalla Haglund					Permits		
29-4-0003	Gunnedah	AGD	56	239000	6569000	Open site	Valid	Modified Tree (Carved or Scarred) : -, Burial : -	Burial/s,Carved Tree	
	Contact	Recorders	NPWS - Blackheath Office,R Etheridge,Fred McCarthy					Permits		
29-4-0060	BBS; Red Chief LALC; Wean Rd ST3	AGD	56	238203	6571499	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99031
	Contact	Recorders	Archaeological Surveys & Salvage ,Red Cheif LALC - BBS Survey Team					Permits		
29-4-0061	BBS; Red Cheif LALC; Wean Rd ST2	AGD	56	237891	6571412	Open site	Valid	Modified Tree (Carved or Scarred) : 1		99031
	Contact	Recorders	Archaeological Surveys & Salvage ,Red Cheif LALC - BBS Survey Team					Permits		
29-1-0098	Wandabah 1	AGD	56	235016	6565704	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0099	Wandobah 2	AGD	56	235007	6565704	Open site	Valid	Grinding Groove : 5		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0104	Wondobah 7	AGD	56	235006	6565608	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0105	Wondobah 8	AGD	56	235065	6565772	Open site	Valid	Artefact : 50		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0106	wondobah 9	AGD	56	235099	6565818	Open site	Valid	Artefact : 5		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0107	Wondobah 10	AGD	56	235077	6565912	Open site	Valid	Artefact : 50		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0108	Wondobah 11	AGD	56	235461	6567018	Open site	Valid	Artefact : -		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0109	Wondobah 12	AGD	56	235362	6566699	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 05/09/2012 for David Pattison for the following area at Lat, Long From : 150.218, -31.00145 - Lat, Long To : -30.96434, 150.27997 with a Buffer of 1000 meters.Additional Info : Project developemnt for potential new rail crossing in Gunnedah. Number of Aboriginal sites and Aboriginal objects found is 21

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Page 1 of 2

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : Gunnedah_search1

Client Service ID : 79202

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0110	Wondobah 13	AGD	56	235308	6566448	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.John Shipp					Permits		
20-4-0163	Cushions Old Tamworth Rd 1	AGD	56	239397	6570411	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Mr.John Shipp					Permits		
20-4-0164	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0100	Wandobah 3	AGD	56	234950	6565608	Open site	Valid	Grinding Groove : -		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0101	wondobah 4	AGD	56	234950	6565602	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0102	wondobah 5	AGD	56	234950	6565602	Open site	Valid	Grinding Groove : 3		
	Contact	Recorders	Mr.John Shipp					Permits		
29-1-0103	Wondobah 6	AGD	56	235006	6565608	Open site	Valid	Grinding Groove : 1		
	Contact	Recorders	Mr.John Shipp					Permits		

Report generated by AHIMS Web Service on 05/09/2012 for David Pattison for the following area at Lat, Long From : 150.218, -31.00145 - Lat, Long To : -30.96434, 150.27997 with a Buffer of 1000 meters.Additional Info : Project developemnt for potential new rail crossing in Gunnedah. Number of Aboriginal sites and Aboriginal objects found is 21