Appendix

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Aboriginal Cultural Heritage Impact Assessment

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Aboriginal Cultural Heritage Impact Assessment Report for the Continuation of Boggabri Coal Mine

Report to:
Hansen Bailey Pty Ltd

17th June 2010

Aboriginal Cultural Heritage Impact Assessment Report for the Continuation of Boggabri Coal Mine

Project Coordinators	Insite Heritage	A Besant
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Our Reference	ACHIAR_IBC_FINAL_17.6.2010	
Date	17th June 2010	

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Table of Contents

List of Figures

List of Tables

List of Plates

Executive Summary

Insite Heritage Pty Ltd was commissioned by Hansen Bailey Pty Ltd on behalf of Boggabri Coal Pty Limited to conduct an Aboriginal archaeological heritage assessment of the area proposed for the continuation of open cut coal mining at Boggabri Coal Mine, NSW.

Boggabri Coal is proposing to apply for approval to continue its open cut mining operations for a further 21 years. Project Approval is sought under Part 3A of the *Environmental Planning and Assessment Act 1979* to gain a single, contemporary planning approval for the continuation of its mining operations within the Project Boundary.

The Aboriginal archaeological assessment identified 77 archaeological loci (artefact scatters, isolated finds and scarred trees combined) within the study area. These sites have been grouped by proximity and landform units and recorded on site cards and electronically submitted to the Department of Environment, Climate Change and Water. The report also provides management recommendations for the 27 previously recorded sites still extant within the Project Boundary.

A number of identified sites were of low significance, comprising low density open artefact scatters or isolated finds, in disturbed contexts, particularly on the Namoi River plain. Sites located within the Leard State Forest are considered to be of moderate to high scientific significance within a local and regional context. The significance of the sites within the Leard State Forest lies in their relative integrity. The Leard State Forest contains relatively intact soil profiles, so surface expression of artefacts is indicative of the potential for subsurface deposits. The significance of the sites arises from the landscape context, relatively dense site contents and in some cases, apparent horizontal integrity of the assemblages. In a regional context the inter and intra characteristics of such open sites is not well known.

The Baan Baa Ranges also have potential to reveal further information regarding site structure in the area. Whilst a small sample of the landform is represented in the study area, surface recordings indicate some variation in comparison to the Leard State Forest sites, giving some sites in this landscape moderate significance.

The approval of the Project will require the salvage of the sites and the information will form a database from which to explore inter and intra loci variability. The analysis will build upon the work by ARAS Pty Ltd (ARAS 2005 & 2007) who salvaged sites within the footprint of the existing mine operation.

The Project will directly impact on some sites identified during this survey and located within the mine disturbance boundary in addition to sites recorded by ARAS in 2005 which are still extant. Further recording of sites to be impacted, by means of salvage, is warranted on the basis of cultural and scientific significance. The report recommends the development of an Aboriginal Heritage Management Plan in consultation with the Aboriginal community to provide a framework for the salvage of the archaeological and cultural values of the study area. Mitigation measures include surface recording and collecting, targeted salvage excavations of

subsurface deposits and the relocation of scarred trees to an environment that facilitates public education and enables stakeholders to retain a cultural connection to the trees.

Whilst no direct stories or linkages have been made to the Leard State Forest, as a cultural entity the sites provide a cultural link to the area for the Aboriginal stakeholders.

The authors of this report are Angela Besant and Elizabeth Wyatt of Insite Heritage Pty Ltd.

1.0 Introduction

1.1 Background

Boggabri Coal Pty Limited (Boggabri Coal), a wholly owned subsidiary of Idemitsu Australia Resources Pty Ltd (IAR), operates the Boggabri Coal Mine. IAR is 100% owned by Idemitsu Kosan Co. Ltd which is a Japanese listed Resource Company. Boggabri Coal Mine is located approximately 15 km north east of Boggabri in the Narrabri Shire Council (NSC) Local Government Area (LGA) in the central north of NSW, see Figure 1.

1.2 Location

The study area is located in and adjacent to the Leard State Forest, New South Wales, approximately 14km north east of Boggabri. The study area is located within the Narrabri Shire Council area, Parish of Leard, County of Nanderwar.

The location of the study area is consistent with the Project Boundary outlined in Figure 1 below and incorporates an area of approximately 3400 hectares.

1.3 Project Details

Boggabri Coal is proposing to apply for approval to continue its open cut mining operations for a further 21 years. Project Approval is sought under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to gain a single, contemporary planning approval for the continuation of its mining operations within the Project Boundary (the Project).

The Project generally comprises the following:

- Continuation of mining operations via open cut methods up to 7 Mtpa product coal to the Merriown seam;
- Open cut mining fleet including excavators and fleet of haul trucks, dozers, graders, water carts and other equipment with the flexibility to introduce a dragline as required utilising up to 500 employees;
- Modifications to existing and continuation of approved (but not yet constructed) infrastructure including:
    - Coal Handling and Preparation Plant (CPP);
    - Modifications to existing site infrastructure capacities including: Run of Mine (ROM) coal hopper, second crusher, stockpile area, coal loading facilities, water management and irrigation system;
    - Rail loop and 17 km rail line across the Namoi River and floodplain including overpasses across the Kamilaroi Highway, Therribri Road and Namoi River;
    - Minor widening of the existing coal haul road including overpasses across the Kamilaroi Highway, Therribri Road and Namoi River;

- Upgrading and relocating site facilities including offices, car parking and maintenance sheds as and when required;

- Closing a section of Leard Forest Road; and
- Upgrading the power supply capacity to 132 kilovolt (kV) high voltage lines suitable for dragline operations.

1.4 Study Area Description

The Mining area is located predominantly within the Leard State Forest, which is managed by State Forests NSW. Elevations within the Leard Forest range between 300 and 460 metres. The Leard State Forest is vegetated with ironbarks, box gums and cypress pine and has a history of logging since the late nineteenth Century. The forest area has relatively dense vegetation cover although drought has impacted on undergrowth. Ground cover is also fairly dense due to leaf litter.

The proposed rail loop and spur and haul road widening crosses Therribri Road, the Namoi River and Kamilaroi Highway to the west of the extraction area. The route traverses open paddocks on relatively flat plains, across terraces of the Namoi River and into the low hills and scree slopes of the Baan Baa Range on the western side of the Kamilaroi Highway. The corridor of potential impact is approximately 17 kilometres in length and up to 50 metres wide on both sides of the existing haul road and rail spur.

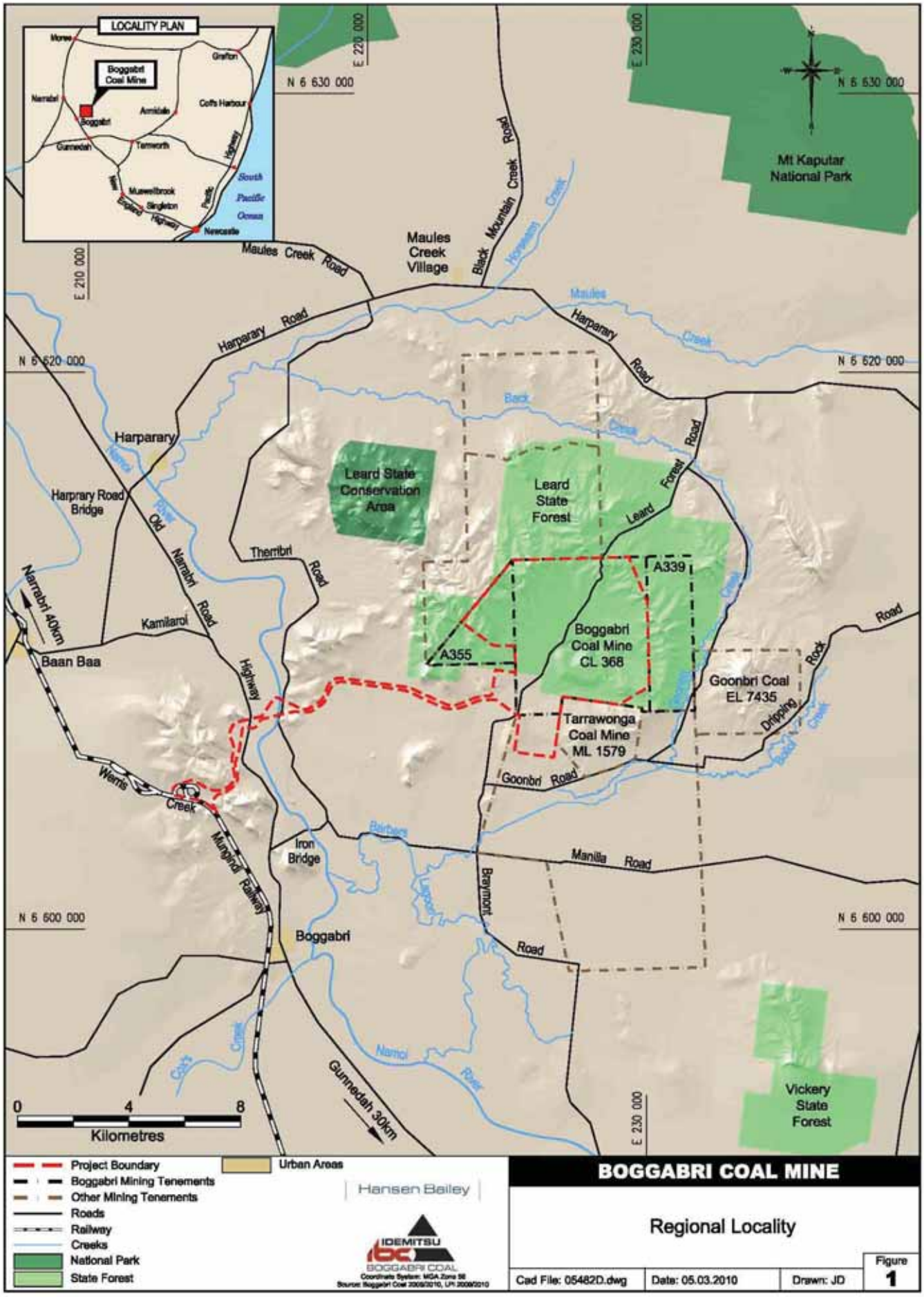

Figure 1 Study Area Location Map

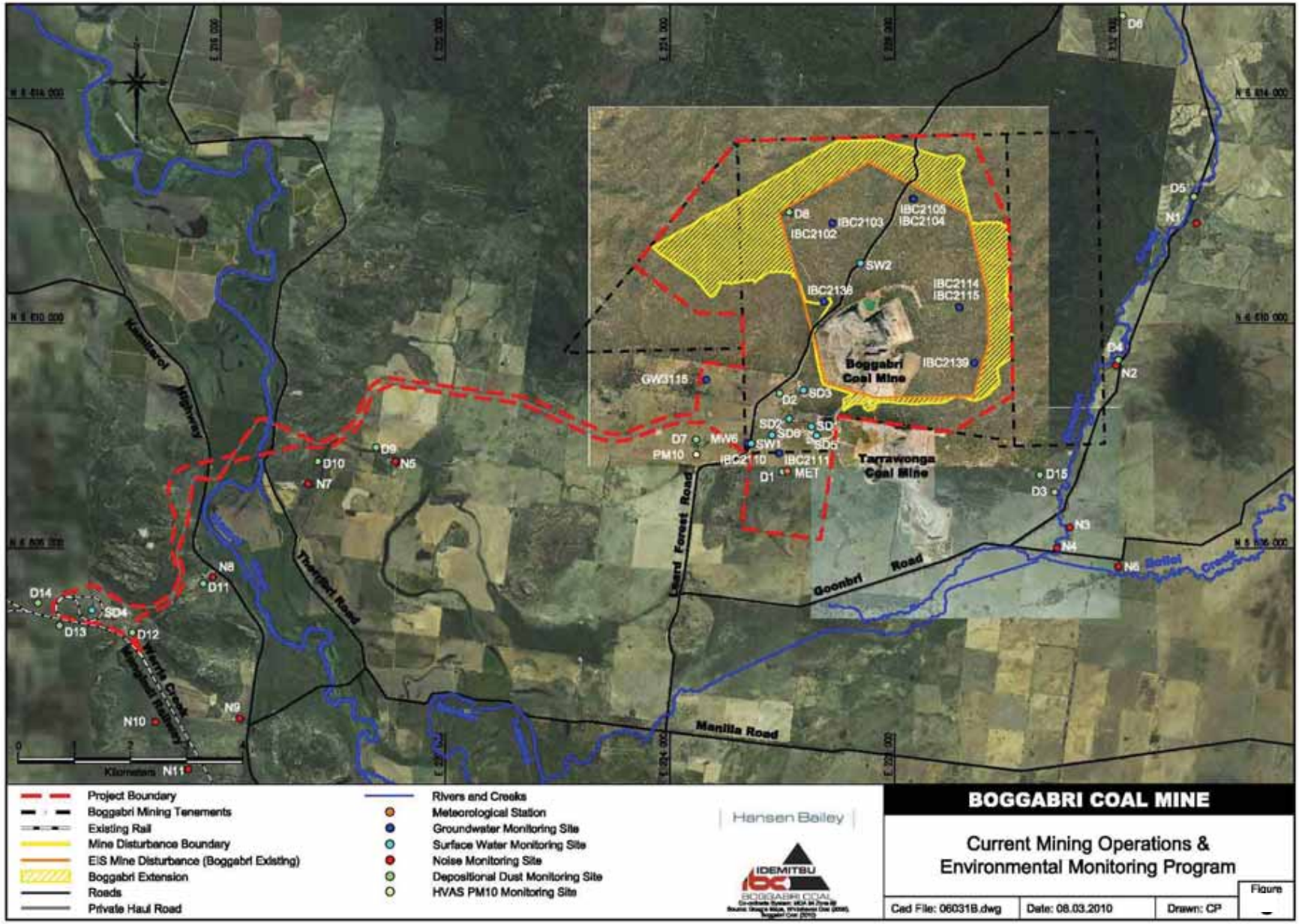

Figure 2 Project Boundary

1.5 Community Consultation

Community consultation for the Project was conducted by Hansen Bailey Pty Ltd. The following section has been written by Hansen Bailey Pty Ltd.

Notification and Registration

The Aboriginal stakeholder consultation program was conducted in accordance with the Department of Environment Climate Change and Water (DECCW) guidelines, "*Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation" (2005)* and "*Interim Community Consultation Requirements for Applicants" (2004)* (DECCW Guidelines).

The NSC, New South Wales Native Title Searches, New South Wales Department of Aboriginal Affairs – Office of the Registrar, Red Chief Local Aboriginal Land Council (RCLALC) and DECCW were all notified by letter on 14 July 2009 of the Project and requesting information regarding the contact details of known Aboriginal stakeholder groups in the locality for consultation (**Appendix A**).

Notification of the Project was provided in local newspapers in order to identify Aboriginal stakeholders who wanted to be consulted in regard to the Aboriginal Archaeological and Cultural Heritage Assessment. Boggabri Coal placed one identical Public Notice in both the *Namoi Valley Independent* and *The Courier* on the 16 July 2009 seeking registration of interest for participation in the consultation program (**Appendix B**).

Three Aboriginal groups; RCLALC, Gunida Gunyah Aboriginal Corporation (GGAC), Bigundi Biame Traditional People (BBTP) registered their expression of interest in the project verbally or in writing in response to the newspaper advertisements. Each group indicated they would like to participate in both the Cultural Heritage Assessment and Archaeological survey aspects of the Project (**Appendix C**).

DECCW provided a list of the contact details for eight known Aboriginal stakeholder groups who may have an interest in the Project on 20 July 2009. A letter was received from NSC on 31 July 2009 stating that no records of Aboriginal stakeholder reference groups are held and referred to DECCW as the primary source of information. An expression of interest letter was faxed and posted to each Aboriginal stakeholder group, as identified by DECCW who had not already registered an expression of interest in the Project. The expression of interest letter outlined the details of the Project and invited each stakeholder group to participate in the Archaeological survey or to be consulted in relation to Aboriginal and Cultural Heritage matters.

In response to the personalised expressions of interest letters sent, a further three groups; Cacatua Cultural Consultants (CCC), Elli Lewis Cultural Heritage Consultants (ELCHC) and Min Min Aboriginal Corporation (MMAC) registered their expression of interest in regard to the Project. Gomeroi Narrabri Aboriginal

Corporation (GNAC) chose to decline the invitation to participate in the Archaeological survey as it was out of their area of Cultural Heritage.

A full list of all known Aboriginal stakeholder groups that were consulted with is presented in Table 1.

Table 1 Consulted Aboriginal Stakeholder Groups

Name of Group	Primary Contact	Expression of Interest
Red Chief Local Aboriginal Land Council (RCLALC)	Robert Horne	Yes
Bigundi Biame Traditional People (BBTP)	Wayne Griffiths	Yes
Min Min Aboriginal Corporation (MMAC)	Gwen Griffen	Yes
Gunida Gunyah Aboriginal Corporation (GGAC)	Jane Bender	Yes
Elli Lewis Cultural Heritage Consultants (ELCHC)	Patricia Jean Hands	Yes
Cacatua Cultural Consultants (CCC)	Donna Sampson	Yes
Gomeroi Narrabri Aboriginal Corporation (GNAC)	Craig Trindall	No

Consultation Regarding Survey Strategy and Conservation Values

All Aboriginal groups that provided an expression of interest in the Project were sent a hard copy of the proposed methodology developed by Insite Heritage on the 7th September, 2009. The letter described the proposed survey methodology and Aboriginal stakeholder group representatives were encouraged to provide comments and raise any concerns they may have in relation to the Project regarding Cultural Heritage or the survey methodology. A request for a formal expression of interest, and the nomination of a proposed representative was also requested in the letter.

Summary of Responses

Correspondence was received from the six Aboriginal groups regarding the proposed methodology and expressing an interest in participating in the field survey component of the assessment. All responses, with the exception of one accepted the design of the proposed survey methodology for the Project. RCLALC believed that the anticipated timeframe of the assessment would not be sufficient to accurately assess the study area. RCLALC also raised the need to consider previous work that had been done in the area. RCLALC also noted that a buffer zone along the rail alignment should be included as part of the assessment, and that a representative from RCLALC should be present throughout the duration of the assessment. On 1 October 2009 a letter of response was provided to RCLALC to address the above concerns regarding the proposed methodology.

BBTP and MMAC agreed with the proposed methodology however, were interested to know if any of the artefacts found during the fieldwork would be removed for exhibition in the RCLALC Museum. CCC, GGAC and ELCHC all agreed with the design of the proposed methodology and were satisfied that all Archaeological and Cultural Heritage values would be included in the assessment.

As part of the induction process prior to the commencement of the fieldwork a detailed presentation of the Project and the Aboriginal Archaeology and Cultural Heritage Assessment was provided to all representatives. The presentation was conducted by Boggabri Coal and Insite Heritage and included a description of the Project followed by the proposed survey methodology. The presentation was followed by a discussion inviting input from the Aboriginal community as they were more familiar with the local conditions than the archaeologist.

Any concerns raised by Aboriginal representatives in response to the proposed methodology were discussed, with all stakeholders satisfied that the final methodology would accurately assess the study area. Specifically, the methodology was designed to include a 50 m buffer either side of the proposed rail alignment to ensure any future areas required for drains or culverts were included in the assessment. It was also mentioned that the proposed 10 days field work was likely to be an adequate timeframe to complete the survey, given the anticipated level of surface visibility. Additional time would be considered following the completion of the 10 day field work if the cover of the study area was considered inadequate.

No additional concerns or comments were raised by any Aboriginal stakeholder group in relation to the Project or methodology. All written responses and acceptances of the survey methodology are provided in **Appendix C**.

Field Work Involvement

A total of six Aboriginal stakeholder groups registered their acceptance of the methodology and indicated they would like to participate in the fieldwork component of the Aboriginal Archaeology and Cultural Heritage Assessment. On 8 October 2009, a letter was sent to all six groups confirming the field work. The field survey was originally developed to be conducted over a period of 10 working days. However, due to wet weather on Monday, 26 October 2009 an additional day of fieldwork was required to complete the assessment. The six Aboriginal stakeholder groups were split into two field groups. Group 1 consisted of four Aboriginal stakeholder representatives and Group 2 consisting of three Aboriginal stakeholder groups. Each group was allocated five successive days field work.

Prior to their commencement in the archaeological survey all groups were contacted by telephone to confirm designated fieldwork days to ensure there were sufficient representatives present on each day. On 9 of the 10 field days two archaeologists were present at the field work. One day, Angela Besant was unable to attend. The archaeologists involved were; Angela Besant, Chris Carter and Mike Parker from Insite Heritage. Fieldwork was conducted between 19 October and 2 November. The study area as defined in the methodology was surveyed with a total area of 2930 ha. The further 470 ha of previously surveyed land was sampled.

At the completion of each group's field work allocation, archaeologists from Insite Heritage discussed the findings with the groups and sought any comments or suggestions in relation to Cultural Heritage significance of the areas surveyed. As a result of these debriefs, it was agreed with Aboriginal representatives that the

assessment had been undertaken in accordance with the methodology, and that surface visibility had been the main constraint on survey effectiveness.

Information regarding the attendance of each Aboriginal stakeholder group and representatives who participated in the archaeological survey is presented in Table 2.

Table 2 Registered Aboriginal Stakeholder Groups that Participated in Archaeological Survey

Field Work	Aboriginal Stakeholder Group	Representative
Group 1 19 – 23 October 2009	Red Chief Local Aboriginal Land Council (RCLALC)	Peter Beale
	Min Min Aboriginal Corporation (MMAC)	Ronald Griffien
	Gunida Gunyah Aboriginal Corporation (GGAC)	Wade Natty and Stan Condran
	Cacatua Cultural Consultants (CCC)	George Sampson
Group 2 26 – 30 October 2009 & 2 November 2009	Red Chief Local Aboriginal Land Council (RCLALC)	Peter Beale
	Bigundi Biame Traditional People (BBTP)	Gary Griffiths
	Elli Lewis Cultural Heritage Consultants (ELCHC)	Stephen Hands

Draft Aboriginal Archaeological Assessment Review

The draft report was circulated to stakeholders on the 15th January 2010. As several stakeholders (RCLALC & BBTP) requested an extension of time to consider the report, the response date was extended from the 8th February 2010 to the 22nd of February 2010.

Reviews of the report were provided by the six stakeholders. The reviews of the report can be seen in full in **Appendix G.**

In general, the report was seen as adequate in terms of scope and assessment. Four of the six groups expressed concern that Aboriginal heritage will be impacted by the Project.

Summary / Conclusion

Seven registered Aboriginal stakeholder groups in the North West NSW Region or other areas that may have an interest in the Project were notified of the Project in accordance with the DECCW Guidelines.

After letters were sent inviting all known Aboriginal stakeholder groups to participate in the Archaeological and Cultural Heritage survey, six responses were received indicating a Aboriginal stakeholder group's desire to be consulted with and participate in the assessment. Each of the Aboriginal stakeholder groups who registered an expression of interest in the Project participated in the field survey on five or more days from the 19 October to the 2 November 2009. The consultation log provides a summary of all Aboriginal stakeholder consultation for the Project (up to end the of field work) with further detail provided in **Appendix A**.

The stakeholders reviewed the draft report and these reviews have been incorporated in the final report in **Appendix G**

1.6 Environmental Context

1.6.1 ELEVATION

The study area comprises plain and low hills between 265 m elevation rising to 350 m elevation in the Leard State Forest. The Leard State Forest forms the northern part of the study area and the Namoi River plain the southern end. The Baan Baa Ranges lie in the western extremity of the Project Boundary. Fragmented drainage lines are noted on the topographic map however these have been obscured on the ground by a long history of ploughing.

1.6.2 GEOLOGY & SOILS

The following geological description is sourced from ARAS (2007) geomorphology report for the section 87 and 90 work conducted at Boggabri Coal.

The underlying geology is described from Tadros 1993.

> **Maules Creek Formation.** Early Permian carbonaceous claystone, pelletoidal clay sandstone, upward fining cycles of sandstone, siltstone and coal, conglomerate dominant toward the top. Sediments were deposited in braided river systems on alluvial fans coming from the west.
>
> **Leards Formation.** The lower part of the early Permian sequence mainly pelletoidal clay sandstone with some coal. Maximum thickness 32m. This formation dips gently to the east and lies unconformably over the:
>
> **Boggabri Volcanics.** Intrusions and some inter bedded flows or sills of late Carboniferous – Early Permian rhyolite, dacite and ignimbrite with rare shale. The ignimbrites are flow banded and glassy but usually weathered and devitrified in outcrop.

1.6.3 RAINFALL & SOILS

The annual rainfall in the area is approximately 600mm. Most of the soils are solodic – harsh texture contrast profiles or duplex in structure (Mitchell in ARAS 2007). The geotechnical assessment describe the majority of the soil as dominated by Grey Brown Gradational Loam and Light Brown Uniform Gravely Sand soil types (GSS 2009) The A-horizon of coarse sand to loam lies over columnar sandy clays to medium clays. The surface soil mantle becomes finer onto the plains, ranging from red clay loams to black earths along the drainage lines. Heavy alluvial clay soils are found along the main river terrace and floodplain.

1.6.4 VEGETATION

The 1985 Forestry Commission management plan (ARAS 2007) lists the following forest types as present in Leard State Forest: silver-leaved ironbark (Eucalyptus melanophloia), white cypress pine (Callitris glaucophylla), western box, white box and yellow box. Several of these species have been the focus of commercial harvesting activities. Other trees present include: narrow-leaved ironbark (Eucalyptus crebra), broad-leaved ironbark (Eucalyptus fibrosa), bull oak (Allocasuarina luehmannii), pilliga box (E. pilligarensis), grey box (E. microcarpa), bimble box (E. populnea), and black cypress pine (Callitris endlicheri). The plant lists a large number of understorey species indicating that the area would have had high resource values to Aboriginal people.

The southern and western parts of the study area have been cleared with stands of vegetation remaining on the western and eastern portions of the lot boundaries where outcropping Permian sandstones have prevented ploughing. The Leard State Forest has a full cover of native forest that has been selectively logged in the past.

2.0 Archaeological Context

2.1 Regional Indigenous Archaeological Context

The majority of sites, found in the course of development-related studies of Aboriginal occupation, have generally been dated to the Holocene period (the last 10,000 years). Sites from the Holocene (the last 10,000 years) period are far more common, than Pleistocene sites which are generally found on remnant river terraces and in sand bodies. In open sites artefacts tend to move down through the soil profile by bioturbation and, in duplex soils, tend to sit within a gravel layer on the B horizon. In this context only the typology and morphology of the artefacts can be used to date their period of manufacture. Therefore, to prove the age of an open site is problematic.

Earlier reduction techniques have been known as the 'core and scraper tradition' that focused on the initial reduction of cores to produce flake blanks for use as tools (Koettig 1990). The resultant cores were abandoned at the stone source and the flake blanks formed at times when relatively large tool sizes and shapes were dependent upon the character of the stone. The replacement of this technological approach with the manufacture of microliths which were then hafted to produce a functional tool occurred about 5,000 years ago. The change in manufacturing technique replaced the long cutting edges of the previous large flake with a composite tool comprised of small artefacts, resin, bindings and wood. An advantage of the change may have been the use of raw material previously too small for this purpose (Moore 2000).

Reasons for change in technological characteristics have been proposed by Hiscock (1994) who suggested that increased mobility may have become necessary during the Holocene, as people occupied areas of unfamiliar environmental resources, or as climatic fluctuations rendered the environment less predictable. The extension of stone resources to include small pebbles and small outcrops would have increased the amount of time between visits to the stone sources previously used.

Boggabri is in the area of the Gamilaraay[1] people, whose range at the time of European arrival was thought to extend from Walgett, NSW, to Nindigully, QLD and included areas near Talwood and Garah at Moree, Mungindi, Mogil Mogil, Narrabri, Pilliga, Gunnedah, Bingara, Tamworth, Quirindi, Bundella, Barraba, Gwabegar, and Come-by-Chance; on headwaters of the Hunter River[2]. The grammar and vocabulary published by Hale (1845) ostensibly of this tribe relates to the Geawegal of the lower Hunter River. Mathews (1904) with a broad-brush type of statement suggested the Kamilaroi language extended to Jerrys Plains, this would include about one half of the Geawegal territory and also some Wonnarua country.

ARAS (2005) produced an ethno-historic account and review of available resources in the Gamilaraay area. Based on Balme (1986) the economy would have been based upon Mitchell grass (Panicum *loevinode*), pigweed (portulaca *loleracia*),

[1] Also spelt Kamilaraay, Gamilaroi, Kamilaroi (Horne et al)
[2] Tindale 1974 *Aboriginal Tribes of Australia* South Australian Museum

native orange (Capparis *mitchelli)* and quandong (Fusanus *acuminatus).* Animals important in the local economy included eastern grey kangaroo, possum, emu goanna, snake, waterfowl, eels, fish and mussels. Fern rhizome and yams were roasted, giant lily stems and roots cooked and made into paste and cycad seeds soaked and roasted. Kurrajong seeds were also roasted and made into paste as like cycad seeds they are toxic if not treated in a specific manner. Grass seeds were made into 'Johnny' cakes, grass tree nectar eaten from flowers and resin and stems used to make composite tools. Mat rush stems were also woven into mats, bags and nets, as were stringy bark fibres. The review was based upon observations made by early Europeans in areas such as Bathurst, Newcastle and Parramatta. Therefore the review represents a fairly generic resource list. There would have been more area specific resources based on local ecosystems relevant to the study area[3].

The word Boggabri is derived from the Gamilaraay word 'Bukki-bri" meaning place of many creeks. John Oxley was the first European to traverse the district in 1818 and George "the barber" Clarke, an assigned convict to Benjamin Singleton, escaped to the area in 1826[4]. Clarke is said to have lived with the Gamilaraay people and Barbers Lagoon and Pinnacle are named after him.

European settlement of the region started in the early 1800's and had a catastrophic impact on the local Gamilaraay peoples and their traditional culture. Populations were greatly reduced due to the introduction of previously unknown diseases and traditional social structures disintegrated. A significant Aboriginal population remains in the area today and they take an active interest in their cultural heritage. The Leard State Forest is located within the boundaries of Red Chief Local Aboriginal Land Council.

2.2 AHIMS Search

A search of the AHIMS (Aboriginal Heritage Information Management System) data base maintained by DECCW was done on the 18th November 2009 for the area Easting: 210000 - 235000 and Northing: 6600000 – 6620000. 103 have been recorded in this 500 square kilometre area. The results can be generally described in their following site types (also refer to Table 3 and Figure 3 below):

Gins Leap Mythological Site – 1
Open Sites – 86
Scarred Tree – 14
Open Site & Scarred Tree – 1
PAD (Potential Archaeological Deposit) – 1 (see note below)

In addition to these sites Insite Heritage Pty Ltd (2008) identified three sites located within the study area BCD1-3 (refer to Figure 3 below and Section 2.3). These sites comprise of a potential quarry site and two open sites (an artefact scatter and isolated find).

[3] ARAS 2005 *Boggabri Coal Aboriginal archaeology assessment* Report to Boggabri Coal
[4] Horne, Thomas and Cunningham 2008 Gunnedah High School Parents and School Partnership Initiative.

The PAD site was registered by Besant in 2008 to support an AHIP for the monitoring of earthworks during the construction of a dam. The AHIP application was rejected on the grounds that DECCW do not give AHIP as a precautionary measure. Site 20-4-0196 Boggabri Coal PAD 1 is in the process of de-registration.

The AHIMS search provides an overview of all the site types that have been recorded in the surrounding area. It is not an exhaustive list of sites in an area as all land will not have been surveyed, however it does give an indication of the main site types that could be anticipated in the current study area. The AHIMS result for the Boggabri Coal study area indicates the prevalence of stone artefacts in the area. Stone artefacts are found in open sites of varying size and frequently as isolated finds.

Thus, open sites and isolated finds should be anticipated in the study area. Scarred trees are also anticipated in the study area where trees of sufficient age survive.

Table 3 Results of AHIMS search

NB: OCS - Open Camp Site, IA - Isolated Artefact, ST - Scarred Tree, PAD - Potential Archaeological Deposit.

Site_No	Site Type	Site_No	Site Type	Site_No	Site Type
20-4-0010	RITUAL	**20-4-0103**	IA	**20-4-0146**	IA
20-4-0011	ST, OCS	**20-4-0104**	IA	**20-4-0147**	OCS
20-4-0015	OCS	**20-4-0105**	IA	**20-4-0148**	IA
20-4-0016	OCS	**20-4-0106**	IA	**20-4-0149**	IA
20-4-0017	OCS	**20-4-0107**	IA	**20-4-0150**	IA
20-4-0019	OCS	**20-4-0108**	IA	**20-4-0151**	IA
20-40020	OCS	**20-4-0109**	IA	**20-4-0152**	IA
20-4-0021	OCS	**20-4-0110**	ST	**20-4-0153**	IA
20-4-0022	OCS	**20-4-0111**	IA	**20-4-0154**	IA
20-4-0023	OCS	**20-4-0112**	IA	**20-4-0155**	IA
20-4-0024	OCS	**20-4-0113**	IA	**20-4-0156**	OCS
20-4-0025	OCS	**20-4-0114**	IA	**20-4-0157**	OCS
20-4-0026	OCS	**20-4-0115**	IA	**20-4-0158**	OCS
20-4-0027	OCS	**20-4-0116**	IA	**20-4-0159**	OCS
20-4-0028	OCS	**20-4-0117**	ST	**20-4-0160**	OCS
20-4-0029	OCS	**20-4-0118**	IA	**20-4-0161**	ST
20-4-0030	OCS	**20-4-0119**	IA	**20-4-0196**	PAD
20-4-0032	OCS	**20-4-0120**	IA	**BCD1**	Quarry
20-4-0033	OCS	**20-4-0121**	IA	**BCD2**	OCS
20-4-0034	OCS	**20-4-0122**	IA	**BCD3**	IA
20-4-0035	OCS	**20-4-0123**	IA	**20-4-0101**	IA
20-4-0057	ST	**20-4-0124**	IA	**20-4-0102**	IA
20-4-0058	ST	**20-4-0125**	IA	**20-4-0144**	ST
20-4-0064	ST	**20-4-0126**	IA	**20-4-0145**	ST
20-4-0072	ST	**20-4-0127**	IA		
20-4-0074	ST	**20-4-0128**	IA		
20-4-0075	ST	**20-4-0129**	IA		
20-4-0076	ST	**20-4-0130**	ST		
20-4-0077	OCS	**20-4-0131**	OCS		
20-4-0078	OCS	**20-4-0132**	IA		
20-4-0079	OCS	**20-4-0133**	OCS		
20-4-0080	OCS	**20-4-0134**	OCS		
20-4-0090	IA	**20-4-0135**	OCS		
20-4-0092	OCS	**20-4-0136**	OCS		
20-4-0093	IA	**20-4-0137**	OCS		
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20-4-0100	IA	**20-4-0143**	ST		

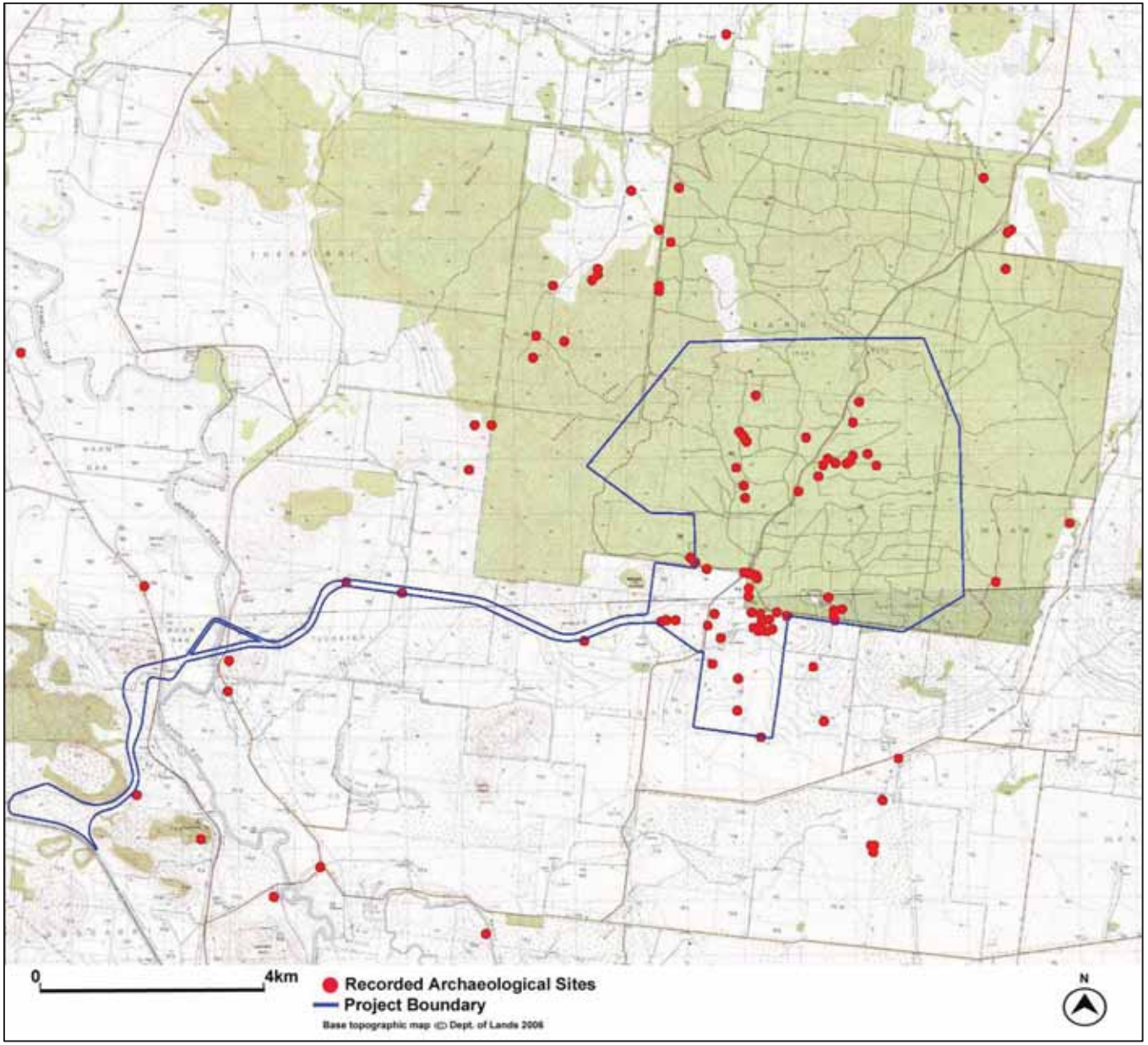


Figure 3 Location of Recorded Archaeological Sites in Proximity to the Project Boundary (source AHIMS Database 18th Nov, 2009).

2.3 Local Indigenous Archaeological Context

A review of previous archaeological assessments in proximity to the Project was conducted in order to place the study area into an archaeological context.

The Boggabri township is located within the Kamilaroi (or Gamilaraay) region. A search of the AHIMS site register found 106 sites were recorded in a 500 km² area surrounding the study area. An additional three sites recorded in the southern open area of the study area have not yet been added to the register. Therefore 109 sites are known in the study area and its surrounds. As mentioned previously, these recordings and the results of other assessment work in the area form the basis of a model of occupation.

2.3.1 GENERAL ASSESSMENTS

Brayshaw (1987) conducted an assessment for a proposed hard rock quarry for Croft & Associates at 'The Knobbs' on Oxley Highway, Gunnedah. The proposed quarry site was located approximately 3 km east of Gunnedah, and approximately 400 m north of the Oxley Highway. No archaeological sites were found within the proposed quarry and plant areas and the associated access road. One possible scarred tree was identified.

Gorecki (1981) conducted an archaeological assessment of land at Mine Authorisation 138 for Gollin Wallsend Coal Company Ltd between Wandobah Road and Black Jack and King Jack Mountains approximately 10 km south of Gunnedah. The survey covered an area of approximately 750 hectares. Seventeen archaeological sites were recorded by the survey. All the sites were located in red soil adjacent to the Springfield knob. The majority of sites identified comprised of low density artefact scatters. One site with a high density of artefacts was identified. The main artefact types identified comprised of flakes, scrapers and cores. One blade and grindstone was also recorded. The dominant raw material types comprised of locally sourced cherts, quartz, quartzite, silcrete. An artefact of petrified wood was also recorded as was a sandstone grindstone. The study concluded that the sites may be representative of local campsites. The artefacts were not located *in situ*, their current locations a result of farming and grazing practices and erosion processes which are prevalent in the area.

Haglund (1985) carried out an archaeological survey and reassessment of previous surveys for Vickery Joint Ventures for proposed coal mining in the Gunnedah region approximately 20 km to the north of Gunnedah. The survey covered a large area of varying landscapes, encompassing the lands of the Blue Vale, Greenwood, Welkeree, Shannon Hill and Vickery Mines of approximately 50 km² as well as associated haulage corridors including Blue Vale Road approximately 20 km in length. Seven archaeological sites were identified by the survey. These sites comprised of artefact scatters and or multiple artefacts. Four locations comprising of isolated artefacts were also recorded. Artefacts identified in the survey comprised of flakes and blades, flake fragments, hammerstones, flake pebbles, sandstone fragments with grinding faces, multi platform and

irregular cores, blade cores, backed blades. Tree scars were also recorded. Raw material types recorded included indurated mudstone, chert, agate, silcrete, quartz, quartzite and igneous rocks. The isolated finds comprised of three cores - two of indurated mudstone and one of chert.

The majority of sites were located near watercourses and drainage lines, and were subject to extensive disturbance as a result of erosional, farming and grazing processes.

Gaynor (2001) undertook an archaeological survey for a proposed limestone mine on the Property "Woodstock" near Manilla. No sites were identified in the survey of Portion 61 approximately 23 ha in size.

Kamminga (1978) carried out an archaeological survey for Amax Proposed Coal Operation at Boggabri. This study involved interviewing informants at Boggabri and Gunnedah and on farms in the study area. None were aware of any Aboriginal sites in the Maules Creek area. An Aboriginal shelter reported at Dripping Rock located 1 km east of the Amax lease boundary was determined not to be a site. The current Boggabri Coal operation is located within the lease assessed in 1978.

Kelton (2000) conducted an Aboriginal archaeological study and non indigenous heritage overview of the site of the Proposed Gunnedah Charcoal Producing Plant, Vickery Coal Mine Site, Blue Vale Rd Gunnedah. A survey of 31 ha found no archaeological sites.

Appleton (2005) reported the Archaeological Investigation of Proposed Open Cut Coal Mine & Haul Road East Boggabri Coal Mine Central Western NSW. This study area is located immediately east of the study area on Portions 10, 11, 31,16 and 29. The report was unavailable at AHIMS however; at least two sites appear on the register search (NAS1) 20-4-0092 - artefact scatter with 4 pieces, and 20-4-0093 - an isolated find. Closer observation of the site cards suggests that these two sites are indeed the same site with the same AGD co-ordinates. Permit #2312 is associated with these sites. NAS1 comprised four cores or core /scrapers over a 35 metre area. The artefacts were all described as volcanic with one agate noted. The site was considered highly disturbed and of low significance. 20-4-0156 NAS2 comprised a flake scraper on metasedimentary stone over a 15 m area. Both sites were located on gentle lower slopes or undulating plain. Site 20-4-0161 is a scarred tree with multiple scars, some of definite cultural origin others of possible natural origin. Three sites were also located along the haul road route as follows:

15-10 artefacts in an area 60m by 45m comprising chalcedony, volcanics, mudstone porcellanite and chert.

Open scatter of 20-25 artefacts over an area 70m x 45m chalcedony, volcanics, mudstone, quartzite, malachite, porcellanite and chert.

Open scatter of 8-10 artefacts in an area 15m diameter. Chalcedony, malachite and mudstone.

All appear to be located on flats associated with Gins Gully, a creek line to the north of lot 18, about 2 kilometres to the south east of the current study area.

Insite Heritage Pty Ltd (Besant & Wyatt 2006) were commissioned by North West Projects (NSW) Pty Ltd to conduct an archaeological assessment at the former Gunnedah Abattoir site, Lots 333-334, 336-340 DP 755503 and Lots 1-2 DP 120946 corner Quia and Black Jack Roads, Gunnedah.

The assessment, in December 2006 was conducted by Angela Besant in conjunction with Red Chief Local Aboriginal Land Council and Gunidah Gunya. The study area was located several kilometres from the Namoi River and had been subject to intense disturbance during its operation as an abattoir. No sites were located.

Insite Heritage (Besant & Wyatt 2008) surveyed an area within the southern extent of Boggabri Coal Mine. A dam to hold clean water from the dewatering of the mine void was proposed. The dam water would then be used to irrigate a rotational cropping area, thus control the water's release. The survey located a small artefact scatter and an isolated find to the south of the dam and a quarry site on the southern corner of the mine entry. An area of PAD was registered to support a Section 87 permit application for the monitoring of earthworks.

ARAS (Hamm) 2005 & 2007 conducted a survey and salvage of sites for the existing Boggabri Coal Mine, within the disturbance footprint of the Project. This report seeks to build upon the information compiled by ARAS within the Project Boundary.

The 2005 report documented 30 open artefact scatters, 26 isolated finds and four scarred trees. Four sites BC 38, BC 43, BC 46 & BC 54 were considered to have potential for subsurface deposits. Sites BC 16, BC 50-52 were considered to have moderate levels of significance and sites BCV 34, 38 & 54 were considered to have high archaeological significance. The significance was based upon artefact numbers/densities. The remaining sites were considered of low significance.

A total of 35 sites were subject to a Section 90 Consent; sites BC1-16 within the mine footprint, BC 34 adjacent to the mine footprint and BC 38 & BCHR 1-8 by the haul road. Another 27 sites were not to be disturbed within the development particularly in the southern area of the development adjacent to the potential wetland area on Nagero Station.

BC 34 was not salvaged at this time and remains extant. The site adjoins site BC 54 and effectively comprises a large continuous scatter over the adjacent low spurs. BC 34 was the only site to contain backed artefacts in the ARAS survey area.

On the basis of the field survey results and a geomorphic assessment by Dr Mitchell the following conclusions were drawn regarding the scientific potential of the sites within the study area:

Open sites are unlikely to be stratified.

Artefacts will be confined to the biomantle.

Artefacts will have been subject to surface dispersion, down-slope movement, and differential exposure or burial by bioturbation agents. Artefacts will contribute to a stone layer between the A and B-horizon with no apparent diagnostic differences between artefacts of different ages.

In spite of the taphonomic processes discussed above the vertical distribution of artefacts may survive in plan form, mixed with later and earlier discard events, and laterally distorted.

Artefact burial is an ongoing process and material will only be exposed by erosion.

Dating of sites in this landscape is unlikely and may only occur where intact hearths or burials are found.

2.3.2 ARAS (2007) SALVAGE

ARAS salvaged some sites prior to the commencement of mining in 2007. The salvage focused on sites within the planned pit area and the haul road. The salvage involved surface collection, hand excavation in two locations in and adjacent to the Forest, and grader scrapes.

Hand Excavation

BC 35 comprised two stone artefacts on a forestry track within the Leard State Forest. When the site was revisited for collection, further artefacts were found and the potential for sub surface material reconsidered.

One metre square test probes were excavated along the track. A total of 18.6 m² were excavated and 179 artefacts recovered. The majority of the artefacts were in lenses of 2 m² and 3 m². A small number of backed artefacts were recovered also.

BC 41 was located on the edge of Nagero Creek comprising three artefacts on a creek terrace. The site was considered part of the complex of five lenses in this area. A total of 8 m² was excavated and 30 artefacts retrieved. In both areas artefacts were retrieved from the A horizon in the duplex soils.

Grader Scrapes

Grader scrapes were placed in all the landform units of the study area. 47 scrapes along the route of the haul road, located 151 artefacts in 26 locations. These scrapes were subject to systematic sieving.

The borrow pits for the haul road were subject to grader scrapes with no sieving of soil. A total of 35 artefacts were retrieved from the 12 locations.

Both forms of scrapes indicated that the most productive area along the route was in the area of the property known as ‘’The Rock” on the western side of the Namoi River.

27 systematically sieved, grader scrapes within the Leard Forest recovered 179 artefacts at 23 locations. The greatest density of artefacts was found in the vicinity of BC 48 (50), BC 49 (14) and BC 50[5] (22), in the south west of the forest.

Surface Collections

40 sites were subject to surface collections over a broad range of landform units. Site BC 1-15, BC 21-30, BC 35, BC 38-41, BC 44, BC 45, and BC 53 and haul road sites BCHR 1-8 were collected.

Additional Survey

Additional survey was conducted at the time of the salvage works and an additional 21 new sites recorded. These sites included two scared trees.

The distribution of sites within the study area can be seen in Figure 3.

2.3.3 SITE STATUS

The salvage of the sites under Section 90 Consent #2369 and Section 87 Permit #2370 resulted in the following.

Sites of high significance – BC 34, 38 & 54

Sites BC 38

- This site was collected with no additional data recorded.

Site BC 34

- This site was not collected or excavated. It was included in S90 #2369 however not acted upon as the site was one of high significance and impact was not imminent. The site remained extant upon expiration of the permit, and is therefore subject to revised management recommendations in this report.

[5] Note that several site no.s have been used twice BC50 is a scarred tree subject to conservation (ARAS 2007 p7) but also used to label an area of grader scrapes (ibid p 37). This is also the case for BC 30.

Site BC 54

- This site remains in-situ and is subject to revised management recommendations in this report.

Sites of moderate significance – BC 16, 50, 51 & 52

Site BC 16

- This site is a scarred tree subject to the S90 #2369 Consent. There is no record of the tree having been relocated and it is subject to revised management recommendations in this report.

Sites BC 50 to 52

- These sites are scarred trees that were located in areas previously not to be directly impacted by Boggabri Coal. They will be subject to this report.

Sites of low, moderate and high significance in numerical order

Sites BC 1- 15

- These sites comprise isolated finds and small scatters of fewer than 5 artefacts. These sites were salvaged by collection - #2369.
- BC 16 – a scared tree subject to the permit but remains extant.
- BC 17 -19 isolated finds that have not been subject to a permit and are extant.
- BC 20 – isolated find collected #2369 – in haul road corridor.
- BC 21 – collected as it had been added to the amended permit #2369 on the haul road route.
- BC22 – conserved.
- BC 23 – collected under #2369.
- BC 24 to 26 – conserved.
- BC 27 to 30 - isolated finds and small scatters collected under amended #2369
- BC 30 reused to name a scarred tree.
- BC 31 to 33 – isolated finds and small scatters extant.
- BC 34 – an open site subject to #2369 but remains extant.
- BC 35 - excavated and collected - the status of this site was revised by ARAS from low to high as a result of some unplanned excavation.
- BC 36 an isolated find that was not to be impacted hence subject to this report.
- BC 37 a historic modified tree to be conserved.
- BC 38 – salvaged under the permit #2369.
- BC 39, 40 & 41. Artefact scatters of up to thirty pieces. These areas were also subject to grader scrapes.
- BC 42, 43 conserved and extant.
- BC 44 & 45 small artefact scatters each with four pieces – salvaged
- BC 46 & 47 - one small scatter and one of 28 pieces conserved.
- BC 48 - collected and scraped under amended permit #2369.
- BC 49 - isolated find that was to be conserved.
- BC 50 – 52 – modified trees retained
- BC 53 - this site was collected however doesn't appear on the permit #2369
- BC54 – open site retained adjoins BC 34.
- BCHR 1 to 8 – these sites of small scatters and isolated finds were all collected from the haul road corridor.

In summary 24 ARAS site remain inside and adjacent to the Project Boundary.

2.3.4 ARAS CONCLUSION

The following is quoted from ARAS 2007 results of subsurface work on the Boggabri Coal development area (pp48-49).

"Investigation of sites recorded as part of the Boggabri Aboriginal Cultural Assessment and Section 87 and 90 Permit work have resulted in the following results and conclusions:

- *As result of Section 87 and 90 Permit investigation, 44 sites of new Aboriginal occupation have been recorded across the study area.*
- *A majority of these sites are made up of artefact deposits of between 1–10 artefacts density.*
- *Over 90% of artefacts recovered from test excavations (both hand and mechanical) consist of unmodified broken flakes and flaked piece material.*
- *Retouch or modified tools account for less than 2% of the entire stone artefact record.*
- *A majority of stone tool raw material used in stone tool production is derived from local volcanic siliceous origins located within colluvial gravels near ridge-lines.*
- *Exotic stone raw materials (i.e. cherts, quartz, silcretes) account for less than 10% of the entire stone artefact assemblage recorded.*
- *There is no potential for directly dating open sites within the study area.*
- *Two new scarred tree sites have been recorded and are both are located within flood plain areas adjacent to existing creek and river margins.*
- *Archaeological evidence recorded in the original archaeological survey did not detect the real extent of Aboriginal land-use especially within the forest landscape or rolling hills.*
- *Only through sub-surface examination of low visibility landforms did the real distribution of Aboriginal occupational evidence become known.*
- *Leard State Forest is likely to contain more evidence of Aboriginal occupation, especially where elevated land units may connect two or three ridge-lines and flats near forest margins or on route to drainage features further north (i.e. Back Creek and Maules Creek).*
- *Excavation of Site BC 35 revealed evidence of stone tool manufacturing and knapping events within the forest margin.*
- *No new Aboriginal sites or objects recorded were regarded as archaeologically significant.*
- *Leard State Forest contains enough cultural evidence for it to be considered to have Aboriginal cultural landscape values."*

2.3.5 DISCUSSION

The collection and scrapes within the various landform units demonstrated that there is higher concentration of stone artefacts within the Leard State Forest in comparison to the open plain. There is a generalised low presence of backed artefacts or formal tool types. This has been interpreted as evidence of lesser quality stone and availability of suitable stone presumably on the basis of the high proportion of flaked pieces. Flaked pieces have been associated with fragmentation of cores during the reduction process (Hiscock 2000).

The grader scrapes found that the slopes and drainage lines on the western side of the Namoi River around the property “The Rock” resulted in frequent buried sites. The potential for buried sites within the Leard Forest was also highlighted by the excavation results at BC 35.

The most disappointing area was on the Namoi River flood plain where it is thought that flood events have dispersed, buried and scoured any sites that may have been located in this landform unit.

A total of 243 ARAS sites remain extant within or adjacent to the Project Boundary. In addition there are three sites (BCD1-3) identified by Besant & Wyatt 2008. The latter three sites are within the far southern part of the Project Boundary but distant to the footprint of development.

2.4 Predictive Model of Archaeological Potential

The archaeological record of the Boggabri district is relatively unknown with most studies being development related therefore sample biased toward impact zones. This particular survey will focus on a study area that includes the previous ARAS (2005-2007) study area. Therefore the following research questions are under consideration:

In terms of landscape units will the general distribution pattern of sites mirror that found in 2005 – 2007?

The 2007 salvage work was initially based on the 2005 survey footprint. An additional survey and grader scrapes was subsequently required to address community concerns that the impact associated with the haul road had not been fully addressed, such as the impact areas for the culverts and borrow pits. This survey located an additional 44 sites. The grader scrapes in particular provide additional information regarding the potential for buried sites along the route. In the interim period continued drought and fortuitous ploughing and land disturbance will enable this survey to add to the site distribution model developed in 2007.

Based on the ARAS data the following statements will be considered.

The majority of surface sites will be generally low density sites of 1 - 10 artefacts.

Retouched or modified flakes will account for less than 2% of the assemblage.

The most frequent stone material recorded by ARAS was tuff (we however refer to this stone as FGS see discussion below), with less than 10% of the assemblage being made of exotic material – cherts, quartz and silcretes.

Given that chalcedony outcrops are common in the area (Besant 2008) – this material will be well represented in the assemblage.

Within poor visibility landforms, particularly in the Leard Forest, only sub surface tests can reveal the real extent of sites.

The following is a brief description of the site types that may occur within the study area:

ARTEFACT SCATTERS: In most archaeological contexts, an artefact scatter has been defined as either the presence of two or more stone artefacts that are considered clustered by a landscape context or within 50 or so metres of each other.

An artefact scatter may consist of surface material only, which has been deflated by erosion, and may involve a sub-surface deposit of varying depth.

Other features may be present within artefact scatter sites, including hearths or stone-lined fireplaces, and heat treatment pits.

Artefact scatters may represent the evidence of:

Camp sites, where everyday activities such as habitation, maintenance of stone or wooden tools, manufacturing of stone or wooden tools, management of raw materials, preparation and consumption of food and storage of tools has occurred;

Hunting or gathering events; or other events spatially separated from a camp site (eg. tool production or maintenance); or

Transitory movement through the landscape.

The detection of artefact scatters depends upon conditions of surface visibility and ground disturbance and post-depositional change through either sediment accumulation or surface erosion. Vegetation cover and deposition of sediments generally obscures artefact scatter sites and prevents their detection during surface surveys. High levels of ground disturbance can also obscure or remove evidence of a site.

Isolated finds are single artefacts. They may be representative of simple, singular discards or may be all that is visible within a site, with other material either obscured from view or buried beneath the surface.

BURIALS: Human remains tended to be placed in hollow trees, caves or sand deposits along river banks. Usually burials are only identified when eroding out of sand dunes or creek banks, or when disturbed by development. Aboriginal communities are strongly opposed to the disturbance of burial sites.

GRINDING GROOVES: Grinding grooves are formed in stone where stone hatchet or axe 'blanks' have had their edges ground sharp. Suitable blanks are prepared by taking flakes off the edges of pebbles then grinding the edge smooth and sharp with a repeated, linear motion across the surface of the grind-stone. Sandstone is generally preferred, as the sand particles have excellent abrasive qualities particularly when water is introduced onto the grindstone.

SCARRED TREES: Scarred trees contain scars caused by the removal of bark for use in manufacturing canoes, containers, shields or shelters. Mature trees and remnants of stands of the original vegetation have the potential to contain scars. Scars are identified by their morphology and the absence of alternative explanations such as lightning strike or stock damage.

Scarred trees are identified by the following criteria:

The wound will terminate before ground level to exclude factors such as lightening strikes;

The wound is symmetrical;

The tree is of sufficient age at the time of wounding.

PLEISTOCENE SITES: Pleistocene sites may be found on Pleistocene surfaces which have been subsequently buried. The preservation of Aboriginal sites that date back more than 10,000 years BP, are a rare find in NSW, particularly in open areas. The work of Mitchell 2005 indicates the area of potential for Pleistocene landscapes are the palaeo-channels of the Namoi River, evident as semi circular waterholes and swamps features, where cut off channels had meandered in a wavelength three times that of the current river.

No palaeo-channels are located within the Project Boundary.

3.0 Archaeological Survey

3.1 Survey Objective

The aim of the survey was to identify any Aboriginal sites or areas of potential archaeological deposit within the study area which may be impacted by the proposed development. The survey aims to sample the maximum possible area in order to create the best possible opportunity for site recording. To facilitate the potential to find sites transects, the study area, as defined by area of impact, is divided into landform units.

Four landform units were identified (refer Figure 4 below) and where the study area was lineal, zig- zag transects were walked by five people over a fifty to sixty metre wide corridor. In the Leard State Forest the study area encompassed a large portion with minimal surface exposure. Light vehicle tracks were utilised to provide access to those areas with maximum surface exposure.

Survey results are tabulated and assessed in light of their landscape context and analysed in consideration of the known data from the area.

3.2 Survey Details

The survey was conducted between 19th October and the 2nd November, 2009. Field archaeologists on behalf of Insite Heritage were Angela Besant, Michael Parker and Christopher Carter. Aboriginal field officers were drawn from the six stakeholder groups and included Ron Griffin (Min Min), Peter Beale (Red Chief LALC), George Sampson (Cacatua), Wade Natty & Stan Condran (Gunida Gunyah), Gary Griffiths (Bigunde Biame) and Steven Hands (Elli Lewis).

The survey of the study area was conducted primarily on foot with some vehicle transects in areas of severely limited visibility. Where vehicle transects were used, systematic sweeps about fifty metres apart were used to find any small areas of exposure, for example cattle tracks, ants nests or spot erosion.

The study area was divided into landform units; Leard Forest, Lower Drainage Area, Namoi River Plain and Baan Baa Range. Figure 4 outlines the study area land form units.

Survey transects were carried out within the separate landform units (refer to **Appendix D**). Surface visibility was limited by vegetation and leaf litter. The transects were inspected on foot by groups of four to five persons, walking parallel in a relatively straight line spaced 8 to 10 metres apart. Each individual in the transect group could deviate temporarily to inspect exposed or disturbed areas more closely.

3.2.1 RECORDING PARAMETERS

Sites were recorded by the following features:

Location (Recorded using Garmin GPS 72 hand held GPS, WGS 84 datum)

Visible Extent - as determined by the extent of the artefact scatter or the extent of the visible area of the scatter and the extent of potential archaeological deposit surrounding the scatter and the basis for the PAD definition (for example break of slope, surrounding sterile exposure or thinning of the soil profile), landform i.e. top of creek bank, face of creek margin, base of creek bank, small crest, flat, base of minor slope.

Aspect – where relevant.

Stone Artefacts - were recorded at a basic level including type, colour, raw material, basic dimensions and obvious diagnostic features (eg cortex, edge wear, backing etc). Artefacts were not removed from the area.

The total project boundary covers approximately 3400 ha. The study area of 2930 ha excluded the 470 ha previously surveyed by ARAS in 2005 and Insite Heritage in 2008. The areas previously surveyed in 2005 and 2008 were noted and not systematically resurveyed (Figure 5). The majority of the study area was covered by the survey, with all landholders allowing access to their properties.

A focus on larger older trees was made to search for evidence of scarring. Exposures of outcropping sandstone, generally in boulder form, were inspected for axe-grinding grooves.

Surface visibility hindered the survey. Visibility was particularly low in the Leard State Forest due to forest floor cover and low on the plain due to grass cover. However, the level and nature of survey coverage and recording of artefact detail, is considered satisfactory to present an effective assessment of the Aboriginal heritage resources identified and those potentially present within the study area. Therefore the survey provides a valid basis for determining the probable impacts of the development and formulating recommendations for the management of the identified and potential Aboriginal heritage resources.

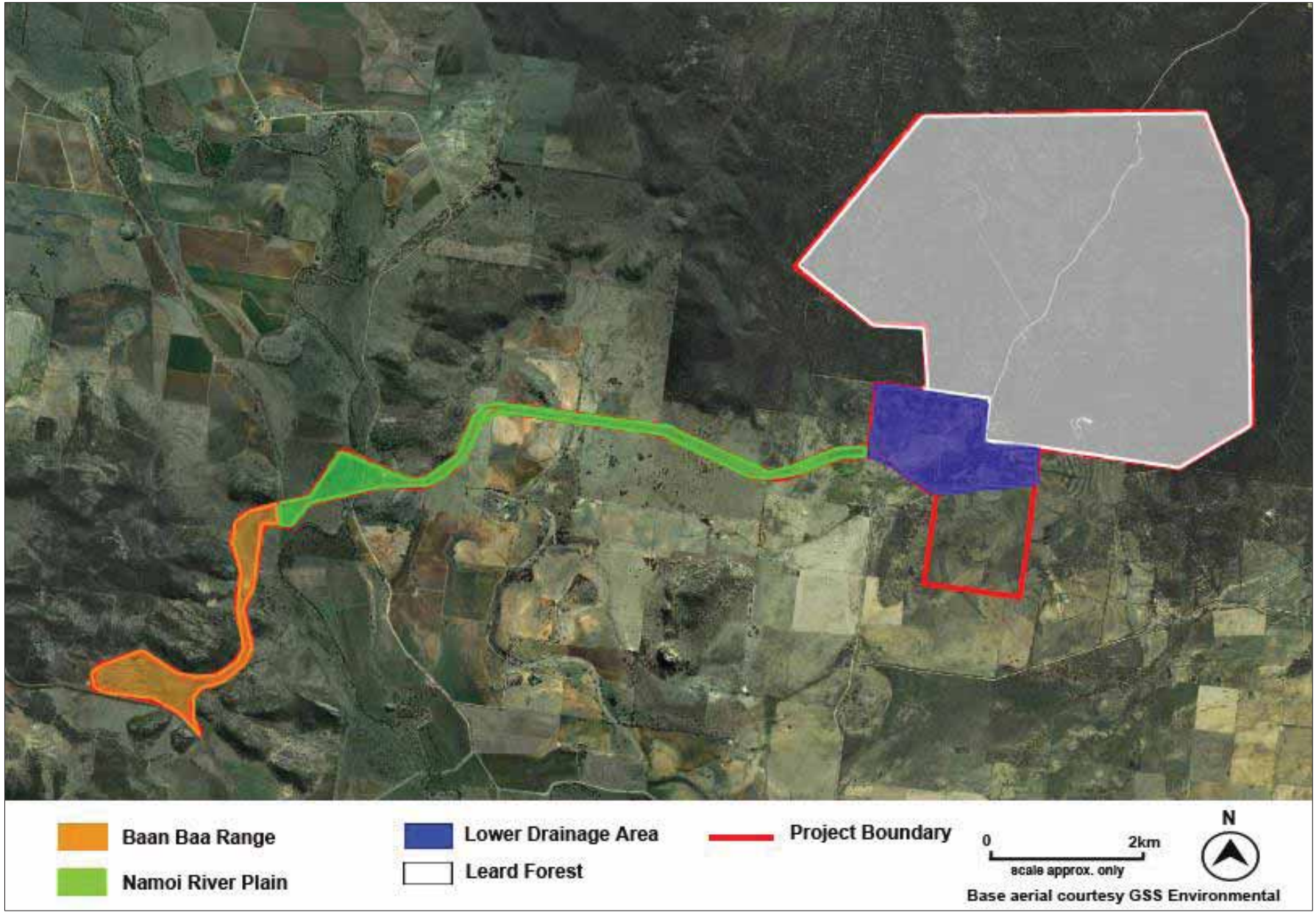


Figure 4 Landform Units

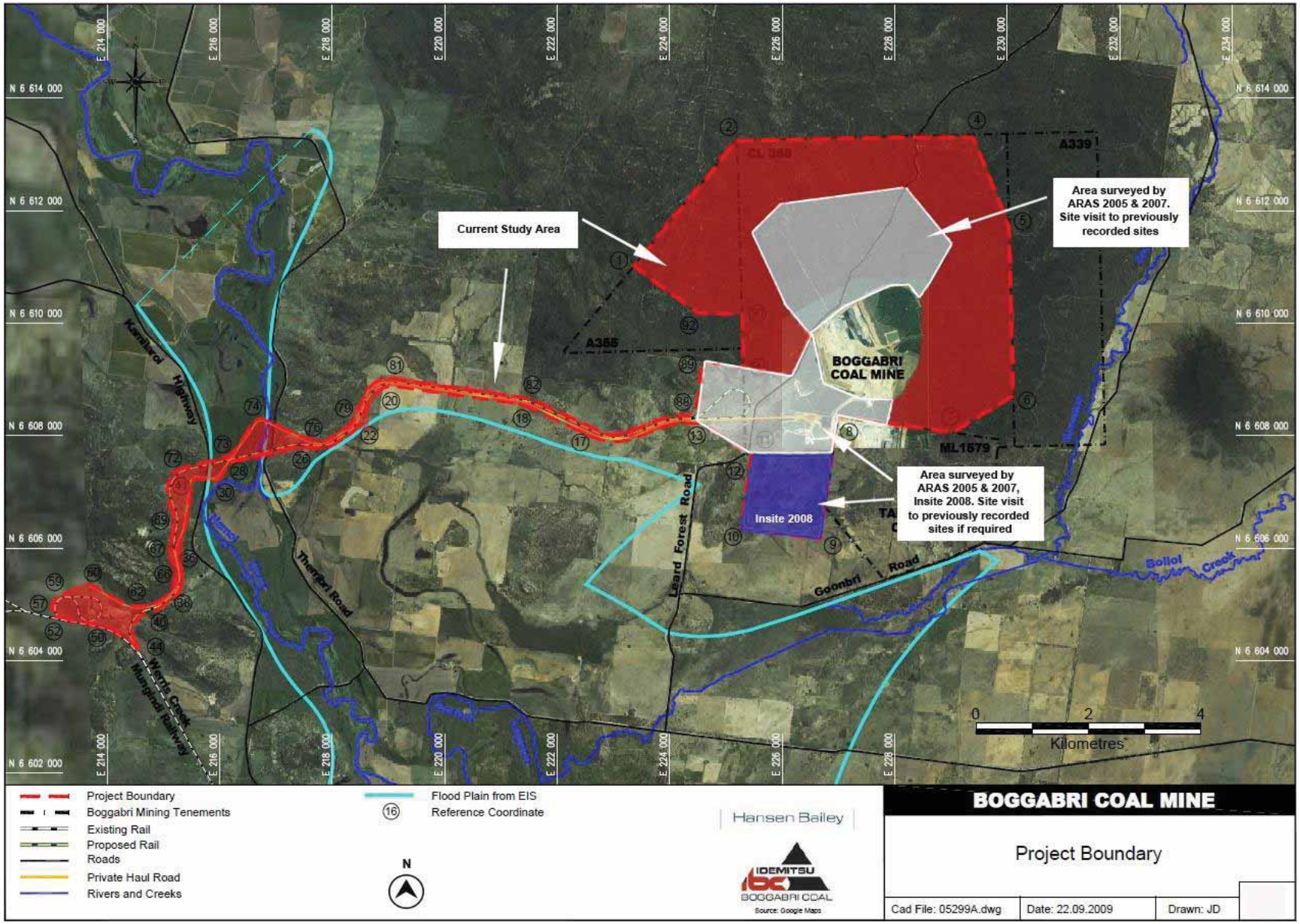


Figure 5 Current Study Area and Areas Covered by Previous Surveys

3.3 Survey Results

3.3.1 VISIBILITY

The visibility within the various landform units was generally limited. Ploughing has turned the soil and exposed artefacts in the foot-slopes of the Baan Baa Range. Ploughing and contour banks exposed artefacts adjacent to the eastern end of the existing Haul Road. Sheet wash in the vicinity of BC 34 and 54 and vehicle tracks have exposed artefacts in the Leard State Forest.

In general the Leard State Forest had low visibility with a relatively small (and yet adequate) sample area surveyed. The sample did address all the variations in landform within the Forest i.e. slope, ridge and plain. The visibility on the tracks was generally at least 50%, however, unless the soil had eroded to the A2 soil horizon the archaeological visibility was low.

Plate 1 shows a typical ridge top track with about 50% surface visibility and relatively intact soils. Plate 2 shows an artefact located in an area of slope wash / sheet erosion that has exposed the A2 soil horizon and the gravels lying on top of the Bs soil horizon.

Plate 1 Ridge top track in the Leard State Forest showing typical exposure levels.

Plate 2 Artefact at NV 8 - note eroded background soil with lag deposit gravels on lower A2 soil horizon.

In the lower slopes unit – on the eastern side of the site bordering with the Leard State Forest landscape and probably formerly part of the forest, more visibility was afforded by ploughing, contour banks and other landscape modification. Sites were located on the southern side of the haul road and these proved quite extensive. Numerous ARAS sites remain on the northern side of the haul road in this landform demonstrating the density of sites in this area.

Plate 3 shows the general visibility on the margins of the forest in the proposed rail easement. In this general area ARAS 2005 located numerous sites and grader scrapes in 2007 found additional artefacts. Further artefacts were located by the survey of the adjacent ground this year.

Plate 4 shows the visibility on the plains of the Namoi River where few artefacts were located. This area lies on clayey soils with very high shrink – swell characteristics and is subject to regular flooding which depending on the intensity of the flood could deposit or scour soils. Artefacts are likely to move down through the soil profile by means of bioturbation and movement down cracks. Few sites were found in this landform unit which is consistent with the ARAS 2005 findings and 2007 excavations.

Plate 3 The location of a large artefact scatter adjacent proposed rail spur easement.

Plate 4 The alluvial soils in the plain landform unit.

3.3.2 SITES RECORDED

A total of 67 artefact locations or 'sites' were located, 10 scarred trees and one possible stone cairn recorded. Within the Leard State Forest the survey was generally confined to formal and informal forestry tracks (Figure 6). These tracks range from lightly formed tracks to informal bush tracks. The tracks provided access to all micro landform units within the forest particularly on the western side of the Leard State Forest Road. The majority of sites were located on these tracks.

The haul road was surveyed on both sides to a width of 50 to 60 metres. The terrain was generally open cleared country that had been ploughed in places. The numbering of these transects can be seen in Figure 7. A description of the transects can be seen in **Appendix D**.

The sites recorded during the survey are described in Table 4 and in more detail in **Appendix E**. The sites were named 'NV' (Namoi Valley) to differentiate them from those recorded in 2005 ('BC'). Table 4 includes the sites type i.e. artefact scatters (AS) scarred trees (ST) and isolated finds (IF). A possible quarry was also recorded, where outcropping bedrock had damaged or flaked chalcedony nodules. A stone feature noted as a stone cairn has been noted and given identifier NV17 but has not been determined to be a 'site', as there is a possibility that the stones have been stacked in recent times. This feature will be further inspected if impact is proposed.

The artefact details and site attributes can be seen in **Appendix F.**

The sites allocated their 'NV' identifier, have been grouped by proximity and context, on the site cards submitted to AHIMS. Thus NV 46, 47 and 23 are recorded as multiple exposures under a single AHIMS no. These site groupings and the site card names can be seen in **Appendix H.**

Figure 8 shows the location of the sites recorded in this survey across the study area.

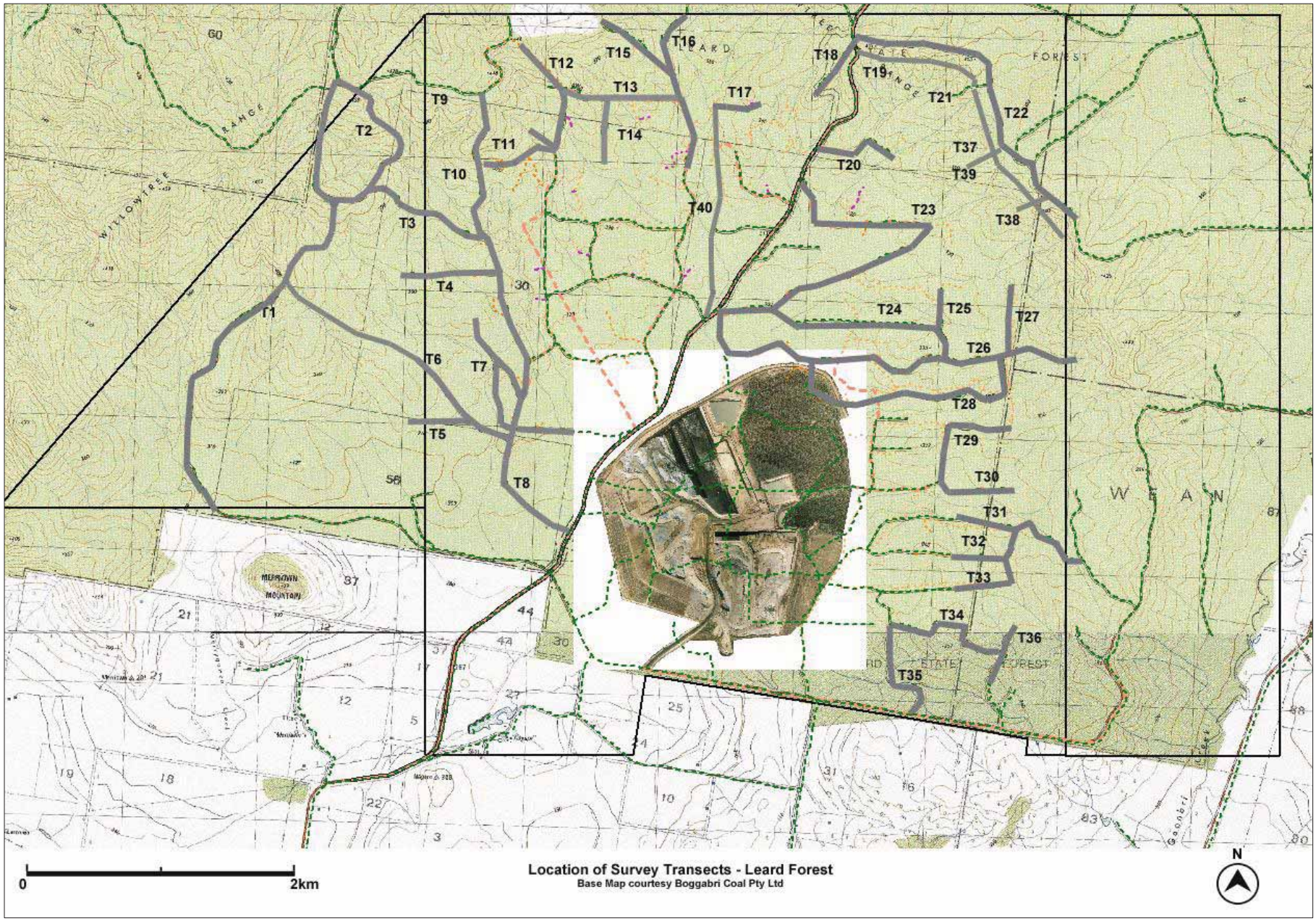


Figure 6 Transect locations - Leard State Forest

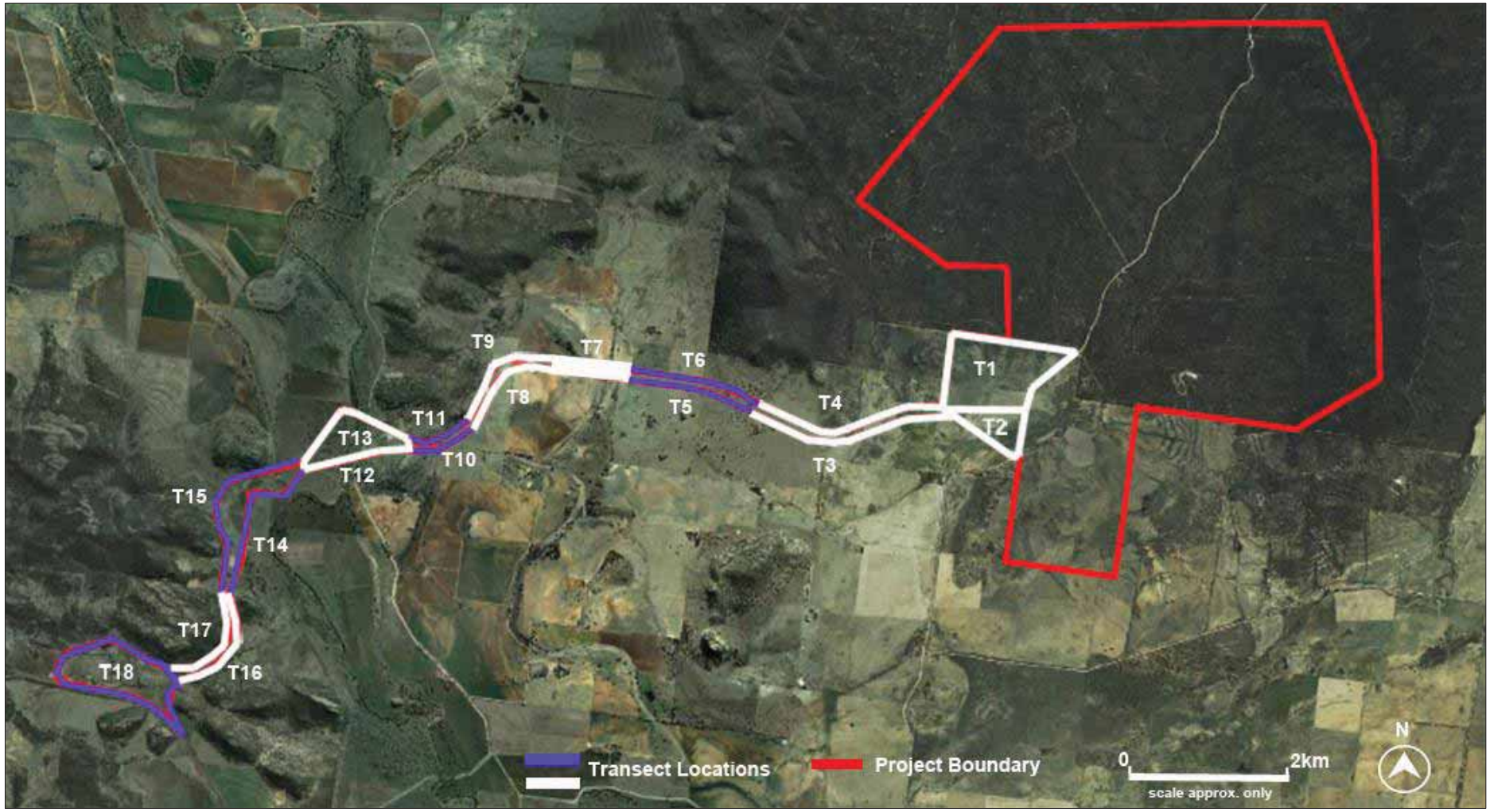


Figure 7 Location of Survey Transects - Haul Road T1 & 2 lower drainage area T3-13 plain and T14 -18 Baan Baa Ranges (Base areal courtesy GSS Environmental)

Table 4 Recorded sites details.

IF - isolated find, AS- artefact scatter, ST - scarred / modified tree

Site Name	Site Type	Landform	Description
NV1	IF	Leard Forest	Located in exposure in track way. 1x chalcedony core and 1x chalcedony flake identified. Approx. 10m south on west side of road 3x chalcedony cores and 1x chalcedony flake also located.
NV4	AS	Leard Forest Ridge Line	Located in track way, and small track offshoot approx. 40m long which ended at 223846,6611269. Site defined by surface disturbance. 39 Artefacts located at site. Quartz artefacts included: 1 blade, 5 broken flakes, 1 core, 7 flakes, 3 flaked pieces. Artefacts manufactured from Chalcedony: 4 broken flakes, 4 flakes. Chert artefacts: 1 broken flake, 1 flake. FGS artefacts: 1 broken flake, 4 flakes, Silcrete: 2 broken flakes, 2 flakes, Volcanic: 1 broken flake, 1 flake, 1 flaked piece. 7x angular fragments of quartz and 12x angular fragments of chalcedony also noted at the site.
NV6	IF	Leard Forest Ridge Line	1 x brown red mudstone flake mid section possible redirecting located on vehicle track to the south off main ridge road. Track ends approx. 50m past location of the artefact.
NV5	AS	Leard Forest Ridge line	Two artefacts - 1x Black/grey volcanic flake, and a volcanic broken axe head which has been pecked on one side located in track way along ridge line
NV7	IF	Leard Forest Base of slope	Located in the Leard Forest at the base of slope in an access road. White /pink silcrete flake possible scraper.
NV8	IF	Leard Forest base of slope	1 x mudstone flake, distal portion with multi directional dorsal scars.
NV9	IF	Leard Forest base of slope	1x grey, fine grained silcrete flake, distal portion located in road way at base of slope
NV10	AS	Leard Forest Flats	Located on creek flats/terrace in sandy soil. All artefacts located in exposure previously dug over by wild pigs 2 x FGS flakes and 2x FGS broken flakes identified.
BC34	AS		Site relocation. Site has been salvaged but some artefacts still noted. 1 x mudstone flaked piece, 1 x chalcedony flake and 1 x silcrete flake. The site is located on a ridge creek/margin.
NV35	ST	TSR Holding Paddock	Scarred tree in midst of TSR holding paddock. 2x scars on a 'Brimble Box'. Scars No.1, located on right hand side of tree situated 52cm above base of tree - 330mm long x 340mm wide x 200mm deep. Regrowth noted. Scar No. 2 (left hand side of tree) 500mm x 160mm x 160mm (regrowth).

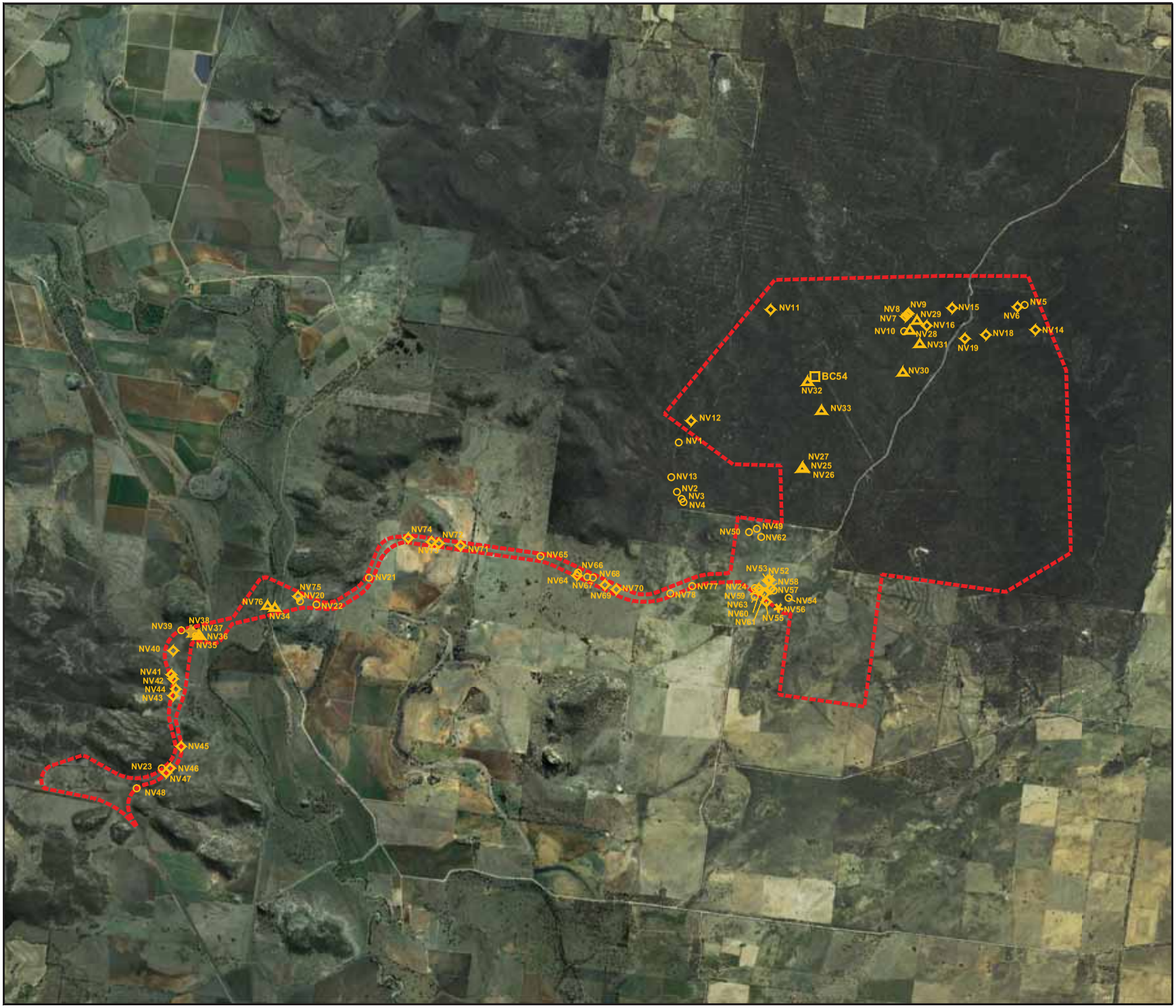
Site Name	Site Type	Landform	Description
NV36	ST	TSR Holding Paddock	Scarred tree. Scar dimensions: 380mm x160mm x 200mm regrowth. Scar situated 960mm from base of tree.
NV37	ST	Haul Rd/Train Line Lower Slopes BB Ranges	Located near an unformed track. A very old scar on a 'Brimble Box'. 1000mm x 1150mm x 100-190mm regrowth. Tree still living.
NV38	IF	Haul Rd/ Train Line Lower Slopes BB ranges	1 x reddish volcanic flake located in exposure in stony paddock. Background gravels of similar rock type noted.
NV17	Possible Stone Formation	Haul Rd / Rail Corridor / lower slopes	Possible stone formation located on a foot slope of a rocky hill. Dimensions: Height 94cm boulders approx 20-30cm in size. loose boulders in filled between two larger boulders. May be historic stone picking/clearing paddock. Further investigation recommended. Height of feature 94cm between adjoining boulders x 49-40cm, Depth 165-98cm.
NV39	AS	Haul Rd/Rail Corridor	1 x green volcanic flake. Located adjacent to exposure in gateway. Background gravel. 1 x volcanic core, 4 x chalcedony angular fragments.
NV40	AS	Haul Rd / Rail Loop Lower Slopes/Flood Plain	Located in exposure in stony ploughed paddock adjacent to vehicle track. 1 x chalcedony core. 1 x large chalcedony core. At 215076, 6606823 1 x flake chert. 2 x chalcedony angular fragment.
NV41	IF	Haul Rd / Rail Loop Flood plain	Located in stony cleared paddock/grazing area 1 x white FGS flake/core.
NV42	IF	Haul Rd/Rail Corridor Floodplain	1 x chalcedony core in eroded exposure in paddock.
NV43	AS	Haul Rd/Rail Corridor Floodplain	Located in exposure in unformed road in a stony cleared paddock. 2x chalcedony cores situated approx. 10m apart.
NV44	IF	Haul Rd/Rail Corridor Lower Scree Slope	1 x silcrete core located in cleared stony paddock on Lower scree slope.
NV45	IF	Haul Rd/Rail Corridor	1 x chalcedony flake ex located on property "The Rock".
NV46	IF	Haul Rd/Rail Corridor Lower Slope	1 x chalcedony flake
NV47	AS	Haul Rd/Rail Corridor Flood plain	2x chalcedony flakes i.
NV48	AS	Haul Rd/Rail Corridor Lower slopes	Located on lower slopes adjacent to cleared area for cattle (fences, water troughs ect). At 214606, 6604800 2x chalcedony flaked pieces, 1 x chalcedony flake 25x15x5, 1x chalcedony flake distal end 15x10x5mm At 214577,6604813 2x angular . fragments chalcedony, 1 x pot lid piece of chalcedony, 1 x light grey FGS, 1 FGS flake,1 x chalcedony flake. At 214572,6604814 1x chalcedony flake, 1 x cream/pink FGS, 2x angular fragments chalcedony. 1x FGS flake possible blade, usewear both margin, distal snap. 1x cream/pink quartz flake . Approx 2m east 2x angular fragments chalcedony. 4 x chalcedony flakes, 1 x chalcedony angular fragment.
BC34	AS	Leard Forest Ridgeline	Relocation of previously recorded site. 11 artefacts, 1 angular fragment, 1 flaked piece.
BC54	AS	Leard Forest Ridgeline	Relocation of previously recorded site. Large site. Artefacts located at 225659, 6611616 (16 artefacts, 1 angular fragment quartz), 225701, 6611587 (15 artefacts, 1 x angular fragment quartz milky, 1 x

Site Name	Site Type	Landform	Description
			grey FGS heat shatter. Grinding Grooves identified at 225861, 6611635. Two sets of grinding grooves located on sandstone boulder approx 1.5m x 1m x 0.4m. GG1 dimensions: 410 x 50 x 15mm. GG2 390 x 30 x 10mm. Boulder orientated NW/SE. 225654, 6611616-225662,6611570 13 angular fragments (3 mudstone, 7 chalcedony, 3 quartz) Also in this section 3 flakes chalcedony, 6 flakes mudstone, 2 silcrete blades, 1 silcrete flake 225670,6611557 Angular fragments 11 chalcedony, 1 mudstone. 3 chalcedony flakes, 2 mudstone flakes,1 chalcedony blade, 2 chalcedony broken flakes 225632,6611566 quartz core Also recorded just west of nearby modified tree:4 mudstone broken flakes, 1 mudstone flake, 1 chalcedony flake, 1 chalcedony broken flake, 1 chalcedony angular fragment. At 225778,6611540 Angular fragments: 3 chalcedony, 3 quartz. 6 chalc broken flakes, 8 chalcedony flake, 2 chalcedony flaked piece, 2 fgs flake, 3 fgs broken flake, 4 fgs flakes, 1 quartz flake, 1 silcrete flake, 1 fgs scraper At 225785,6611456 Volcanic broken hand axe
NV49	AS	Leard Forest Lower Slopes	Located on slight slope. Visibility good as contour bank runs through centre of site. 15 artefacts recorded (4x mudstone broken flakes, 3x chalcedony flakes, 2x mudstone flakes, 2x chert flakes, 1xFGS broken flakes, 1x mudstone core, 1x chalcedony core, 1x FGS flake)and 4 angular fragments (3 x chalcedony, 1 x chert). ephemeral drainage depression located approx. 10m. Located SW from edge of dam.
NV50	AS	Edge of Leard Forest. Lower Slopes	Located approx 50m south east of NV 49 adjacent to ephemeral drainage depression. Moderate slope. Site condition good to disturbed along lower edge. 7 artefacts (3x chalcedony flakes, 1x mudstone core, 1x volcanic flake, 1 x mudstone broken flake, 1 x FGS broken flake) 6 angular fragments (5 chalcedony, 1 mudstone)
NV51	IF	Haul Rd/ Rail Corridor Flood PLain	Visibility impeded by vegetation. 1x mudstone broken flake identified.
NV52	IF	Haul Rd/Rail Corridor Flood Plain/Wetland	1 artefact identified (chalcedony flake).
NV53	IF	Haul Rd/Rail Corridor Flood Plain/Wetland	1x chalcedony flake located in small eroded exposure
NV54	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	Located on contour bank. Site runs along exposure created by contour bank. Archaeological visibility hindered by vegetation and surface disturbance. 7 artefacts recorded (1x chalcedony broken flake, 1x mudstone core, 1x mudstone flake, 1x mudstone broken flake, 3x chalcedony flakes) 2 angular fragments of chalcedony also noted.
NV55	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	One isolated artefact located in a small exposure in a paddock. Loci 2 located in small exposure 3x1m 100% SV, 75%AV - 1x silcrete flake. Ephemeral drainage depression located approx. 25m
NV56	Quarry	Haul Rd/Rail Corridor Flood Plain/Wetland	Creek line, ephemeral located approx. 10m away. Potential quarry site. Some chalcedony nodules outcropping in bed rock
NV57	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	Site located on contour bank.5 artefacts (1x mudstone core, 1x silcrete core, 2x chalcedony flakes and 1x mudstone flake). Angular fragments of silcrete and mudstone also noted.
NV58	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	1 isolated mudstone flake located in small exposure along contour bank.
NV59	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	2 mudstone flakes located approx. 20m off contour bank
NV60	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	9 artefacts recorded (6x chalcedony flakes, 1x mudstone flake, 1x mudstone core). Disturbance from sedimentation. 1st order ephemeral stream located approx. 40m.
NV61	IF	Haul Rd/Rail Corridor Flood Plain/Wetland	Site comprises of an isolated volcanic flake.

Site Name	Site Type	Landform	Description
NV62	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	4 artefacts recorded (1x Volcanic, fine grained broken flake, 1x volcanic flake, fine grained, 1x mudstone flake and 1x mudstone core).
NV63	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	6 artefacts recorded (4x chalcedony flakes, 1x chalcedony broken flake, 1x mudstone broken flake).
NV64	IF	Haul Rd/Rail Corridor Lower slopes	Located in disturbed context - 1x chalcedony flake noted.
NV65	AS	Haul Rd/Rail Corridor Lower slopes	Exposure in cleared paddock. Numerous chalcedony fragments across paddock. 8 artefacts (2x mudstone flakes, 1x mudstone core, 1x chalcedony core, 1x volcanic core, 1x volcanic flake, 1x chalcedony flake and 1x chalcedony broken flake)
NV66	AS	Haul Rd/Rail Corridor Lower Slopes/Flood plain	3 artefacts (2x chalcedony cores, 1 x chalcedony flake) and several angular fragments noted. Site situated on slight slope, located in exposure north of Haul Rd.
NV67	AS	Haul Rd/Rail Corridor Lower Slopes/Flood plain	Artefact scatter located in exposure approx 25 x 2m. Numerous artefacts of chalcedony also noted. Site comprises of 5x flakes of chalcedony.
NV68	AS	Haul Rd/Rail Corridor Lower Slopes/Flood plain	Artefacts located on contour bank. 1x chalcedony core, 1x chalcedony flake. Numerous angular fragments on red and white chalcedony also noted.
NV69	IF	Haul Rd/Rail Corridor Lower Slopes/Flood plain	Isolated artefact located in small exposure.
NV70	IF	Haul Rd/Rail Corridor Lower Slopes/Flood plain	Isolated artefact located in small exposure.
NV71	IF	Haul Rd/Rail Corridor Cleared Flood Plain	Isolated artefact located in exposure adjacent to trackway on flood plain. 1x mudstone flake
NV72	IF	Haul Rd/Rail Corridor Cleared Flood Plain	Exposure along track way. 1x chalcedony flake located.
NV73	AS	Haul Rd/Rail Corridor Cleared Flood Plain	Two artefacts located in exposure adjacent to track way.1x chalcedony flake, 1x mudstone flake
NV74	IF	Haul Rd/Rail Corridor Cleared Flood Plain	One artefact located, mudstone flake, located in exposure.
NV75	IF	Haul Rd/Rail Corridor Cleared Flood Plain/Lower slopes	Artefact located in small exposure on a gentle slope. 1x mudstone flake
NV76	ST	Haul Rd/Rail Corridor Flood Plain	Modified tree, located on level flood plain in cleared heavily grassed grazing approx. 40m from the Namoi River. One scar identified: Length1570mm, Width at mid point 210mm, regrowth left 180mm, regrowth right 220mm. Scar commences 850mm from base of tree. Fire damage, rot and limb fall also noted.
NV11	IF	Leard Forest Ridge Line	Isolated artefact, 1 x chalcedony flake located on track way through forest.
NV12	IF	Leard Forest Ridge Line	Isolated chalcedony flake located in track way.
NV13	AS	Leard Forest Ridge Line	Artefact scatter (3 broken flakes in total) along approx 70m of track way. Loci 1 at 223482, 6610023 quartz broken flake. Loci 2 223477,6609967 1x silcrete broken flake, Loci 3 223476,6609949 1x chalcedony flake.
NV2	AS	Leard Forest Ridge Line	Two flakes of mudstone and chalcedony located in forest track way located approx. 20m apart.
NV3	AS	Leard Forest Ridge Line	Continues on to NV4 located approx 60m SE. Artefact scatter in track way approx 4.5m wide. Scatter located at intersection of two forest track ways. Site comprises of two Loci of artefacts several meters apart. 1x mudstone flake at 223650, 6609605 and 5x flakes of chalcedony at 223658, 6609601
NV14	IF	Leard Forest	Mudstone broken flake located in exposure in forest track way.

Site Name	Site Type	Landform	Description
		Ridge Line	
NV15	AS	Leard Forest Ridge Line	2x chalcedony flakes located approximately in a fairly steep forestry track.
NV16	IF	Leard Forest Ridge Line	Small mudstone flake located in exposure on gentle slope.
NV18	IF	Leard Forest Ridge Line	Site located approx. 5m south of forest trackway in cleared area on a gentle slope. One artefact, a mudstone flake, located in cleared area, and a small silcrete flake located in track offshoot nearby.
NV19	IF	Leard Forest ridge Line	Isolated artefact located in forest track way offshoot which terminates in a cleared area approx. 40x50m in size.
NV20	AS	Haul Rd/Rail Corridor Flood plain	Located in exposure in thick grass cover, west of property 'Daisymead'. 2x flakes of chalcedony and mudstone and 2x angular fragments of chalcedony noted.
NV21	AS	Haul Rd/Rail Corridor	Located adjacent to Haul Rd. Visibility poor due to thick grass cover. Artefacts located area approx. 100m. 8 Artefacts and 10 angular fragments identified. Angular fragments noted included 6x chalcedony, 1x quartz, 3x chert, 1x silcrete.
NV22	AS	Haul Rd/Rail Corridor Lower Slopes	Artefacts recorded over an approx. 270 x 90m area (217588 6607848 - 215317,6605940). Located near corner of property 'Daisymead'. 7 artefacts in total: 1x silcrete flake, 1x volcanic flake, 2x chalcedony flakes, 3x chalcedony broken flakes, 4x angular fragments of chalcedony, 2x angular fragments of quartz.
NV23	AS	Haul Rd/Rail corridor Lower Slopes	Located on lower forest slopes on the west side of the Haul Rd. 1x chalcedony scraper and 1x chalcedony broken flake. 4x mudstone angular fragments also noted.
NV24	AS	Haul Rd/Rail Corridor Flood Plain/Wetland	Located in a disturbed context on a contour bank. Closest water ephemeral depression located approx. 50m. Loci 1 225330, 6608190 3 x mudstone flake, 1 x chalcedony flake. Loci 2 225260,66082051 flake, 1 broken flake FGS Loci 3 225067, 6608198 1 chalcedony flake Loci 4224913, 6608182 1 chalcedony flake, 1 chalcedony angular fragment Loci 5 224900, 6608119 1 chalcedony flake, 1 mudstone core, 1 mudstone flake Loci 6 224897, 6608109 1 mudstone flake, 1 chalcedony flake
NV24	AS	Haul Rd/Rail corridor Lower Slopes - Flood Plain	Continuation of site in eroded exposures approx. 50m south of the Haul Rd Loci (224491,6608238) Chalcedony Broken flake, 2 mudstone Broken Flake Loci (224692,6608607) Mudstone Flake
NV24	AS	As above	Loci (224865, 6608124). 101 artefacts identified at this location and 39 angular fragments. Artefacts identified: 44x Flakes (16x chalcedony, 1x chert, 1x FGS, 21x mudstone, 1x silcrete, 1x volcanic). 38 Broken flakes (15x chalcedony, 2x chert, 21x mudstone), 4 cores (2x chalcedony, 2x mudstone), 11 broken cores (7x chalcedony, 4x mudstone) and 4 implements (1x mudstone scraper, 1x possible quartzite hammerstone, 1x sandstone manuport, 1x sandstone axe head). Broken hammerstone located at (224841,6608086). Angular fragments noted at the site: 33x Chalcedony, 2x Silcrete, 3x Mudstone, 1x Quartz 1.
NV77	IF		Site located in grassed area south of Haul Rd. 1x core and 1x broken core of chalcedony noted. Poor visibility between road and adjacent fence line due to grass cover. 1x angular fragment of chalcedony also recorded.
NV78	AS		Site located in exposure in grassed stony paddock. 8x artefacts identified. 4x flakes (3x mudstone, 1x chalcedony), 1x silcrete possible core, 1x basalt possible core, 3x broken cores (quartz, volcanic, chalcedony). Angular fragments noted: 7x chalcedony, 1x volcanic.
NV25	ST		Modified tree. 1 scar identified on a 'White Box'. 580mm x 120 mm x 90mm. Located 1100mm above ground level.

Site Name	Site Type	Landform	Description
NV26	ST		1x scar identified on a 'White Box'. 800x250x300mm located <100mm above ground level
NV27	ST		1x scar identified on a 'White Box' 780x100x100mm located on tree <100mm from ground level.
NV28	ST		1x scar identified on an iron bark. Tree has fallen over. 520x195x65mm. Scar located approx 2.3m above ground level.
NV29	ST		1x scar located on iron bark 1260x250x80mm approx 6.5m from ground level. Tree is lying on ground.
NV30	ST		1x scar located on a 'White Box'. 750x160x350mm. circumference of tree at breast height 2.03m. Scar located 350mm above ground level
NV31	ST		1x scar located on a 'White Box' 1600x140x250mm. Scar located 250mm above ground level. Circumference at breast height 2.32m
NV32	ST		1 scar located on an 'Ironbark' 650mm above ground level. 940x230x70mm. Lateral axe mark at top of scar
NV33	ST		1x scar located on White Box 450mm above ground level. 1650x210x120mm. Circumference of tree at breast height 2.13-1.75m.
NV34	ST		3x scars located on a river red gum. Tree located at a base of knoll on the flood plain. Circumference of tree at breast height 4.90m. Scar 1 1250x420x280mm at 150mm above ground level. Scar 2 1410x650x220 at 300mm above ground level. Scar 3 approx 8m from ground level - not measured.



LEGEND

Project boundary

Boggabri Sites Located

- Open Site
- Isolated find
- Scarred Tree
- Quarry
- Grinding Groove
- Possible stone cairn subject to further investigation if impacted

N
W
E
S

0 500 1000 1500 2000 2500 metres

ARCHAEOLOGICAL SITES BOGGABRI SITES LOCATED

Project:
Boggabri Coal Archaeological Sites

Client:
Insite Heritage Pty Ltd

File:
Fig1-3_IHP00-001_ArchSites_091222

Projection:
MGA94 Zone 56

Version:	Date:	Author:	Checked:	Approved:
1	19/11/09	LF	CJ	NA
2	25/11/09	LF	CJ	NA
3	22/12/09	LF	CJ	CJ

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4.0 Discussion & Interpretation

As listed in **Appendix E** and **Appendix F**, this survey located over 453 artefacts from 62 recorded sites (including both artefact scatters and isolated finds). Fourteen scarred trees that conform to the scarred tree criteria in were also located, and a possible stone cairn giving a total of 78 recorded locations. Note that the possible stone cairn has not been included in the final site numbers as it is not known to be Aboriginal in origin, and will be subject to further assessment if subject to impact. In addition, the previously recorded BC 34 and BC 54 have been reinterpreted and combined into one large site that now includes a set of two possible grinding grooves. The area of this large site has also been extended to the west with the additional recording of artefacts in a previously unrecorded area. The Aboriginal community interpretation of these sites can be seen in **Appendix G**.

The 62 artefact loci have been grouped into landscape units for lodgement with AHIMS with the exception of the scarred trees which have been recorded separately (refer **Appendix H**).

4.1 Spatial Patterning

The spatial patterning of the sites was interpreted using the ARAS sites from the 2005 survey and the 2007 salvage in addition to the Insite Heritage 2009 sites. Overlaying the sites showed a consistent pattern of site distribution. Figure 9 shows the sites recorded in 2009 and those sites recorded in 2005 and 2007 that remain extant. Figure 10 shows the distribution of sites recorded in 2009 and those sites that have been collected in 2007. In general, sites were located in and adjacent to the Leard State Forest, the lower drainage area and Ban Baa Range lower scree slopes. Fewer sites were found on the Namoi River plain.

The clustering pattern of sites within the Leard State Forest is consistent between the two assessments. Many more artefacts have been recorded on the western side of BC 54 indicating a continuum of artefacts across the slopes. The area of BC 54 extends west and it is considered that site BC 34 & 54 are one site complex. The sites are unusual with the high number of artefacts recorded. This is not because there are more artefacts here than other places in the forest but reflects the extensive vegetation clearing that has resulted in the loss of the A1 and part A2 soil horizons. A gravelly lag deposit now sits on the surface and it is in this layer that the artefacts have accumulated by means of bioturbation.

The implication of this find is that there is potential for subsurface material where duplex soils (Hughes 2009), or harsh texture contrast soils (Mitchell in ARAS 2007), remain relatively undisturbed. The lower slopes of the Leard State Forest are located on such soils and as a result there is a high potential for buried sites throughout this landscape.

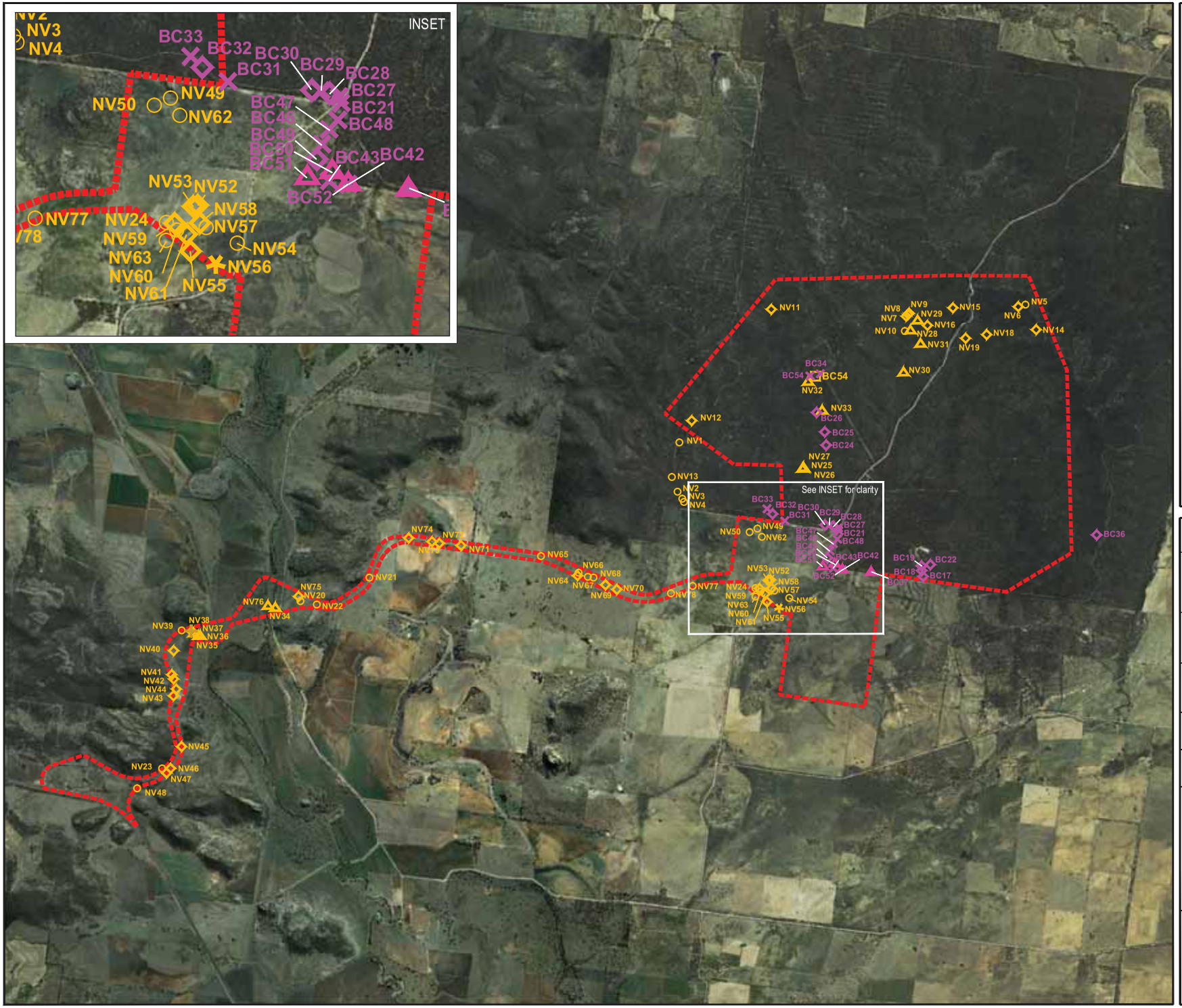
4.1.1 NAMOI RIVER PLAIN

The Namoi River plain in the study area has been affected by agricultural land use (<200 years ago). The archaeological record of this area has been dominated by scarred trees, and this survey found few sites other than these trees. This result is

to be expected when the geomorphology of the area is considered. Mitchell (2007) described the high shrink – swell clays as subject to erosion and deposition events which may have scoured sites while the shrink – swell cracking of the soil would allow vertical movement of artefacts. Thus the potential for stone artefact site location in this landscape unit is low.

Plate 5 The western side of the Namoi River floodplain.

Plate 6 The high shrink-swell clays of the Namoi River floodplain – note the cracking of the surface soil.



ARCHAEOLOGICAL SITES BOGGABRI SITES LOCATED & HAMM SITES CURRENT

Project:
Boggabri Coal Archaeological Sites

Client:
Insite Heritage Pty Ltd

File:
Fig1-3_IHP00-001_ArchSites_091222

Projection:
MGA94 Zone 56

Version:	Date:	Author:	Checked:	Approved:
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2	22/12/09	LF	CJ	CJ

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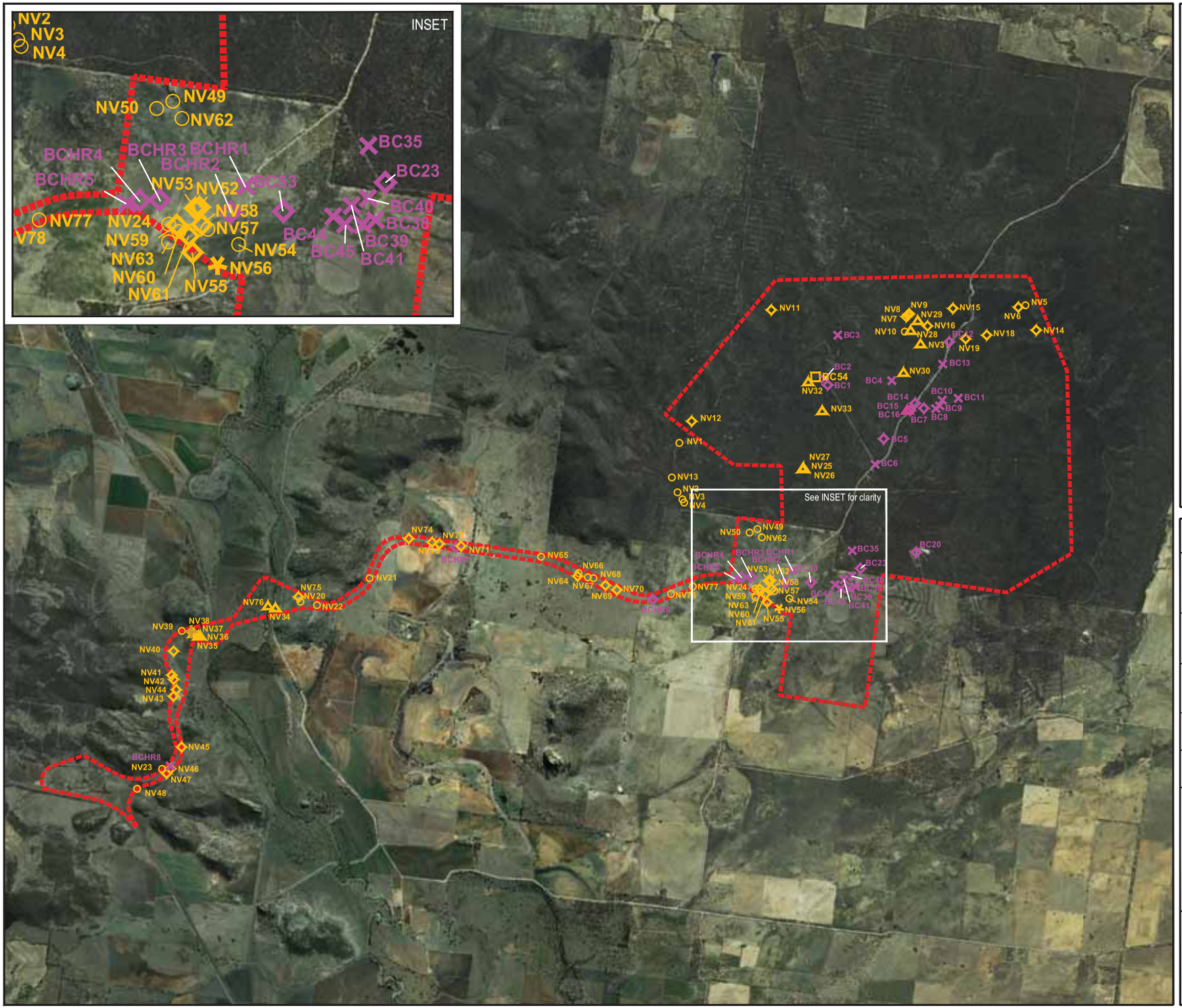

LEGEND

Project boundary

Boggabri Sites Located

- Open Site
- Isolated find
- Scarred Tree
- Quarry
- Grinding Groove
- Possible stone cairn subject to further investigation if impacted

Hamm Sites Salvaged

- Isolated Find
- Scarred Tree
- Artefact Scatter

N W E S

0 500 1000 1500 2000 2500 metres

ARCHAEOLOGICAL SITES BOGGABRI SITES LOCATED & HAMM SITES SALVAGED

Project:
Boggabri Coal Archaeological Sites

Client:
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File:
Fig1-3_IHP00-001_ArchSites_091222

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4.1.2 BAAN BAA RANGES

The Baan Baa ranges located on the western end of the haul / rail route. The area west of the Kamilaroi Highway comprises scree slopes of a spur of the Baan Baa ranges and the colluvial apron identified by Mitchell. These areas have the potential for buried land surfaces which may preserve older Aboriginal sites. The majority of this area has been disturbed by agriculture, particularly ploughing which will have mixed the colluvium and underlying alluvium. Artefacts were found in this area in a pattern consistent with the 2007 salvage work (Figure 10).

When ARAS placed grader scrapes in this area and 151 artefacts from 26 locations were retrieved. The results indicated the potential of the land units near drainage lines in the toe slopes of the Baan Baa ranges including the property called “The Rock” (ARAS 2007).

This general pattern of site distribution was repeated in the 2009 field survey with numerous isolated finds and small artefact scatters located around the toe slopes of the Baan Baa Range. The depth of soil in the open paddock part of the survey unit appeared somewhat shallow and had been subject to frequent ploughing – the subsurface gravel layer had been turned over and now the area has a stony surface that appears to have been subject to some surface sheet erosion.

Plate 7 The stony lower slopes of the Baan Baa Ranges.

4.1.3 LOWER SLOPE DRAINAGE AREA

The lower slope drainage area contained numerous sites located in the 2005 survey. The 2007 salvage comprised a hand excavation of BC 41 and grader scrapes. BC 41 had contained three surface artefacts on an elevated terrace above the main drainage line near the Leard State Forest. Indeed, before European occupation of the area this area would probably have been within the Forest.

The soils here were duplex soils and the artefacts found within the gravel layer that forms between the A and B soil horizons. In this area 30 artefacts were retrieved from 8 square metres of excavation, an average of 3.75 artefacts per square metre. The artefacts were found to be clustered in three specific areas. ARAS considered the impact of bioturbation and flooding had relocated archaeological material subsequent to discard.

Further sites have been recorded in this landform unit. NV 24 is the most extensive of these sites however given the close proximity of all the recorded sites in this area it is likely that the area contains a continuum of artefacts. A large portion of this area has been impacted by agricultural activity however there is potential for areas of subsurface deposits to remain in less disturbed locations.

4.1.4 LEARD STATE FOREST

Of the three sites located by the field survey in 2005 considered the most significant, two were located in the Leard State Forest. BC 34 and BC 35 were the only sites that contained a small sample of backed artefacts and statistically valid samples of artefacts (see Section 2.3.4).

Within the Leard State Forest the excavation of BC 35 (two artefacts on a forestry track) found 179 artefacts with 18.6 m² of excavation, an average of 9.6 per square metre. The majority of the artefacts were found in two lenses of 2 m square and 3 m square. The artefacts were found in the stone layer between the A and B soil horizons at depths of 5 – 25 cm.

This excavation demonstrated the point raised by Dr Mitchell in his geomorphic assessment (Mitchell in ARAS 2007) – the texture contrast or duplex soils that comprise colluvium (A horizon) over the weathering in-situ alluvium (B horizon) creates an environment where artefacts will move down through the soil profile by mechanisms such as bioturbation and settle in the gravel layer on top of the B horizon. While the age of the artefacts is unlikely to be established by means of stratigraphy or dateable carbon or sand particles, the area can provide a vertical distribution pattern in a landscape context. This soil landscape occurs on the slopes and lower plain of the Leard State Forest where forestry practices have not impacted on soil integrity. The geomorphic excavations and test excavations found that the soil profile remains relatively intact within the Forest area.

In this survey, site NV10 was located on a flat adjacent to a creek. The area had reasonable surface visibility and yet few artefacts had been located. NV 10 was found in a small area that had been lightly disturbed by feral pigs. Four artefacts

were found in this small exposure of 1 m x 1.5 m. This site again demonstrates the potential for sub surface artefacts in the forest where soil profiles remain intact.

Another relatively extensive site complex found are sites NV 2, 3, 4 and 13. These sites are located where the study area extended beyond the Project Boundary on a track that provided good visibility and was inspected as a matter of due diligence. The sites were exposed on the track and adjacent drains and indicate the potential for further subsurface deposits in this area.

In general the visibility within the forest area was very low with the forest floor covered in leaf drop. Opportunities to locate artefacts were confined to unformed tracks on slopes that had been subject to slope-wash thus exposing the A2 soil horizon.

BC 34 and 54 are located in an area that was subject to total clearing in preparation for bulk sampling of coal in 1992 (Plate 8). As a result of the clearing the A soil horizon has eroded leaving the artefacts as lag deposit in a background of gravels. This explains the high numbers of artefacts recorded in this area. It also provides difficultly in determining the extent of the sites – it is probable that the sites extend beyond the area of clearing hence their area of surface expression. The ground exposure can be seen in Plates 9 and 10. This survey located many artefacts on the low spur immediately west of BC 54. The sites BC 34 and BC 54 and the newly recorded artefacts combine to create a large site that extends about 500 m east to west and 300 m north to south. The site bridges two incised creek lines which are now dry.

The following issues arise from the survey:

Why the paucity of sites found in the eastern side of the forest? Is this a factor of visibility or actual distribution?

There is a distinct density of sites in the lower slope drainage area at the edge of the Leard State Forest – is this due to factors increasing visibility in this area or again – actual distribution?.

Plate 8 Photograph of the area of BC 34 & BC 54 shortly after disturbance in 1992 (courtesy of J. Rennick and J Rogis Boggabri Coal).

Plate 9 The surface visibility at BC 34 2009

Plate 10 View from the western side of the cleared area in Plate 1 across BC 54 to the north east.

4.2 Lithic items

Major raw materials are described in the following types (Insite Heritage 2008).

Mudstone is a sedimentary material that may become indurated through pressure or heat or a combination of both. When indurated it becomes more brittle and easily flaked.

Tuff is a fine grained stone formed after a cloud of ash ejected by volcanic event descends to form a thin layer over the ground surface. After burial some tuff beds become indurated through a metamorphic process in which the stone hardens and recrystallises to a less friable structure. Tuff is generally grey in colour however it is porous enough to absorb various minerals, particularly iron, to give a yellow, red or orange colour. Volcanic tuffs are widespread across the Hunter Valley and along the coast near Newcastle.

Silcrete is a brittle, intensely indurate rock composed mainly of quartz clasts cemented by a matrix which may be well crystallised quartz, crypto-crystalline or amorphous (opaline) silica (Langford-Smith, 1978:3). The texture of silcrete reflects that of the host rock (eg sandstone) and clasts may range in size from very fine grains to boulders. Silcrete is normally grey in colour but can be whitish/cream, red, brown, black or yellow. It shatters very readily into sharp, angular pieces with a conchoidal fracture and newly broken rocks have a semi-vitreous sheen (*ibid*: 4). It is an attractive material to the local Aboriginal people because of its flaking properties and availability. Flakes have sharp, reasonably durable edges and implements made from the stone were used for a variety of tasks, including wood-working and spear barbs. Studies have identified a number of sources of silcrete in the Hunter Valley including Saltwater Creek (Koettig & Hughes, 1985), Lemington (Brayshaw *et al*, 1996), Jerrys Plains, Bengalla (Kuskie, 2002) and Singleton.

Basic artefact classifications included flakes (incorporating broken flakes, blades, backed blades and scrapers as sub-classes), cores, angular fragments (frequently recorded as flaked pieces), hammer-stones, axes (pre-forms), anvils, grindstones and manuports.

A total of 453 artefacts were recorded. Approximately 30 of these may have been previously recorded as part of site BC54 and an additional 109 recorded to the west of BC 54. These 112 artefacts have been recorded as part of the BC 34 and BC 54 site complex and included in the general artefact analysis. A complete re-recording of BC 34 and BC 54 was not undertaken.

The assemblage of 453 artefacts contained 120 broken flakes and 250 complete flakes. The rate of breakage at about one third of the flake assemblage can be explained by possible breakage during core reduction, and the impact of post deposition activities such as livestock, vehicular traffic, clearing or ploughing.

Only two flakes were classified as being backed and/or retouched and another four were classed as scrapers (with steep retouch along one margin). 18 artefacts were

recorded as being 'utilised', that is they had edge damage or apparent use-wear along a margin. While this is a relatively low number out of a total exceeding 400 artefacts, such attributes cannot always be easily detected in the field. However, it does show that artefacts were utilised within these sites indicating that more than simple knapping went on in the study area.

Cores were relatively numerous (42 or nearly 10%) and knapping floors were identified via the presence of small flakes and fragments of the same material within a given area.

The analysis of the artefact assemblage as a whole can be seen below in Tables 5 and 6 and Figures 12 and 13.

Table 5 Percentage of Raw Material Types 2009

Raw Material	Count	%
Chalcedony	194	43.3
Chert	10	2.2
FGS	44	9.7
Mudstone	120	26.5
Quartz	28	6.0
Quartzite	1	0.2
Sandstone	4	0.9
Silcrete	28	6.2
Volcanic	23	5.1
Totals	452	100

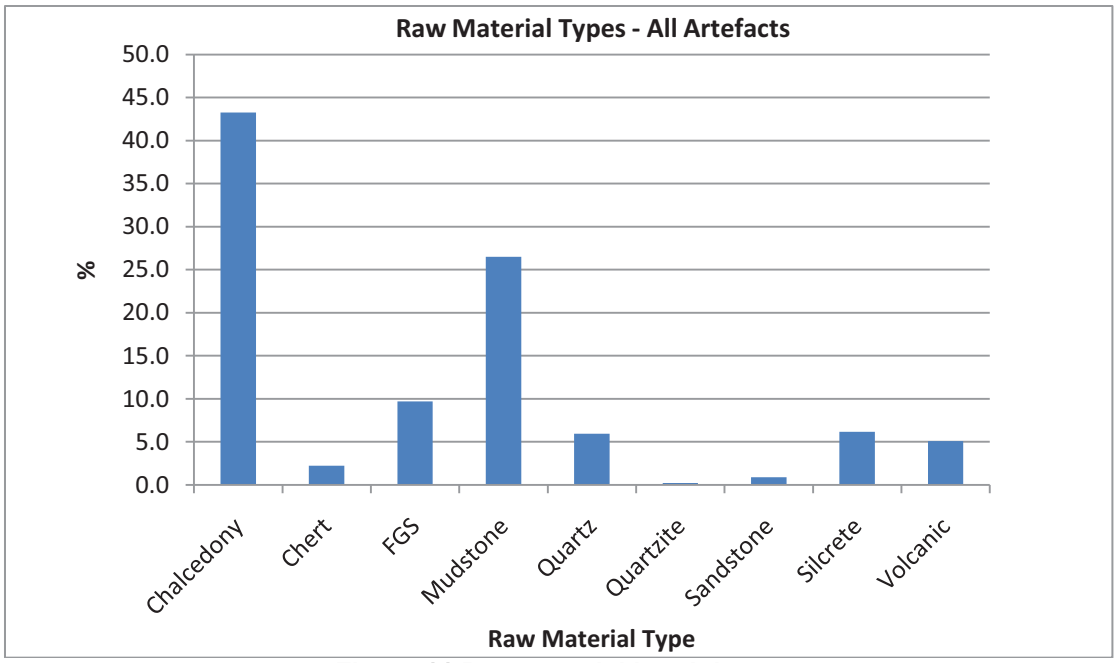

Figure 11 Raw material breakdown

Table 6 Breakdown of artefact types

Artefact Type	Count	%
Axe	1	0.2
Blade	4	0.9
Broken Axe	2	0.4
Broken Core	14	3.1
Broken Flake	119	26.3
Core	42	9.3
Flake	251	55.5
Flaked Piece	11	2.4
Hammerstone	1	0.2
Manuport	2	0.4
Grinding Stone	1	0.2
Scraper	4	0.9
Totals	452	100

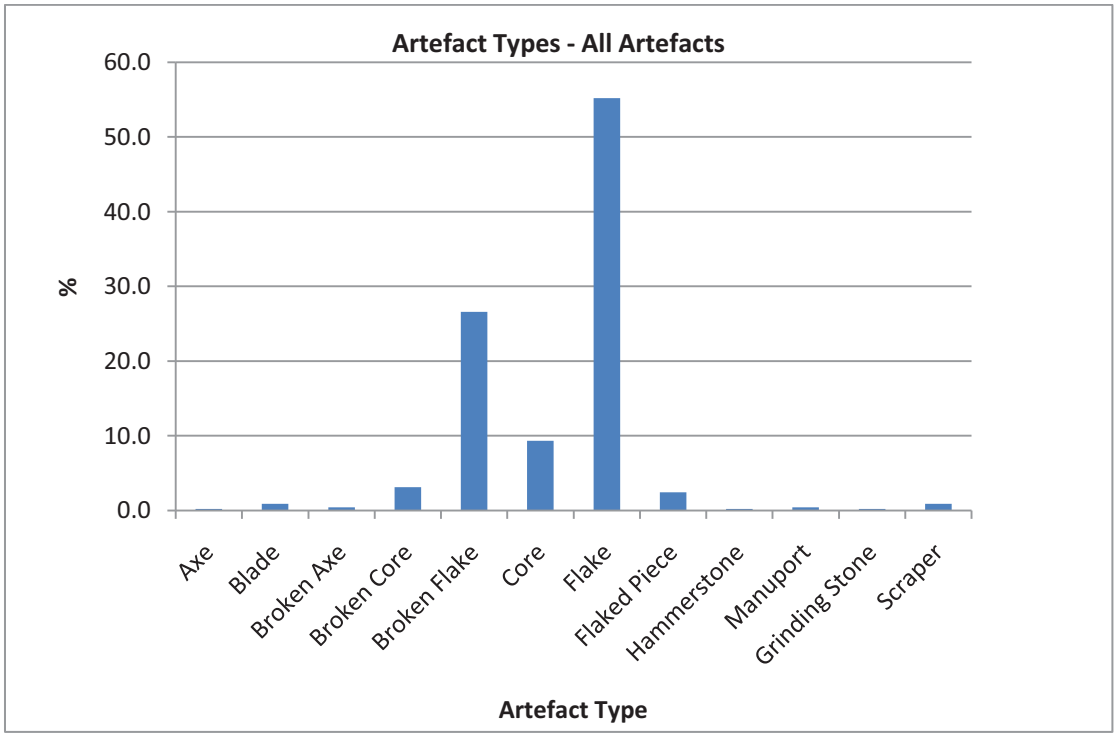

Figure 12 Artefact types across all survey units

4.3 Grinding Grooves

One potential set of two grinding grooves was located on the exposed area of a scree slope boulder of indeterminate total size. The site is located on the side slope of the minor spur on which BC 54 is located and immediately opposite BC34. The grooves have been recorded as an addition to BC 54.

Plate 11 Sandstone exposure with grinding grooves

4.4 Scarred Trees

Numerous scarred trees were recorded during the survey. The scars generally occur on box trees which is typical for the area. Two scars were recorded on ironbark trees – a tree not usually associated with scars in this area (P.Beale pers com). The scars on the ironbark trees had steel axe cut marks on the outer bark above the scars.

Plate 12 Scarred Tree NV 29

4.5 Study Area Interpretation

While this survey recorded 62 artefact loci, it may be more beneficial to consider a lower number of sites that may be continuous through topographic (survey) units. Koettig has suggested that sites located in areas of reduced visibility, as we have here, are merely 'windows' that provided a glimpse of the broader picture of what lies beneath the grass cover, leaf litter or surface soils (Koettig 1990:14).

The pattern of sites – or opportunities to locate artefacts which did indeed contain artefacts – should be viewed collectively to give a justifiable pattern of artefact distribution upon which detailed interpretation can be based.

Exposures change over time, and artefacts are exposed, moved and reburied at varying rates in different micro environmental settings. Landuse practices also influence the rate of change as does the underlying geology. Using the previous assessment and the results of the current assessment conclusions regarding site preservation can be considered.

The broad scale distribution sites are consistent with the geomorphology model of site preservation potential. Areas that appear to have greater potential for site preservation are elevated landform units above the active floodplain.

The areas described below are known to contain open sites.

The Leard State Forest – particularly the lower slopes and gully floor. The relatively undisturbed soil profiles in the forest are potentially artefact bearing. The vertical potential was demonstrated by excavation at BC 35 (see section 2.3.4). The horizontal potential for artefact distribution within sites is demonstrated at sites BC 34, BC 54 and the re-growth area to the west. The two sites have been incorporated into one site complex. BC 34-54 clearly show the role exposure plays in site location.

The Baan Baa Hills – particularly the base and slopes of the low hills – Where the transects intersected toe slopes, generally above 250 metres elevation, artefacts were recorded. The locations of surface recordings in this survey generally mimic the results of the 2007 grader scrapes of the haul road.

The potential for assemblage preservation is variable, dependant upon the depth of the soils and previous land-uses. The transects at the base of the toe slopes had been ploughed and disrupted the soil profile. Thus the surface in this area is littered with gravels and isolated larger artefacts.

Subsurface artefacts are likely to be preserved with varying degrees of archaeological context. The general area referred to as 'The Rock 'in previous assessments again was noted to contain artefacts and areas potential buried sites.

Namoi River Plain – scarred trees are the main site type in this environment. Artefact assemblages are not likely to have been preserved on the Namoi River plain. Sites are also difficult to locate in this area due to the high shrink – swell clay soils that would allow vertical movement of artefacts in addition to the deposition of silt over sites throughout the Rivers flood history. No stone artefact sites were found in this landform unit.

Potential Archaeological Deposits (PAD) - The potential for subsurface artefacts in the Leard State Forest is considered high and it is quite possible that sites as expansive as BC 34 and 54 could be located on the lower and upper slopes around the forest. These sites provide evidence of the potential for sub surface sites within the grey – brown gradational loam of the low and mid slopes in the Leard State Forest. The exposure of NV 10 by pigs further demonstrates the potential for sub surface material in this soil environment.

The ARAS excavation at BC 35 demonstrated the potential for sub surface artefacts on the lower slopes of the forest and the numerous sites recorded in the duplex soils at the southern end of the forest.

4.6 Comparison of Survey Data with ARAS 2005 & 2007

The general assemblage of artefacts within sites is comparable with the ARAS assessment with a very low percentage of formal implement types and backed artefacts.

The 2007 salvage found the following proportions of artefact categories. ARAS data uses the angular fragment category whilst Insite Heritage records these features but does not include this category in artefact analysis – there are plentiful fragments of chalcedony and quartz in particular eroding from the background geology and these AF's are not considered to be artefacts.

Insite found that flakes formed the highest proportion of the artefact assemblage overall at 55%. ARAS found that flaked pieces formed the highest proportion of their assemblage at 74 – 86% of the assemblage across different landforms. Complete flakes formed 10 to 13 % of the assemblage. Insite found flaked pieces formed 2.4% and broken flakes 26.5%. Insite include all flaked pieces with proximal, distal or medial flake features as broken flakes. ARAS has included all mid section broken flakes as flaked pieces thus the discrepancy. The percentage of backed artefacts between the two studies was consistent at 2% or less. Cores made up less than 4% of the ARAS assemblage but combining cores and broken cores made up 12.4% of the Insite assemblage.

In addition, the identification of raw material by ARAS was based on volcanic tuff, quartz, chalcedony, silcrete, quartzite and other. In 1996 Kuskie had thin sections of what was commonly called mudstone analysed and the material was determined to be tuff – however this was from a location near Newcastle and may be of little relevance to the Boggabri area. Insite has referred to the stone as mudstone or FGS

and for the purposes of comparison only this category is considered the same as ARAS tuff.

ARAS found that across the various landform unit rhyolitic tuff accounted for 50 to 82% of the assemblages. The 2009 survey found that mudstone and FGS combined accounted for 36.2% of the assemblage with chalcedony accounting for 43.3%. ARAS found that chalcedony represented on average 15% of their assemblages. It is probable that the confusion lies in the field identification of material. The geomorphology assessment in the 2007 ARAS report, identifies chalcedony and rhyolite as glassy volcanic stone and discusses how the rhyolite can weather very quickly, changing its outer appearance. It is also noted that rhyolite naturally fractures into flake like blocks that can make identification of genuine flakes difficult (Mitchell in ARAS 2007 p23). If these categories are being recorded as rhyolitic tuff this could account for the discrepancies between recordings. Appleton (2005) located artefacts on the eastern side of Boggabri Coal in materials described as chalcedony, volcanic, mudstone, malachite, porcellanite, and chert. Again it is probable that many of these would have been called tuff by other recorders.

Prior to salvage work in this area a framework for the decisive identification of raw materials in the field should be established. Also clarification of the application of the flaked piece category and angular fragment category should be stated.

5.0 Legislation

5.1 Commonwealth

The National Parks and Wildlife Conservation Act 1975

The *National Parks and Wildlife Conservation Act 1975* (Cwlth) sets up structure for the protection of Aboriginal cultural heritage. The *World Heritage Properties Conservation Act 1983* (Cwlth) enables Aboriginal places to form the basis of designation of the World Heritage Area, for example Willandra Lakes. The *Environment Protection (Impact of Proposals) Act 1974* required Aboriginal cultural heritage be considered in the assessment of impacts of Commonwealth activities.

No such places occur within the project boundary or the near vicinity.

The Aboriginal and Torres Strait Islander Heritage Protection Act 1984

This Act allows Aboriginal people to apply to the Commonwealth Minister for the Environment to make a protective declaration where a site or area of "particular significance to Aboriginal in accordance with Aboriginal tradition" from desecration. The Minister is required to consider whether the site is afforded adequate protection prior to making the declaration. The declaration can be of any length of time and are subject to public submissions. Declarations are put before both Houses of Parliament and can be disallowed. Section 13(3) allows the Minister to nominate a mediator to resolve matters to which the declaration application relates (Farrier et al p 328-329).

No applications within the project boundary or the near vicinity have been made.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's key piece of environmental legislation which commenced 16 July 2000.

The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance. The Australian Government Department of the Environment, Water, Heritage and the Arts (the Department) administers the EPBC Act. The objectives of the EPBC Act are to provide for the protection of the environment, on matters of National environmental significance, conserve Australian biodiversity, provide a streamlined national environmental assessment and approvals process, enhance the protection and management of important natural and cultural places. The Act also controls the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife. The Act aims to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.

No places are known to occur within or in the near vicinity of the project boundary.

5.2 State

The Environmental Planning and Assessment Act (1979)

This Project is being assessed by the Department of Planning under Part 3(A) of the EP&A Act. This Act overrides other State legislation as the Project is considered State significant. The guidelines on the preparation of planning instruments specifically state that Aboriginal heritage should be assessed as an integral part of these studies.

The National Parks And Wildlife Act 1974

Pursuant to the Section 75U of the EP&A Act a permit under Section 87 or an AHIP under Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act) is not required. However, it forms the basis on which Department of Environment, Climate Change & Water (DECCW) provides its recommendations to the Department of Planning upon their review of the Project. The NPW Act (section 90) provides statutory protection for all material evidence of Aboriginal occupation of NSW. Aboriginal places, which are areas of cultural significance to the Aboriginal community, are also protected by Section 84 of the NPW Act.

The Act states:
"The Minister may declare lands to be 'protected archaeological areas' to preserve Aboriginal places and relics; and
It is an offence to disturb or destroy an Aboriginal place or relic without first obtaining written consent from the Director of National Parks and Wildlife Service NSW."

A relic is defined as: "*any deposit, object or material evidence (not being a handicraft made for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains*" (NPW A s.5(1)).

The Brigalow and Nandewar Community Conservation Area Act 2005

The above Act provides for a Community Conservation Agreement (BNC Agreement) that in turn provides the framework for the management of all the land in the Community Conservation Area (BNC Conservation Area) of the Brigalow and Nandewar area. The BNC Act was entered into by the Minister for Climate Change and the Environment, the Minister for Primary Industries and the Community Conservation Council who manage the agreement through DECCW.

The agreement applies to crown land that has been divided into four zones:

- Zone 1 – national park managed under the *National Parks and Wildlife Act 1974.*
- Zone 2 – Reserved Aboriginal Area under the NPW Act.
- Zone 3 – State conservation area under the NPW Act for the purposes of conservation, recreation and exploration, mining and petroleum production.
- Zone 4 – dedicated as state forest under the *Forestry Act 1916* for the purposes of forestry, recreation and mineral extraction.

The purpose of the BNC Agreement is to provide framework for land management that is developed in consultation with the community. The Community Conservation Council (BNC Council) is made up of the Directors General of the Department of Premier and Cabinet, The Department of Environment Climate Change and Water, and Industry and Investment New South Wales (I&I NSW). The Agreement is subject to review every 7 years. Advice is provided to the BNC Council by the Ministers administering the *National Parks and Wildlife Act 1974* and *Forestry Act 1916*.

One of the key drivers behind the development of the BNC Conservation Area is the recognition of connection to the country of Aboriginal people. Aboriginal people are recognised as major stakeholders because of their spiritual and cultural connection to the land. The Aboriginal communities' cultural association with the land may include cultural practices, knowledge, songs and stories. The Agreement acknowledges Aboriginal peoples cultural and custodial relationship with the landscape.

Zone 1 and Zone 2 areas have been set aside to preserve the Aboriginal cultural heritage values of the Brigalow and Nandewar areas. These areas are managed to preserve the Aboriginal cultural values inherit in these landscapes as an offset to those activities that may impact these values in Zone 3 and Zone 4 areas. Areas managed to conserve Aboriginal heritage can be seen in Figure 12. Areas to the north and to the south of The Leard State Forest are conserved under this agreement (refer Figure 14 below).

The Leard State Forest and therefore the majority of the Project area is located in Zone 4.

The strategic aims of the BNC Conservation Area relevant to cultural heritage are:

- Management of land for social, economic and environmental sustainability, based on the principle of inter-generational equity.
- Maintain and seek to improve the natural and cultural values of the land.
- Promote public understanding of the natural and cultural values of the BNC Conservation Area.
- Promote appropriate access to land and invite ongoing involvement of Aboriginal communities in land and resource management.
- Provide for appropriate research and monitoring.

Strategic aims specific to Zone 4 lands include the encouragement of utilising timber resources, conserve and promote growth of timber to the advantage of the State and provide for exploration, mining and extractive industries. All activities are to be conducted according to the relevant State legislation.

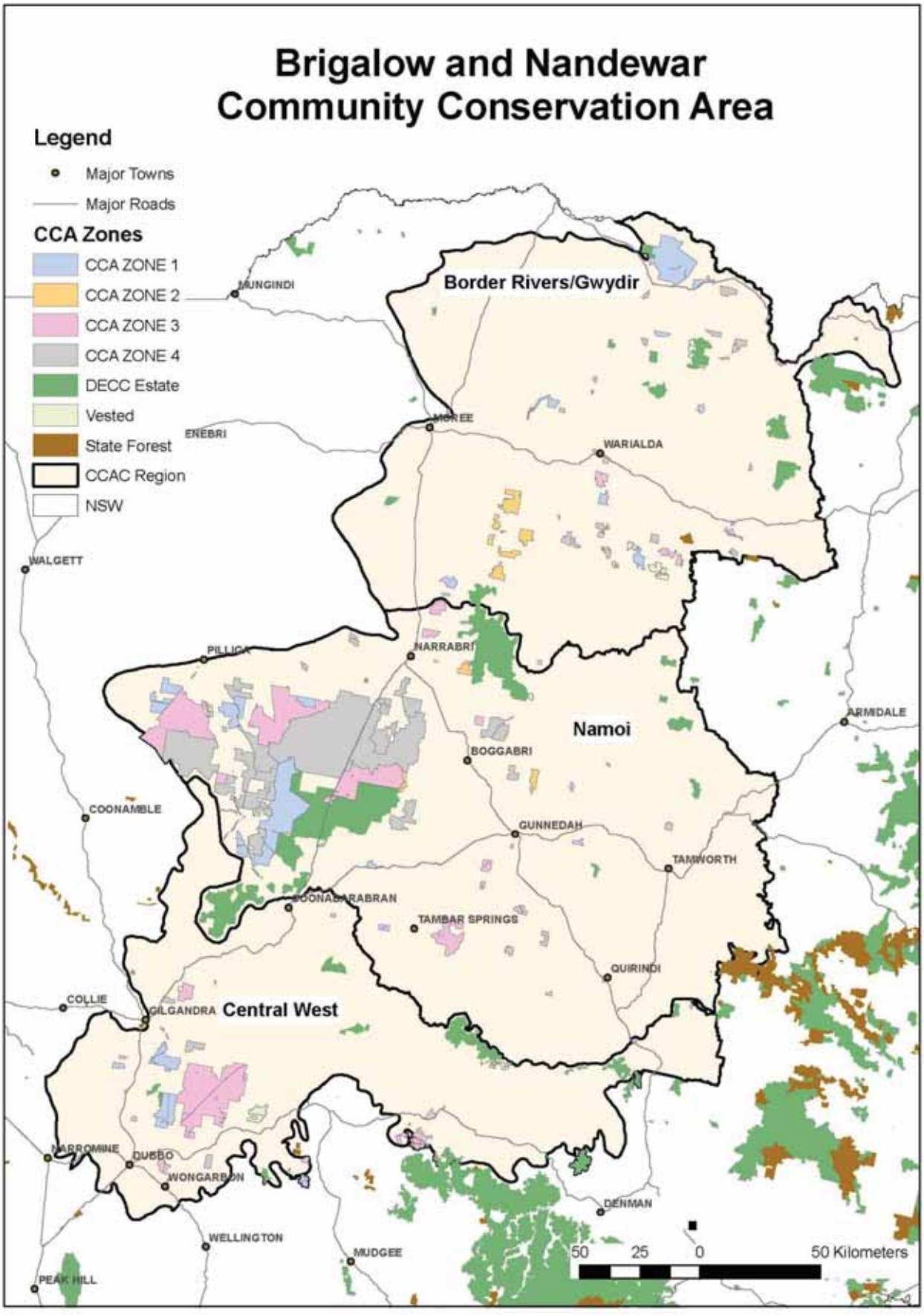

Figure 13 The location of Zones 1,2,3 and 4 and DECCW Estates under the BNC Act.

6.0 Significance of Identified Sites

6.1 Significance Criteria

The basic processes of assessing significance for items of heritage are outlined by *The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter* (amended 1999) and its associated *Guidelines*. The significance assessment is made to ascertain a relative value of heritage sites, as a preliminary to management recommendations.

Sites may be significant according to several criteria, including scientific or archaeological significance, significance to Aboriginal people or cultural significance, aesthetic value (generally applied to art sites), and value as an educational resource or public significance. The degree to which a site is representative of archaeological and/or cultural type, are also factors that are considered in the development of management recommendations.

Scientific Significance

Site significance is rated low, medium and high. In order to determine scientific significance it is necessary to first place sites within a local and regional context. This process enables the assessment of any individual site in terms of merit against other sites of similar nature within similar contexts. The scientific significance of sites, or an identified landscape, is judged in consideration of what knowledge the site can contribute that no other resource can. Is this knowledge relevant to general questions about human history.

Public Significance

The sites are assessed in terms of their educational value, to enhance community knowledge and appreciation of cultural heritage. Public significance is also referred to as educational significance or potential.

Cultural Significance

Generally, all sites are of significance to the Aboriginal people. It has been recognised however that with the widespread nature of site distribution, sites will eventually be impacted upon by development. It is however important to conserve where possible sites that are of high significance to the community. The cultural significance of sites or landscapes is determined by the Aboriginal community.

Representative Significance

The significance of individual sites is determined by factors such as representativeness, rarity, and the sites potential to add scientific data to what is known about past human occupation of the Australian continent. Conservation outcomes are determined by comparison of a site's qualities with known sites in the region that have been protected or diminished by cumulative impacts. Where conservation is not an option, mitigation measures should include a record of the sites characteristics and values and comparative data for future generations.

6.2 Significance Assessment

The following significance assessment (refer Table 7) is based on the guidelines listed in Section 6.1. Stakeholder assessment of cultural significance is documented individually in **Appendix G**.

Very high significance – indicates that the site has the potential to provide unique information on a State or National level that will elucidate the history of indigenous occupation of Australia.

High significance – means that the site has the potential to provide unique information, in a local context, that is not known to exist extensively in the local landscape. The integrity of the site is considered high in comparison with the local known archaeological resource.

Moderate significance – is where sites have the potential to reveal further archaeological information however the integrity of the site may have been compromised by post deposition disturbance such as flood regimes, ploughing or erosion.

Low significance – is where sites have been compromised by post depositional forces to the extent that surface recording will gather all the data the site has to offer the archaeological and cultural record. These sites will be known to be repeated throughout the local landscape and are likely to be conserved with greater integrity elsewhere.

In the case of scarred (not carved) trees and grinding grooves, scientific significance is low as the information regarding the site can be recorded and little further work can be carried out to gain further information. They are of high public significance as they are an obvious visual connection to past land use. They are of moderate representative significance as while they are reasonably common now, they are a diminishing resource that will become increasingly rare over the years.

Significance Discussion

Three particular landform units have been assessed as containing sites that have moderate to high significance in terms of actual and potential artefact yields, the Leard State Forest, the lower slopes drainage area and Baan Baa Ranges. These areas present the potential for artefacts to be found in relatively intact horizontal contexts. The scientific significance arises from the potential to salvage information from the sites for interpretation in a horizontal and broader landscape context.

Scarred trees are of high cultural significance however, they are of low scientific significance as all available information can be recorded as the tree stands, and the information is relevant to the last few hundred years of occupation. Scarred trees become of greater significance due to rarity as individuals die and fewer examples remain.

The grinding grooves are of cultural significance and low scientific significance as they are relatively minor examples of their type. Complex examples of grinding grooves are known elsewhere in the region.
Representative significance is another factor for consideration and is determined by the rarity of sites and how representative of a type, the sites are. Several sites of the same type (ie stone artefact scatters) have been recorded within the Leard State Forest outside of the Project boundary (see Figure 3 AHIMS search results), however there are other mines operating in the Leard State Forest as allowed by the BNC Act. These sites are therefore, likely to be subject to attrition. Land within Zones, 1 and 2 of the BNC Act are likely to contain similar sites as they are examples of the same landscape type. The detailed recording of sites within zone 4 areas will provide additional information for the interpretation of sites within the conservation offset areas (Zones 1 & 2).

6.3 Statement of Significance

Archaeological sites are of cultural importance to the Aboriginal community as they provided a tangible link to the past. The Aboriginal stakeholders have not indicated historically recorded links with the study area, however the sites within the Project Boundary do have cultural value, the degree of which is determined by the Aboriginal community. The Stakeholders have participated in the fieldwork and reviewed the draft report. The Stakeholder comments and perspectives on the cultural significance of the area within the Project Boundary are reproduced in **Appendix G.** In general, the Stakeholders found the report represented the assessment process adequately. Several Stakeholders raised the importance of the cultural ties to the area, and stated that the destruction of sites was not generally supported.

The following significance assessment addresses the scientific, public and representative significance of the sites within the Project Boundary.

The Aboriginal sites found in the Leard State Forest are of high scientific significance at a local level. The sites are relatively rare in the regional context, due to the limited examples of this landscape type, and due to the limited archaeological assessment that has been undertaken in the region. The sites within the forest are well preserved as they are located above the active floodplain and have not been adversely impacted by forestry practices.

The sites within the Leard State Forest are of moderate public and representative significance at a local level. The artefact scatters and sub surface deposits are likely to be represented in other examples of this landscape in the region, which are managed as conservation areas under the BNC Act. The sites are of moderate public significance as artefact scatters and subsurface deposits are not easily used as an educational tool while they are in-situ.

The sites within the lower drainage area are of moderate significance in a local context. These sites were probably located in the margins of the Leard State Forest prior to use for agricultural purposes. The impact of agriculture which includes the construction of contour banks, ploughing and grazing has reduced the scientific

significance of these sites as they have low potential for intact subsurface deposits. The sites are of moderate public and representative significance for the reasons cited above and they are better preserved with greater integrity within the Leard State Forest.

The sites on the floodplain along the haul road route are of low significance in a local context as these sites are likely to occur throughout the region in this landscape context. These sites have been impacted to a greater extent by agricultural practice particularly ploughing and the disturbance of duplex soil profiles. These sites have low potential for sub surface deposits.

The sites within the Baan Baa Ranges are of moderate scientific significance as whilst they are likely to be replicated elsewhere in the region there has been few assessments to identify those areas. The sites in the area of 'The Rock' at the western end of the haul road route are in relatively undisturbed contexts. The remaining sites do not have potential for sub-surface deposits due to the impact of agriculture.

Table 7 Significance Assessment

Unit/ Site	Site Type[6]	Scientific Significance	Public Significance	Representative Significance
Leard Forest sites all inclusive	AS/IF	High	Moderate	Moderate
Lower slopes drainage area sites all inclusive	AS/ IF	Moderate	Moderate	Moderate
Haul Road sites to the Baan Baa ranges	AS/IF	Low	Low	Low
Baan Baa Range sites	AS/IF	High	Moderate	Moderate
Namoi River plain	AS/IF	Low	Low	Low
Scarred trees across all landscapes	ST	Low	High	Moderate

[6] AS - Artefact Scatter, IF - Isolated Find, ST - Scarred / Modified Tree

7.0 Management Recommendations

7.1 Discussion

The following management recommendations are made in consideration of the views of the Aboriginal stakeholders as expressed in the field and the Stakeholder reviews of the draft report (**Appendix G**). The legislative context and significance assessment of the study area and the proposed impacts are the key elements of the assessment framework.

Heritage items located within the mine area will be destroyed by the open cut operation. Infrastructure will impact to varying degrees on Aboriginal archaeological sites through excavation and ground disturbance during construction.

The Project is to be assessed under Part 3(A) of the EP&A Act and as such approvals under Section 90 of the NP&W Act are not required. The approval body is the NSW Department of Planning.

The management recommendations must also take account of inter-generational equity by considering the cumulative impact of development in the context of the Project. Traditional occupation sites laid down by generations of local people are a diminishing resource. Conservation of all sites is not possible in the context of development, and mitigation by effective salvage methods is the best option to preserve information for future generations. The BNC Act identified Zone 1 and Zone 2 lands to be managed to preserve Aboriginal cultural heritage and other values (see Section 6.2). These areas are managed to offset the activities that may impact Aboriginal cultural values in Zone 4 lands which is dedicated as State Forest for the purposes of forestry, recreation and mineral extraction.

An Aboriginal Heritage Management Plan (AHMP) will be prepared following Project approval. The plan will be developed in conjunction with the primary stakeholders – the Aboriginal community and Boggabri Coal. The AHMP will detail the methodology for the identification and quantification of sub surface deposits in the Leard State Forest and the Baan Baa Ranges. The AHMP will also outline the protocols for the management of impact upon sites as the mine develops and the management of sites that remain in-situ.

A total of 77 sites have been recorded in addition to the 24 ARAS (2005 & 2007) sites and 3 Insite Heritage (2008) sites previously recorded. The total of 104 sites, are addressed in the site specific outcomes in Table 8. Of the total number of sites (104), the Project will impact on a total of 63 sites that includes; 23 artefact scatters, 28 isolated finds and 12 scarred trees that will require relocation.

A total of 41 sites of 104 known sites will not be impacted by the Project. These sites will be managed to retain their archaeological and cultural values during the development and operation of the Project. The sites that will not be impacted comprise; 19 artefact scatters, 12 isolated finds, 7 scarred trees, the 2 quarries and the historic scarred tree.

7.2 Management Recommendations

The AHMP will draw upon, but is not confined to, the following management outcomes.

I) The AHMP will need to address the management of the sites recorded by this survey and the sites identified by previous surveys undertaken for Boggabri Coal.

II) A salvage operation will be required to retrieve a representative sample of artefacts prior to destruction. The details of the salvage methodology should be developed in conjunction with the Aboriginal stakeholders to ensure that scientific and cultural outcomes are met.

III) The salvage of sites within the rail corridor should address detailed impacts. These are anticipated to include, but not confined to, the footprint of the haul road widening and rail spur, drainage earthworks, signalling and borrow pits. Where these impacts intercept sites, the sites will be salvaged by collection (where sub surface deposits are negligible). Salvage excavation to sample sub surface deposits, where evident, in some parts of the Baan Baa Ranges and lower drainage area.

IV) Complete a detailed analysis of all materials retrieved, including raw material identification by a suitable geologist, and appropriately report all works undertaken. Provide copies of reports to relevant authorities and Aboriginal stakeholders.

V) In consultation with the Aboriginal stakeholders determine the most appropriate keeping place for the artefacts retrieved.

VI) A total of 41 sites are located outside the footprint of disturbance. The ongoing management of these sites will be addressed in the AHMP. The plan will outline the method of site protection, such as fencing, and protocols for ongoing site management.

Site specific management recommendations are detailed in Table 8 below.

Table 8 Site Specific Management Recommendations *

Sites	Significance	Management Recommendations	Status following management measures
Leard Forest NV 1, 2, 3, 4, 5,11,12,13, 14, 49, 50 & 62. *BC 17, 24, 25, 31, 32 & 33.* *BC 36*	Moderate to High Moderate to low	Delineate an area around these sites that contains potential subsurface artefacts. To be managed according to the AHMP. Outside Project Boundary	Extant
Southern Area (excluded from this survey) BCD 1 & 2 BCD 3	Low Moderate to high	In far southern part of the site – status unchanged from (Insite 2008)	Extant
Lower Drainage Area NV24, 51, 54, 55, 56, 57, 58, 59, 60, 61 & 63	Moderate	Outside the footprint of development – to be retained and managed according to the AHMP.	Extant
Leard Forest – Scarred trees NV 25, 26, & 27 *BC 30 & 37* **Plain –** Scarred tree NV 35, 36 & 37	Moderate High Cultural significance	Trees retained in-situ and managed, ie fenced and protected from inadvertent impact. Details of protocols in the AHMP. Trees to be retained within the TSR – not impacted by the Project	Extant
Leard Forest – NV6, 7, 8, 9, 10, 15, 16, 18 & 19 *BC 34 & 54*	Moderate to High	Undertake manual salvage excavations and test probes. Full extent and methodology of excavation undertaken at each site to be determined in consultation with the stakeholders. Detailed methodologies to be included the AHMP.	Excavated and destroyed
Leard Forest - *BC 26*	Moderate	To be managed as part of Leard State Forest assemblage – potential locations for test probes.	Salvaged, excavated and destroyed.
Leard Forest - Scarred trees NV28, 29, 30, 31, 32 & 33, *BC16* **Lower drainage area** Scarred trees *BC 50, 51 &52* **Plain** - Scarred trees NV 34, 76	High cultural significance	These trees will require relocation to an appropriate location as determined by the stakeholders. Not all scarred trees on the haul road will be impacted, particularly in the Travelling Stock Reserve (35, 36, 37). Trees not to be impacted will be retained in-situ.	Relocated
Haul Road - **Plain** NV 20, 21, 22, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 77 &78	Low	Record location and collect all artefacts from the surface. Small test probes for sub surface potential where necessary.	Salvaged and destroyed
Haul Road – **Baan Baa Ranges** NV 48	High	Manual excavation of any features or high concentrations of artefacts. Full extent and methodology to be determined.	Excavated and destroyed
Haul Road – **Baan Baa Ranges** NV 23, 46 & 47 NV 39, 40, 41, 42, 43, 44 & 45 NV38	High – moderate Moderate Low	Manual excavation and grader scrapes to salvage an effective sample in a manner developed with the community. Collection – possible probe	Excavated, salvaged and destroyed
Haul Road, lower drainage area- NV 52,53,	Moderate	Small test probes for subsurface potential – probably low in which case surface collection will suffice.	Salvaged and destroyed
Haul Road lower drainage area – *BC 18, 19, 22, 31, 37, 42, 43, 46, & 47 49.*	Moderate to high	Assess potential for sub-surface deposits. Salvage by collection and excavation.	Excavated salvaged and destroyed.

*Note: site NV17 has been used to identify the stone cairn that has not yet been determined as a "site". Hence it is not included in the figures of sites that will be impacted. It will be registered and managed as a site if further investigation shows it not to be an agricultural feature.

8.0 Glossary

Angular Fragment: Flaking debris that lacks diagnostic features. Also referred to as a flaked piece (Holdaway & Stern 2004:113).

Artefact: Any object, usually portable, that has been made or shaped by human hand (Mulvaney & Kamminga 1999:425).

Assemblage: A set of artefacts found in close association with each other (Flood 1989: 281).

Backed/Backing: Unidirectional or bi-directional retouch located on one lateral margin of a tool (Holdaway & Stern 2004:159).

Backed Blade: A blade with one margin deliberately blunted to form a penknife-like back (Flood 1989:281).

Basalt: Volcanic igneous rock dark in colour (black – dark grey). Fine grained containing 45-55% silica, iron and magnesium. (Holdaway & Stern 2004:22).

Bioturbation: Reworking of sediments through the action of ground dwelling life forms such as ants, termites, and earthworms (Mulvaney & Kamminga 1999:425).

Blade: A parallel sided flake, twice as long as it is wide (Flood 1989:282).

Broken Flake: A flake fragment which displays only part of the diagnostic features of a complete flake. Broken flakes are classed are classed as either proximal flakes, medial flakes, lateral and distal flakes depending on their visible attributes (Holdaway & Stern 2004:111).

Chalcedony: A cryptocrystalline form of silica (Kearey 2001:48).

Chert: A fine grained crystalline aggregate of silica (Flood 1989:82).

Clay: Sediment that contains particles less than 4 μm in size (Kearey 2001:49).

Coal: Combustible sedimentary rock, greater than 50% carbonaceous material (Kearney 2001:51).

Colluvial: Transported by non fluvial processes (Kearey 2001:53).

Conglomerate: Sedimentary rock containing rounded clasts greater than 2 mm in size (Kearey 2001:56).

Core: A piece of stone, often a cobble or pebble but also quarried stone, from which flakes have been struck for toolmaking (Mulvaney & Kamminga 1999:426).

Core Tool: A core bearing trimming or use wear indicating its use as an implement (Flood 1989:282).

Cortex: Outer weathered surface of a rock or mineral (Holdaway & Stern 2004:144).

Debitage: The waste product from tool manufacture (Holdaway & Stern 2004:154).

Distal Flake: Flakes which have a termination but do not show a platform or evidence of an impact point (Holdaway & Stern 2004:111).

Dorsal Surface: Retains part of the original surface of the core or scars from earlier flake removals (Holdaway & Stern 2004:143).

Erosion: Process where particles are detached from rock or soil and transported away principally via water, wind, ice and air (Kearey 2001:88).

FGS:

Flake: A piece of stone detached by striking a core with another stone (Flood 1989:283).

Flake piece/s: Refer to angular fragment.

Geometric Microlith: A microlith of triangular, trapezoidal or other geometric shape, with an abruptly trimmed thick margin (Flood 1989: 283).

Geomorphology: The description and interpretations of landforms (Mulvaney & Kamminga 1999:426).

Hearth: The site of a campfire (Flood 1989:284).

Heat Treatment: Also referred to as heat shatter. The natural or human induced process of heating raw materials to change their properties prior to tool manufacture. Observable changes include alterations in colour, lustre and crystalline structure (Holdaway & Stern 2004:29).

Loam: A soil which contains approximately equal proportions of sand, silt and clay (Kearey 2001:156).

Medial flake: Flake or flake fragment with an identifiable ventral surface but lacking proximal and distal margins (Holdaway & Stern 2004:111).

Microlith: A variety of small, less than 30mm in size, retouched implements of various shapes (Mulvaney & Kamminga 1999: 427, Flood 1989:285).

Microblade Cores: Provide the blanks for the small –tool tradition – Bondi points and geometric microliths. Less than 100mm in maximum dimension. Flake scars are parallel and elongate and long relative to core size (Holdaway & Stern 2004:204).

Midden: Aboriginal occupation site consisting chiefly of shells with minor components of other refuse such as ash, stone artifacts and animal bones (Mulvaney & Kamminga 1999:427).

Mudstone: Used to refer to the fine to very fine grained sedimentary rocks of siltstones and mudstones (Holdaway & Stern 2004:20).

Open Campsite: A surface of stone and other artefacts exposed on the ground surface (Flood 1989:285).

Permian: Geological time period from 290 – 245 Ma (Kearey 2001:200).

Platform: The area on a stone core on which a blow is struck to detach a flake. The detached flake bears on its butt end the original striking platform (Flood 1989: 287).

Podzolic: Acid soils with strong texture contrast between sandy or loamy topsoils and clay subsoils (Matthei 1995:319).

Porcellanite: A rock formed by the thermal metamorphism of a soil horizon in basalt (Kearey 2001:208).

Proximal flake: broken flakes that do not have a termination but exhibit features from where the flake was struck from the core such as a platform, bulb of percussion, impact point (Holdaway & Stern 2004:110).

Quartz: Common mineral with naturally sharp edges and poor fracturing properties. Colour ranging from clear, to milky white and pink (Flood 1989:286).

Quartzite: Homogenous medium to coarse grained metamorphosed sandstone (Flood 1989:286).

Retouch: To shape, sharpen or blunt a stone tool by flaking (Mulvaney & Kamminga 1999:428).

Retouched flake: Flakes removed during retouching of a tool (Holdaway & Stern 2004:173).

Sandstone: A sedimentary rock comprised of greater than 25% clasts of sand grains 0.625-2mm in diameters (Kearey 2001:234).

Scarred tree: Trees which have had portions of their barked removed (Mulvaney & Kamminga 1999:32).

Scraper: A flake with one or more margins displaying retouch along the entire margin (Holdaway & Stern 2004:227).

Shale: A sedimentary rock with particles less than 4µm in diameter (Kearey 2001:242).

Silcrete: A sedimentary rock comprising of quartz grains in a matrix of fine grained – amorphous silica (Holdaway & Stern 2004:24).

Soloth (or Solodic): Acid soils with strong texture contrast between pale topsoil and clay subsoil with coarse blocky or columnar structure (Matthei 1995:319).

Stratigraphy: The study of natural and cultural sedimentary strata (Mulvaney & Kamminga 1999: 428).

Symmetrical backed artefact: see geometric microlith.

Thumbnail Scraper: A small flake with a convex scraper edge opposite the platform of the flake and with a shape similar to a thumbnail (Holdaway & Stern 2004:234).

Tuff: Fine grained stone formed after a cloud of ash ejected by volcanic event descends to form a thin layer over the ground surface. After burial some tuff beds become indurated through a metamorphic process in which the stone hardens and recrystallises to a less friable structure.

Use-wear: Alteration of an artefact caused by its use (Holdaway & Stern 2004:41).

9.0 References

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The Draft Agreement on public exhibition
www.enviroment.nsw.gov.au/consult/DecPublic Consultation.htm 2008

Appendix A – Community Consultation Log

Summary of Consultation

Date	Form of Consultation	Aboriginal Stakeholder Groups Contacted
14 July 2009	Letter sent to relevant stakeholders to provide a list of stakeholders that should be consulted with in relation to the Archaeological and Cultural Heritage Assessment.	DECCW, Department of Aboriginal Affairs - Office of the Registrar, NSW Native Title Services, NSC and RCLALC.
16 July 2009	Public Notice displayed in *The Courier* and the *Namoi Valley Independent*.	N/A
17 – 23 July 2009	Correspondence received registering an expression of interest.	GGAC, BBTP and RCLALC
20 July 2009	Letter received providing a list of Aboriginal stakeholder groups and contact details that may wish to be consulted in regard to the Project.	DECCW
31 July 2009	Letter received indicating that NSC does not have any list or database in regard to Aboriginal stakeholders.	NSC
31 July 2009	Letter received from Office of the Registrar stating that Boggabri Coal Mine does not have any Registered Aboriginal Owners.	Office of the Registrar Aboriginal Land Rights Act (1983)
5 August 2009	Letter sent to Aboriginal groups who were identified by regulators that may wish to be consulted in relation to the Project.	Aboriginal Reference Group Namoi Catchment Management Authority, CCC, ELCHC, GNAC and MMAC.
10 – 12 August 2009	Correspondence received registering an expression of interest.	MMAC, ELCHC and CCC
12 August 2009	Letter received stating that Aboriginal group did not wish to be involved in the Project as it is outside their cultural area.	GNAC
7 September 2009	Letter sent to Aboriginal Stakeholder groups containing a proposed methodology and included a request for any comments. A return attendance confirmation form was attached to indicate interested groups.	CCC, BBTP, RCLALC, GGAC, MMAC and ELCHC
9 - 25 September 2009	Received an acceptance of the methodology and expression of interest to be involved in the fieldwork.	BBTP, CCC, MMAC, RCLALC, GGAC and ELCHC
8 – 9 October 2009	Invitation fax and letter sent to all Aboriginal stakeholder groups who accepted the methodology to participate in the fieldwork. All Aboriginal stakeholder groups were presented with a rotational works roster and each groups outlined for their attendance.	CCC, GGAC, MMAC, ELCHC, RCLALC and BBTP
19 – 23 October 2009	Fieldwork involvement with Aboriginal stakeholder representatives from Group 1.	MMAC, RCLALC, CCC and GGAC
26 – 30 October 2009	Fieldwork involvement with Aboriginal stakeholder representatives from Group 2.	RCLALC, BBTP and ELCHC
2 November 2009	Additional day of fieldwork required to compensate for a day lost to wet weather with Aboriginal stakeholder representatives from Group 2.	RCLALC, BBTP and ELCHC

Date	Form of Consultation	Aboriginal Stakeholder Groups Contacted
15 January 2010	The draft report sent to the registered stakeholders by express post. Response requested by the 8th Feb 2010.	CCC, GGAC, MMAC, ELCHC, RCLALC and BBTP
4th Feb 2010	Red Chief LALC request a time extension of four weeks.	
4th Feb 2010	Gunidah Gunyah request a time extension.	
5th Feb 2010	Elli Lewis Cultural Heritage Consultants respond to the draft report.	
5th Feb 2010	Cacatua Culture Consultants respond to the draft report.	
9th Feb 2010	Time extension offered by fax to the 22nd Feb 2010	RCLALC, GGAC,
19th Feb 2010	Red Chief LALC respond to the draft report	
21st Feb 2010	Gunidah Gunya respond to the draft report	
22nd Feb 2010	Min Min AC respond to the draft report.	
1st March 2010	Bigunde Biame TP respond to the draft report.	

Appendix B – Project Advertisements

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Thursday, July 16, 2

16/7/09 NAMOI VALLEY INDEPENDENT page 10.

PUBLIC NOTICE

Aboriginal Stakeholder Consultation
Boggabri Coal Mine

Idemitsu Australia Resources is seeking to identify Aboriginal stakeholders who wish to be consulted in relation to a proposed cultural heritage assessment associated with the Boggabri Coal Mine located near Boggabri, NSW.

Interested stakeholders are requested to register their interest in writing to:

Mr Ben Eastwood
Hansen Bailey
Environmental Consultants
PO Box 473
SINGLETON NSW 2330
beastwood@hansenbailey.com.au
Phone 6575 2009
Fax 6575 2001

Expressions of Interest should include current contact details. The closing date for registration is close of business on Thursday, July 30. Once Expressions of Interest have been received a planning meeting will be held to discuss the program further.

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munities to ensure their land and water are protected."

Two other landholders who earlier had similar cases rejected are taking their battle to the Supreme Court in Sydney next month.

Four Corners show will feature the ongoing debate between

ST Xavier's Primary School Principal Doug Garnett in front of St M College Ag-plot on the corner of Osric and Bloomfield streets, which will b site of the new $2.5 million school hall in the grounds of St Xavier's. The Ag will be relocated to the college grounds to make way for the hall.

$4 million funding fo

Plate 13 Advertising Namoi Valley Independant 16/7/2009

Plate 14 Advertisement The Courier 16/7/2009

Appendix C – Community Registrations & Responses to the Survey Methodology

Return Fax: (02) 6575 2001

Attention: Ben Eastwood

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Aboriginal Stakeholder Group: Biguandi Biame Traditional People

I have read and have understood the Boggabri Coal Continuation of Mining – Methodology for the Aboriginal Heritage Survey which has been prepared by Insight Heritage. I agree that this Survey Methodology is adequate and consistent with the views and wishes of the local Aboriginal Community. With regard to the Survey Methodology, I would like to confirm that our group:

☑ Agrees with the content ☐ Disagrees with the content

We would li!.e to make the following comments on the Survey Methodology:

Will their be a plan for any new artifacts found such as dialogue to the Red Chief LALC Muselina Gaily rep should have a clear knowledge of the area in terms of Aboriginal significance. And the surrounding Area.

Further, in regard to the field work to be undertaken in **October 2009**, a representative from our Group:

☑ Would like to attend ☐ Does not wish to attend

Our nominated representative attending the field work for the Boggabri Coal Aboriginal Heritage Survey will be:

Gary Griffiths, Greg Griffiths.
Tony Griffiths.

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Signed in support: Wayne Griffiths.

On behalf of (Group): Biguandi Biame Gunnedah Traditional People.

Date: 9

Cacatua Culture Consultants

Entity of Cacatua General Services

ABN 83 774 580 518

10 September 2009

Ben Eastwood
Senior Environmental Scientist
Hansen Bailey
PO Box 437
SINGLETON NSW 2330

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Ben,

We have read and discussed the methodology by Angela Besant with regards to the Methodology for Aboriginal Heritage Survey for the Boggabri Coal Continuation of Mining, which was enclosed in your paper work dated 7th September 2009.

We have worked with Angela before and found that her methodologies have always considered the protection on significant items. Due to these facts we support the methodology that is contained within your letter.

Further in regard to the field work to be undertaken in October 2009, George Sampson would be the one representing for above stakeholders.

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Yours truly

George E Sampson

George Sampson
Manager

22 Ibis Parade, Woodberry NSW 2322
Ph 02 4964 4685 • Fax 02 4964 4635

Return Fax: (02) 6575 2001

Attention: Ben Eastwood

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Aboriginal Stakeholder Group: Min Min Aboriginal Corporation

I have read and have understood the Boggabri Coal Continuation of Mining – Methodology for the Aboriginal Heritage Survey which has been prepared by Insight Heritage. I agree that this Survey Methodology is adequate and consistent with the views and wishes of the local Aboriginal Community. With regard to the Survey Methodology, I would like to confirm that our group:

☑ Agrees with the content ☐ Disagrees with the content

We would like to make the following comments on the Survey Methodology:

.....

.....

.....

.....

Further, in regard to the field work to be undertaken in **October 2009**, a representative from our Group:

☑ Would like to attend ☐ Does not wish to attend

Our nominated representative attending the field work for the Boggabri Coal Aboriginal Heritage Survey will be:

Ronald Griffiths

.....

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Signed in support: R A Griffiths

On behalf of (Group): Min Min Aboriginal Corporation

Date: 11-9-09

Return Fax: (02) 6575 2001

Attention: Ben Eastwood

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Aboriginal Stakeholder Group: Red Chief LALC

I have read and have understood the Boggabri Coal Continuation of Mining – Methodology for the Aboriginal Heritage Survey which has been prepared by Insight Heritage. I agree that this Survey Methodology is adequate and consistent with the views and wishes of the local Aboriginal Community. With regard to the Survey Methodology, I would like to confirm that our group:

☐ Agrees with the content ☑ Disagrees with the content

We would like to make the following comments on the Survey Methodology:

As per letter attached.

Further, in regard to the field work to be undertaken in **October 2009**, a representative from our Group:

☑ Would like to attend ☐ Does not wish to attend

Our nominated representative attending the field work for the Boggabri Coal Aboriginal Heritage Survey will be:

Will to confirm at later date

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Signed in support: [signature]

On behalf of (Group): Red Chief LALC.

Date: 22/9/09

RED CHIEF LOCAL ABORIGINAL LAND COUNCIL

P.O. Box 745
Gunnedah NSW 2380

Phone: (02) 6742 3602
Fax: (02) 6742 3815
Email: redchief@westnet.com.au
ABN: 11 825 966 870

Mr. Ben Eastwood
Senior Environmental Scientist
Hanson Bailey
22nd September 2009

Dear Ben

Re: Boggabri Coal Continuation of Mining Project
Aboriginal Archaeological and Cultural Heritage Assessment

I am writing in response to the methodology of the above and would appreciate your consideration to the following points:

1. Anticipated time frame of the assessment
2. areas of assessment
3. Red Chief LALCs involvement ie. works roster
4. fee for service/rate of pay.

1. **Anticipated time frame of the assessment**

I have noted that you have allowed 10 days in which to complete the assessment of the proposed survey area. It is becoming clear that you have not sourced any information from the 2005 survey work and the 2006 salvage conducted by ARAS and the Red Chief LALC, where the Heritage in the area was grossly underestimated. Hamm's 2005 survey methodology was based on previous reports, Purcell's 2000 BBSB, Andrefsky '98 Dalme '86 Foley and Dancey 1981 all of which lacked Cultural Heritage value.

2. **Areas of assessment**

As we have not at this point of time been privy to any Layout plans of the proposed alignment routs of the private haul and rail easement, we can only assume that you have taken into account some development that may widening of the proposed alignment in some areas. These may include:
Culverts, borrow pits, catch drains or vehicle turning areas and compounds.

3. RCLALC involvement

The Red Chief Local Aboriginal Land Council was constituted on and in accordance with the provisions of the NSW Aboriginal Land Rights Act of 1983 as amended. One of the functions of a LALC is: To promote the protection of Aboriginal Culture and the Heritage of Aboriginal persons in its area.
So as to comply with our legislative requirements I respectfully request that Red Chief LALC have at least one sites officer on the job for the duration of the assessment.

4. Fee for service/rate of pay

The current rate of pay for sites officers of the Red Chief LALC is $80.00 per hour + travel to and from the site this rate also attracts GST.

I thank you for your invitation and hope this letter may be of some assistance to you. We are looking forward to working with you on this project in the near future. Should require any further consultation please do not hesitate to contact me on the above details.

Robert Horne

CEO

3. **RCLALC involvement**

The Red Chief Local Aboriginal Land Council was constituted on and in accordance with the provisions of the NSW Aboriginal Land Rights Act of 1983 as amended. One of the functions of a LALC is: To promote the protection of Aboriginal Culture and the Heritage of Aboriginal persons in its area.
So as to comply with our legislative requirements I respectfully request that Red Chief LALC have at least one sites officer on the job for the duration of the assessment.

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The current rate of pay for sites officers of the Red Chief LALC is $80.00 per hour + travel to and from the site this rate also attracts GST.

I thank you for your invitation and hope this letter may be of some assistance to you. We are looking forward to working with you on this project in the near future. Should require any further consultation please do not hesitate to contact me on the above details.

Robert Horne

CEO

Return Fax: (02) 6575 2001

Attention: Ben Eastwood

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Aboriginal Stakeholder Group: Cumda Cumyah Aboriginal Corporation

I have read and have understood the Boggabri Coal Continuation of Mining – Methodology for the Aboriginal Heritage Survey which has been prepared by Insight Heritage. I agree that this Survey Methodology is adequate and consistent with the views and wishes of the local Aboriginal Community. With regard to the Survey Methodology, I would like to confirm that our group:

☒ Agrees with the content ☐ Disagrees with the content

We would like to make the following comments on the Survey Methodology:

.....

.....

.....

.....

Further, in regard to the field work to be undertaken in **October 2009**, a representative from our Group:

☒ Would like to attend ☐ Does not wish to attend

Our nominated representative attending the field work for the Boggabri Coal Aboriginal Heritage Survey will be:

Wade Natty alternate Tommy Bash

.....

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Signed in support: .....

On behalf of (Group): Cumda Cumyah

Date: 25.9.09

Return Fax: (02) 6575 2001

Attention: Ben Eastwood

RE: **BOGGABRI COAL CONTINUATION OF MINING – METHODOLOGY FOR ABORIGINAL HERITAGE SURVEY**

Aboriginal Stakeholder Group: ELLI LEWIS

I have read and have understood the Boggabri Coal Continuation of Mining – Methodology for the Aboriginal Heritage Survey which has been prepared by Insight Heritage. I agree that this Survey Methodology is adequate and consistent with the views and wishes of the local Aboriginal Community. With regard to the Survey Methodology, I would like to confirm that our group:

☑ Agrees with the content ☐ Disagrees with the content

We would like to make the following comments on the Survey Methodology:

See Attachment

Further, in regard to the field work to be undertaken in **October 2009**, a representative from our Group:

☑ Would like to attend ☐ Does not wish to attend

Our nominated representative attending the field work for the Boggabri Coal Aboriginal Heritage Survey will be:

Additionally, we support Hansen Bailey's application to access data from the AHIMS database.

Signed in support: G. Hands

On behalf of (Group): G Hands

Date: 25-9-09

Cultural Heritage Consultants

ELLIE-LEWIS

Phone - 02 - 65 731875
Fax - 0422 780463
E-mail - kamillaroi

Mr Ben Eastwood
Senior Environmental Scientists
Hansen Bailey Environmental Consultants
PO Box473
Singleton NSW 2330

Dear Ben

RE: BOGGABRI COAL CONTINUATION OF MINING PROJECT- ABORIGINAL ARCHAEOLOGICAL AND CULTURAL HERITAGE ASSESSMENT

Thank you for your letter dated 7th September 2009 inviting our organization to express an interest in being consulted and participating in the project.

We would like to be included in the full 10 days survey period and will provide written comments on the cultural heritage values following a review of the draft provided we are included in the survey and consultation process.

- We have lived in this area used to go for family drivers in the area, we where the first families that found THUNDER EGGS in the area. We had to a clear a bush track to get to them.
- "As recorded sites are present within the study area and other significant sites have been found along the Namoi River the area has cultural Significance.
- It is also known that Old Logging Roads where built in the 1800s/1900s, they were constructed over well worn travelling paths ,of the Aboriginal people ,and it is likely that Leards Forest Road was one of these .Therefore other sites will be found.
- We have noted the fieldwork framework requirements, and the propose methodology for the assessment survey appears to be acceptable.
- Enclosed are the certificates of currency for our public liability and workers compensation insurances as requested?

We look forward to working with you please do not hesitate to contact me should you wish to discuss the project
My Mobile 0422780463
Kind Regards

J Hands 25/09/09

Jean Hands
ELLIE-LEWIS

Appendix D – Transect Details

Table 9 Transect Details - Leard State Forest

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coverage m²[8]	Sites	Notes
1	Leard State Forest, South-West corner. E223650; N6610549[9]	Ridge	Foot	60%	80%	2170mx4m	4166m	NV 1-4 & NV 12 & 13	Single lane track on ridge line. Continues to North-West boundary of study area. Track aligned NE/SW. Exposure off track 20m max.
2	Leard State Forest, Western survey limit. E223750; N6610885	Ridge	Foot	75%	70%	1171mx5m	3074m		Dense forest.
3	Leard State Forest, Western portion. E224850; N6611946	Lower slopes of ridge	Foot	65%	65%	1088mx5m	2298m	BC 34 BC 54	Continuation through Western portion of Leard State Forest. Leads to Western limit of ARAS 2005 & 2007 surveys and their marked sites BC54 & BC34. Other features located in this region (grinding grooves; and scarred tree approximately 500m ESE of them).
4	Leard State Forest, Western portion. E225692; N6611347	Undulating low hills.	Foot	60%	60%	665mx5m	1197m		East/West transect from Western limit of former ARAS survey boundary (2005 & 2007). BC 54 & BC 34 to NNE (approximately 300m).
5	Leard State Forest. South-West side. E225532; N6610250	Undulating low hills	Foot	85%	80%	457mx5m	1462m		Short East/West transect abutting Transect 6. Good visibility.

[7] Archaeological Visibility
[8] Effective Coverage
[9] **Please note all GPS recordings given using GDA94 co-ordinate system.**

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
6	Leard State Forest. South-West portion of surveyed area. E225881; N6610149	Elevated plain	Foot	80%	80%	1065mx5m	3408m	NV 25-27	NE/SW track abutting Transect 8. Three scarred trees (all White Box: NV's 25, 26 & 27), in close proximity, approximately 350m from SE start of transect. Visibility good.
7	Leard State Forest. South-West portion. E226154; N6610289	Gradual slope	Foot	60-80%	60%	1125mx5m	2363m	NV 32	Gradually slopes up to the North-West. A scarred tree (NV 32) is present on a stony rise near the Northern limit of transect. Transect bounds the South-West perimeter of former ARAS survey limit (2005 & 2007).
8	Leard State Forest. South-West portion. E226318; N6609487	Gradual slope to North-West	Foot	75%	70%	2568mx5m	6741m	NV 33	Transect leads off Maules Creek Road in North-West direction. Slightly overlaps West perimeter of former ARAS (2005 & 2007) survey. Transect 8 is an offshoot on Western side.
9	Leard State Forest. North-West corner of study area. E225564; N6612671	Undulating ridge area	Foot	70%	60%	1133mx5m	3395m	NV 11	East/West transect at North-West corner limit of survey. At E225126/ N6612750 there is a small level platform area (about 25 sq m.) - former saw mill. Elevation: 416m.
10	Leard State Forest. North-West corner of study area.	Disturbed Creek Flat	Foot	60%	55%	2129mx5m	3513m		Predominantly North/South transect crossing area previously surveyed by ARA. Meandering ridge track way.
11	Leard State Forest. North-West portion of study area. E225652; N6612157	Mid to top of slope	Foot	70%	70%	725mx5m	1776m		Fairly short East-West transect along track way through undulating forest terrain.
12	Leard State Forest. Northern survey portion. E226227; N6612398	Lower slope to near top of ridge	Foot	55%	50%	1169mx5m	1607m		Steep climb up ridge. Poor visibility.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
13	Leard State Forest. Northern portion of survey boundary. E227028; N6612684	Undulating slope	Foot	70%	80%	1112mx5m	3114m		East/West transect. Undulating terrain. Good visibility.
14	Leard State Forest. Northern portion of study are. E226550; N6612637	Fairly level. Ground rises East and West.	Foot	75%	70%	319mx5m	837m		Short, North/South transect, immediately North of previously surveyed area (ARAS: 2005 & 2007).
15	Leard State Forest. Northern portion of study area. E226944; N6612969	Steep slope South-East to North-West.	Foot	60%	60%	596mx5m	1073m		Short North-West/South-East transect, to Northern limit of study area.
16	Leard State Forest. Northern portion of study area. E227173; N6612541	Lower slopes and flat terrace cum creek line	Foot	80%	80%	1038mx5m	3322m	NV 10	Forest flats. Creek line and flat terrace. Sandy soil. Pigs foraging in soil has unearthed four flaked stone artefacts(E227341; N6612386). Indicates strong probability of subsurface deposits elsewhere.
17	Leard State Forest. Northern portion of study area. E227691; N6612652	Base of slope	Foot	60-70%	90%	395mx5m	1155m	NV 7-9 & NV 16 & NV 29, NV31	Short transect at base of forest slope. Good visibility. Sparse young trees. Scarred tree located at E227556; N6612564.
18	Leard State Forest. Northern portion of study area. E228362; N6613145	Fairly steep track	Foot	30%	35%	400mx5m	210m	NV 15	Short transect on North-East corner of landscape unit. Leads down to dry rock creek bed. Visibility <10%. NV 15 at: E228138; N6612774.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
19	Leard State Forest. North-East corner of study area. E228426; N6613148	Gradual to fairly steep slope	Foot	40%	50%	1132mx5m	1132m		Steepening NNE/SSW forest track. Visibility generally poor.
20	Leard State Forest. North-East portion of study area. E228249; N6612351	Gradual slope (partially cleared of trees)	Foot	80%	80%	729mx15m	10919m	NV 18 & NV 19	Forest track opening into a cleared with good visibility: E228700; N6612330.
21	Leard State Forest. North-Eastern portion. E229232; N6612800	Ridge	Foot	80%	80%	422mx5m	1350m	NV 6	Vehicle track to the South of main ridge road. Short transect. Good visibility. Sites: NV 5-6.
22	Leard State Forest, North-East section of study area. E229506; N6612403	Ridge	Foot	70%	60%	402mx4m	675m	NV 14	Short forest track transect on North-Eastern boundary of study area.
23	Leard State Forest, North-Eastern portion of study area. E228651; N6611557	Gradual slope	Foot	55%	60%	1151mx5m	1899m		West/East track transect veering sharply South-West on Eastern side of former ARAS (2005 & 2007) study area.
24	Leard State Forest, Eastern portion of study area. E229000; N6610998	Gradual, undulating plain	Foot	50%	50%	811mx5m	1014m		East-West track approximately 400m from North-East corner of existing void..
25	Leard State Forest, Eastern portion of study area. E229141; N6610893	Gradual slope	Foot	60%	55%	370mx5m	611m		North-South short transect on mid-Eastern portion of study area.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
26	Leard State Forest, Eastern portion of study area. E229072; N6610801	Slight, undulating plain	Foot	60%	50%	1346mx5m	2019m		Located on East-West track way.
27	Leard State Forest, Eastern portion of study area. E229601; 6610943	Undulating plain	Foot	55%	50%	497mx5m	683m		Short, North-South transect near Eastern perimeter of study area.
28	Leard State Forest, Eastern portion of study area. E229095; N6610513	Undulating plain	Foot	50%	50%	911mx5m	1139m		Southern offshoot of Transect 26 terminating at extensive cleared area.
29	Leard State Forest, Eastern portion of study area. E229160; N6610309	Fairly flat plain	Foot	55%	55%	628mx5m	950m		East-West transect near eastern limit of current mine works.
30	Leard State Forest, Eastern portion of study area. E229330; N6609818	Undulating plain	Foot	50%	55%	550mx5m	756m		Short, East-West transect near Eastern perimeter of study area. Is effectively terminated by a curvilinear swathe of recently denuded trees East of current mine works.
31	Leard State Forest, South-Eastern portion of study area. E229649; N6609561	Undulating plain	Foot	50%	55%	522mx5m	718m		Short, East-West transect near Eastern perimeter of study area terminates at large cleared area near eastern extent of current mine works.
32	Leard State Forest, South-Eastern portion of study area. E229399; N6609350	Undulating plain	Foot	55%	50%	1305mx5m	1794m		Transect in South-East portion of study area, East of current mine works. Terminated on West side by recently cleared area.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
33	Leard State Forest, South-Eastern portion of study area. E229659; N6609278	Undulating plain	Foot	55%	50%	649mx5m	892m		East-West transect veering North to join Transect 32.
34	Leard State Forest, South-Eastern portion of study area. E229522; N6608606	Undulating plain	Foot	60%	50%	1070mx5	1605m		
35	Leard State Forest, South-Eastern portion of study area. E229009; N6608336	Undulating plain	Foot	55%	55%	812mx5m	1228m		North/South transect, veering sharply Eastwards, then South again. Lies at South-Eastern portion of surveyed area. Limited by proximity to extant mine workings.
36	Leard State Forest, South-Eastern portion of study area. E229601; N6608552	Undulating plain	Foot	60%	50%	492mx5m	738m		Short transect. Aligned NNE/SSW.
37	Off shoot from T 19	Spur	Foot	70%	50%	250m x 5m	437 m	NV5	A track off to the south west following spur off ridge to a bore hole location.
38	Off shoot from T19 west of T37	Spur	Foot	30%	50%	180m x 5m	135m		
39	Off shoot from T19	Spur	Foot	25%	50%	60m x 5m	4m		
40	Transect within ARAS study area adjacent to T16	Plain	Foot	20%	50%	1200 m x 5m	600m	NV28-29	Unformed track through forest dense leaf litter / ground cover
41	Connected T1 and T6 across low ridge spurs	Spur	Foot	30%	50%	1080m x 5m	810 m		

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[7]	Area (approx.)	Effect. Coveragem²[8]	Sites	Notes
					Total	**16.562 ha**	**7.67 ha**	**31**	**Effective cover was 45% of the sample area which represented 0.32% of the study area.** **A total of 301 artefacts recorded**

Table 10 Transect Details Haul Road

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[10]	Area (approx.)	Effect. Coverage m²[11]	Sites	Notes
Lower Slope Drainage area									
1	Haul Road, East side Rail Loop area (West of Leard Forest Road). E225926; N6609118	Undulating plain	Foot	<10%	<5%	1.22 sq k	0.0061 sq k	NV 24	Commencing at wood stockpile on West side of Leard Forest Road West towards knoll, South to Haul Road, returning Eastwards to – and following North – Leard Forest Road. Predominantly very poor visibility, due to knee high vegetation, over much of the area. Basal slope of knoll has thin grass cover. Good visibility on upper margin.
2	Haul Road, South of, on East side of 'triangle', below Rail Loop. E224486; N6608225	Undulating plain	Foot	60%	60%	0.25 sq k	0.09 sq k	NV51-NV63	South of Haul Road at Rail Loop end. Close-cropped fine grass with sparse stony areas. Extensive stone artefact scatters; visibility is clear.
					Total	**1.47 sq k**	**961 sq m**	**13**	**6.5 % effective cover within the survey unit. 156 artefacts recorded.**
Haul Road									

[10] Archaeological Visibility
[11] Effective Coverage

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[10]	Area (approx.)	Effect. Coverage m²[11]	Sites	Notes
3	Haul Road, 50m South side, from start of Rail Loop Westwards 1.74km. Central co-ordinates: E223050; N6607992	Undulating plain	Foot	<5%-50%	<40%	2841mx50m	15,341m	NV77	Area leading from Rail Loop Westwards, South side of Haul Road. No visibility first 20m from road to fence line, improves to <40% out to the 50m limit.
4	Haul Road, 50m North side, from start of Rail Loop Westwards 1.74km. Central co-ordinates: E223050; N6607992	Undulating plain	Foot	<5%-50%	<40%	2841mx50m	15,341m	NV78	The transect return of the above area, travelling Eastwards, on North side of Haul Road to 50m outer limit. Visibility poor from road to fence line, improving to <50% beyond. Intermittent sandstone fragment scatters.
5	Haul Road, 50m South side, Westwards to first third of long stretch. Central co-ordinates: E221157; N6608652	Undulating plain	Foot	40%	80%	2100mx50m	33,600m	NV64	Central portion of Haul Road encompassing the commencement of the long stretch heading Westwards. Ground disturbance evident but improves general visibility.
6	Haul Road, 50m North side. Encompassing start of long stretch – moving Eastwards - and veering ESE. Central co-ords: E221157; N6608652	Undulating plain	Foot	40%	10-75% AV 40	2100mx50m	16,800m2	NV65-70	Return of above transect, travelling Eastwards. Small chalcedony artefact clusters evident. Much ground disturbance, eg contour banks
7	Haul Road, encompassing the 50m on both sides, walking westwards. Latter portion on West side. Central co-ords: E219850; N608660	Undulating plain	Foot	<5%	<5%	949mx100m	237m	NV71-74	Very poor visibility, so, transects on both sides of Haul Road taken together, travelling West. Waist high grass with wheat fields beyond.
8	Haul Road, West end of long stretch, 50m on South side, turning South-West toward Daisymede valley. Central co-ords: E218670; N6608789	Undulating plain & Lower slopes	Foot	35%	50%	1441mx50m	12,609m	NV21	This transect is on the South side of the Haul Road travelling East to West. Visibility poor the 20m to fence lines on either side of Haul Road, due to tall grasses. Terrain changes from relative flat to increasing slopes.
9	Haul Road, turning South-West toward Daisymede valley. Central co-ords: E218670; N6608789	Undulating plain & Lower slopes	Foot	35%	50%	1550mx50m	13,563m		This transect is on the North side of the Haul Road travelling West to East. Visibility poor the 20m to fence lines on either side of Haul Road due to tall grasses. Terrain changes from relative flat to increasing slopes.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[10]	Area (approx.)	Effect. Coverage m²[11]	Sites	Notes
10	Haul Road, West end, 50m out from South side, travelling South-West. Terminates at Southern base of Daisymede. Central co-ords: E218060; N6607974	Lower slopes	Foot	<50%	<40%	988mx50 m	9,880m		Transect on South side of Haul Road approaching Daisymede from the East. Gentle slope down toward river flat. Low visibility due to grass cover, decreasing further on lower section. Cultivated ground.
11	Haul Road, West end, 50m out from its North side, travelling South-West. Terminates at Southern base of Daisymede. Central co-ords: E218060; N6607974	Lower slopes	Foot	<5%-30%	<5%-15%	953mx50 m	810m		Transect on North side of Haul Road approaching Daisymede from East. Gentle slope down toward river flat. Visibility bad, with knee-high, thick grass.
12	Haul Road, West end, 50m out from its South side. Daisymede stretch. Central co-ords: E216898; N6607721	Lower slopes	Foot	<20%	5%	1503mx50m	751 m2	NV34	Transect on South side of Haul Road at Daisymede (tor and dwellings). Visibility generally not good due to dense grass cover – clay soils cracked. .
13	Haul Road, West end, North side. Triangular area incorporating Daisymede estate. Central co-ordinates: E216774; N6607968	Lower slopes & Flood plain	Foot	<20%	<5%	1.8km x 50m	90 m2	NV20 NV22 NV75	This area nearly all a flood plain of the Namoi River. The transect is bisected North/South by the river. Some surface visibility due to drought. Some areas poor surface visibility due to thick, high grasses (often waist high). Deep alluvial deposits – clay soils- cracked.
14	Haul Road, West end, 50m out from the Eastern side. Crosses Kamilaroi Highway and veers sharply Southwards. E215427; N6606575	Flood plain and Lower slopes	Foot	<5%	<5%	2,733mx50m	342m2	NV35-37	Continuation of Namoi River floodplain deposits, West of Kamilaroi Highway (with change to Lower slopes at South 1km portion of transect). Visibility very poor due to high vegetation and deep alluvial deposits.
15	Haul Road, West end, West side. Extensive, elongated North/South area on the Western flank bordering The Rock and Gins Leap. Central co-ords: E215275; N6606814	Lower slopes	Foot	60%	60%	2,700 m x 50m	486 m2	NV38 - 44	Extensive, relatively long transect extending approximately 300m to West of Haul Road. Visibility reduced by alluvial deposits but increases on lower slope features consisting. Recently ploughed and settled – ground cover of background gravel high. Visibility generally good.

Transect Number	Location	Landform	Survey Type (Vehicle or Foot)	Surface Visibility (SV)	Arch. Visibility (AV)[10]	Area (approx.)	Effect. Coverage m²[11]	Sites	Notes
16	Haul Road, West end, South side, 50m outwards. Through valley towards Rail Link area. Central co-ords: E215016; N660566	Lower slopes	Foot	50%	65%	950mx50 m	15,437m2	NV45-48	50m wide transect near the Western termination of the Haul Road, North-West of Gins Leap. Follows creek line to Rail Link 'loop'. Visibility varies but generally quite good.
17	Haul Road, West end, North side, 50m outwards. Follows creek line to Rail Link area. Central co-ords: E215016; N660566	Lower slopes	Foot	20%	80%	920mx50 m	7,360m2	NV23	The North side of Haul Road, coming round South-West into the Rail Link 'loop' area. Follows the creek line. Surface visibility reduced but archaeological visibility very good. Finds predominantly chalcedony stone artefacts.
18	Haul Road, Western Termination at Rail Link. Central co-ords: E213739; N6604956	Lower slopes	Foot	20%	50%	4.4kmx50 m	2,200m2		Termination of Haul Road at Rail Loop. Ground ploughed but settled, with good visibility in some areas. The existing coal stockpile area heavily disturbed.
					Haul Road Total	**30.77 km x 50m 153.9 ha**	**14.84 hectares**	**32**	**Total 9.6 % effective coverage of the total surveyed area**

Appendix E – Recorded Site Details

Table 11 Recorded Site Details

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
NV 1	Leard Forest	223601 6610542	6m x 6m	50% SV 80% AV	Located in exposure in track way. 1x chalcedony core and 1x chalcedony flake identified. Approx. 10m south on west side of road 3x chalcedony cores and 1x chalcedony flake also located.
NV4	Leard Forest Ridge Line	223679 6609552	15m x 20m, 5m x 40m	50% SV 80% AV	Located in track way, and small track offshoot approx. 40m long which ended at 223846,6611269. Site defined by surface disturbance.. 39 Artefacts located at site. Quartz artefacts included: 1 blade, 5 broken flakes, 1 core, 7 flakes, 3 flaked pieces. Artefacts manufactured from Chalcedony: 4 broken flakes, 4 flakes. Chert artefacts: 1 broken flake, 1 flake. FGS artefacts: 1 broken flake, 4 flakes, Silcrete: 2 broken flakes, 2 flakes, Volcanic: 1 broken flake, 1 flake, 1 flaked piece. 7x angular fragments of quartz and 12x angular fragments of chalcedony also noted at the site.
NV6	Leard Forest Ridge Line	229224 6612795	5m x 5m	SV 80% AV 80%	1 x brown red mudstone flake mid section possible redirecting located on vehicle track to the south off main ridge road. Track ends approx. 50m past location of the artefact.
NV5	Leard Forest Ridge line	229342 6612823	5m x 5	SV 80% AV 80%	Two artefacts - 1x Black/grey volcanic flake, and a volcanic broken axe head which has been pecked on one side located in track way along ridge line
NV7	Leard Forest Base of slope	227368 6612638	5m x 5m	SV 60-70% AV 90%	Located in the Leard Forest at the base of slope in an access road. White /pink silcrete flake possible scraper.
NV8	Leard Forest base of slope	227396 6612675	5m x 5m	SV 60-70% AV 90%	1 x mudstone flake, distal portion with multi directional dorsal scars.
NV9	Leard Forest base of slope	227413 6612688	5m x 5m	SV 60-70% AV 90%	1x grey, fine grained silcrete flake, distal portion located in road way at base of slope
NV10	Leard Forest Flats	227341 6612386	3m x 6m		Located on creek flats/terrace in sandy soil. All artefacts located in exposure previously dug over by wild pigs 2 x FGS flakes and 2x FGS broken flakes identified.
BC34		225915 6611661			Site relocation. Site has been salvaged but some artefacts still noted. 1 x mudstone flaked piece, 1 x chalcedony flake and 1 x silcrete flake. The site is located on a ridge creek/margin.

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
NV35	TSR Holding Paddock	215619 6607338			Scarred tree in midst of TSR holding paddock. 2x scars on a 'Brimble Box'. Scars No.1, located on right hand side of tree situated 52cm above base of tree - 330mm long x 340mm wide x 200mm deep. Regrowth noted. Scar No. 2 (left hand side of tree) 500mm x 160mm x 160mm (regrowth).
NV36	TSR Holding Paddock	215647 6607336			Scarred tree. Scar dimensions: 380mm x160mm x 200mm regrowth. Scar situated 960mm from base of tree.
NV 37	Haul Rd/Train Line Lower Slopes	215541 6607376			Located near an unformed track. A very old scar on a 'Brimble Box'. 1000mm x 1150mm x 100-190mm regrowth. Tree still living.
NV 38	Haul Rd/ Train Line Lower Slopes	215511 6607407	6m x 6m	SV 20% AV 50%	1 x reddish volcanic flake located in exposure in stony paddock. Background gravels of similar rock type noted.
Possible Stone Formation	Haul Rd/Rail Corridor Foot slope	215499 6607413	3m x 3m		Possible stone formation located on a foot slope of a rocky hill. Dimensions: Height 94cm boulders approx 20-30cm in size. loose boulders in filled between two larger boulders. May be historic stone picking/clearing paddock. Further investigation recommended. Height of feature 94cm between adjoining boulders x 49-40cm, Depth 165-98cm.
NV39	Haul Rd/Rail Corridor	215342 6607421	1m x 4m	SV10% AV 80%	1 x green volcanic flake. Located adjacent to exposure in gateway. Background gravel. 1 x volcanic core, 4 x chalcedony angular fragments.
NV40	Haul Rd / Rail Loop Lower Slopes/Flood Plain	215209 6607087	20m x 20m	SV30-60% AV 80%	Located in exposure in stony ploughed paddock adjacent to vehicle track. 1 x chalcedony core. 1 x large chalcedony core. At 215076, 6606823 1 x flake chert. 2 x chalcedony angular fragment.
NV41	Haul Rd / Rail Loop Flood plain	215177 6606688	5m x 5m	SV30-60% AV 80%	Located in stony cleared paddock/grazing area 1 x white FGS flake/core.
NV42	Haul Rd/Rail Corridor Floodplain	215206 6606618	5m x 5m	SV30-60% AV 80%	1 x chalcedony core in eroded exposure in paddock.
NV43	Haul Rd/Rail Corridor Floodplain	215205 6606338	10m x 5m	SV60% AV100%	Located in exposure in unformed road in a stony cleared paddock. 2x chalcedony cores situated approx. 10m apart.
NV44	Haul Rd/Rail Corridor Lower Scree Slope	215253 6606444	3m x 2m	SV60% AV90-100%	1 x silcrete core located in cleared stony paddock on Lower scree slope.
NV45	Haul Rd/Rail Corridor	215339 6605495	5m x 5m	SV20% AV80%	1 x chalcedony flake ex located on property "The Rock".
NV46	Haul Rd/Rail Corridor Lower Slope	215158 6605133	5m x 5m	SV20% AV80%	1 x chalcedony flake

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
NV47	Haul Rd/Rail Corridor Flood plain	215091 6605058	5m x 5m	SV20% AV80%	2x chalcedony flakes i.
NV48	Haul Rd/Rail Corridor Lower slopes	214606 6604800	40m x 15m	SV 90% AV 100%	Located on lower slopes adjacent to cleared area for cattle (fences, water troughs ect). At 214606, 6604800 2x chalcedony flaked pieces, 1 x chalcedony flake 25x15x5, 1x chalcedony flake distal end 15x10x5mm At 214577,6604813 2x angular . fragments chalcedony, 1 x pot lid piece of chalcedony, 1 x light grey FGS, 1 FGS flake,1 x chalcedony flake. At 214572,6604814 1x chalcedony flake, 1 x cream/pink FGS, 2x angular fragments chalcedony. 1x FGS flake possible blade, usewear both margin, distal snap. 1x cream/pink quartz flake . Approx 2m east 2x angular fragments chalcedony. 4 x chalcedony flakes, 1 x chalcedony angular fragment.
BC34	Leard Forest Ridgeline	225832 6611600			Relocation of previously recorded site. 11 artefacts, 1 angular fragment, 1 flaked piece.
BC54	Leard Forest Ridgeline	225861 6611635			Relocation of previously recorded site. Large site. Artefacts located at 225659, 6611616 (16 artefacts, 1 angular fragment quartz), 225701, 6611587 (15 artefacts, 1 x angular fragment quartz milky, 1 x grey FGS heat shatter. Grinding Grooves identified at 225861, 6611635. Two sets of grinding grooves located on sandstone boulder approx 1.5m x 1m x 0.4m. GG1 dimensions: 410 x 50 x 15mm. GG2 390 x 30 x 10mm. Boulder orientated NW/SE. 225654, 6611616-225662,6611570 13 angular fragments (3 mudstone, 7 chalcedony, 3 quartz) Also in this section 3 flakes chalcedony, 6 flakes mudstone, 2 silcrete blades, 1 silcrete flake 225670,6611557 Angular fragments 11 chalcedony, 1 mudstone. 3 chalcedony flakes, 2 mudstone flakes,1 chalcedony blade, 2 chalcedony broken flakes 225632,6611566 quartz core Also recorded just west of nearby modified tree:4 mudstone broken flakes, 1 mudstone flake, 1 chalcedony flake, 1 chalcedony broken flake, 1 chalcedony angular fragment. At 225778,6611540 Angular fragments: 3 chalcedony, 3 quartz. 6 chalc broken flakes, 8 chalcedony flake, 2 chalcedony flaked piece, 2 fgs flake, 3 fgs broken flake, 4 fgs flakes, 1 quartz flake, 1 silcrete flake, 1 fgs scraper At 225785,6611456 Volcanic broken hand axe
NV49	Leard Forest Lower Slopes	224896 6609111	25m x 75m	SV75% AV75%	Located on slight slope. Visibility good as contour bank runs through centre of site. 15 artefacts recorded (4x mudstone broken flakes, 3x chalcedony flakes, 2x mudstone flakes, 2x chert flakes, 1xFGS broken flakes, 1x mudstone core, 1x chalcedony core, 1x FGS flake)and 4 angular fragments (3 x chalcedony, 1 x chert). ephemeral drainage depression located approx. 10m. Located SW from edge of dam.
NV50	Edge of Leard Forest. Lower Slopes	224768 6609052	40m x 50m	SV75% AV50%	Located approx 50m south east of NV 49 adjacent to ephemeral drainage depression. Moderate slope. Site condition good to disturbed along lower edge. 7 artefacts (3x chalcedony flakes, 1x mudstone core, 1x volcanic flake, 1 x mudstone broken flake, 1 x FGS broken flake) 6 angular fragments (5 chalcedony, 1 mudstone)
NV51	Haul Rd/ Rail Corridor Flood PLain	225360 6606276	5m x 5m	SV25% AV50%	Visibility impeded by vegetation. 1x mudstone broken flake identified.
NV52	Haul Rd/Rail Corridor	225112 6608260	1m x 1m	Sv75% AV75%	1 artefact identified (chalcedony flake).

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
	Flood Plain/Wetland				
NV53	Haul Rd/Rail Corridor Flood Plain/Wetland	225076 6608251	1m x 1m	Sv75% AV75%	1x chalcedony flake located in small eroded exposure
NV54	Haul Rd/Rail Corridor Flood Plain/Wetland	225426 6607961	5m x 100m	Sv75% AV10%	Located on contour bank. Site runs along exposure created by contour bank. Archaeological visibility hindered by vegetation and surface disturbance. 7 artefacts recorded (1x chalcedony broekn flake, 1x mudstone core, 1x mudstone flake, 1x mudstone broken flake, 3x chalcedony flakes) 2 angular fragments of chalcedony also noted.
NV55	Haul Rd/Rail Corridor Flood Plain/Wetland	225055 6607899	20m x 5m	SV75% 75% Av	One isolated artefact located in a small exposure in a paddock. Loci 2 located in small exposure 3x1m 100% SV, 75%AV - 1x silcrete flake. Ephemeral drainage depression located approx. 25m
NV56	Haul Rd/Rail Corridor Flood Plain/Wetland	225256 6607795		SV 50% AV75%	Creek line, ephemeral located approx. 10m away. Potential quarry site. Some chalcedony nodules outcropping in bed rock
NV57	Haul Rd/Rail Corridor Flood Plain/Wetland	225180 6608085	4m x 10m	SV100% AV75%	Site located on contour bank.5 artefacts (1x mudstone core, 1x silcrete core, 2x chalcedony flakes and 1x mudstone flake). Angular fragments of silcrete and mudstone also noted.
NV58	Haul Rd/Rail Corridor Flood Plain/Wetland	225132 6608121	1m x 1m	SV25% AV25%	1 isolated mudstone flake located in small exposure along contour bank.
NV59	Haul Rd/Rail Corridor Flood Plain/Wetland	224928 6608115	3m x3m	SV75% AV75%	2 mudstone flakes located approx. 20m off contour bank
NV60	Haul Rd/Rail Corridor Flood Plain/Wetland	224946 6608068	6m x 50m	SV90% AV75%	9 artefacts recorded (6x chalcedony flakes, 1x mudstone flake, 1x mudstone core). Disturbance from sedimentation. 1st order ephemeral stream located approx. 40m.
NV61	Haul Rd/Rail Corridor Flood Plain/Wetland	225024 6608030	10m x 5m	SV50% AV0%	Site comprises of an isolated volcanic flake.
NV62	Haul Rd/Rail Corridor Flood Plain/Wetland	224970 6608974	6m x 2m	SV75% AV75%	4 artefacts recorded (1x Volcanic, fine grained broken flake, 1x volcanic flake, fine grained, 1x mudstone flake and 1x mudstone core).
NV63	Haul Rd/Rail Corridor Flood Plain/Wetland	224863 6607981	15m x 20m	Sv90% AV90%	6 artefacts recorded (4x chalcedony flakes, 1x chalcedony broken flake, 1x mudstone broken flake).
NV64	Haul Rd/Rail Corridor Lower slopes	221905 6608334	5m x 5m	Sv80% AV80%	Located in disturbed context - 1x chalcedony flake noted.
NV65	Haul Rd/Rail Corridor Lower slopes	221304 6608652	3m x 30m	SV80% AV80%	Exposure in cleared paddock. Numerous chalcedony fragments across paddock. 8 artefacts (2x mudstone flakes, 1x mudstone core, 1x chalcedony core, 1x volcanic core, 1x volcanic flake, 1x chalcedony flake and 1x chalcedony broken flake)
NV66	Haul Rd/Rail Corridor Lower	221930 6608381	3m x 25m	SV80% AV50%	3 artefacts (2x chalcedony cores, 1 x chalcedony flake) and several angular fragments noted. Site situated on slight slope, located in exposure north of Haul Rd.

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
	Slopes/Flood plain				
NV67	Haul Rd/Rail Corridor Lower Slopes/Flood plain	222084 6608311	25m x 2m	SV90% AV75%	Artefact scatter located in exposure approx 25 x 2m. Numerous artefacts of chalcedony also noted. Site comprises of 5x flakes of chalcedony.
NV68	Haul Rd/Rail Corridor Lower Slopes/Flood plain	222179 6608296	50m x 2m	SV100% AV10%	Artefacts located on contour bank. 1x chalcedony core, 1x chalcedony flake. Numerous angular fragments on red and white chalcedony also noted.
NV69	Haul Rd/Rail Corridor Lower Slopes/Flood plain	222374 6608176	1m x 1m	SV50% AV50%	Isolated artefact located in small exposure.
NV70	Haul Rd/Rail Corridor Lower Slopes/Flood plain	222557 6608102	1m x 1m	SV25% AV25%	Isolated artefact located in small exposure.
NV71	Haul Rd/Rail Corridor Cleared Flood Plain	219975 6608835	2m x 35m	SV75% AV50%	Isolated artefact located in exposure adjacent to trackway on flood plain. 1x mudstone flake
NV72	Haul Rd/Rail Corridor Cleared Flood Plain	219620 6608878	70m x 2m	SV75% AV50%	Exposure along track way. 1x chalcedony flake located.
NV73	Haul Rd/Rail Corridor Cleared Flood Plain	219494 6608900	25m x 2m	SV50% AV50%	Two artefacts located in exposure adjacent to track way.1x chalcedony flake, 1x mudstone flake
NV74	Haul Rd/Rail Corridor Cleared Flood Plain	219106 6608955	10m x 2m	SV25% AV25%	One artefact located, mudstone flake, located in exposure.
NV75	Haul Rd/Rail Corridor Cleared Flood Plain/Lower slopes	217277 6607988	1m x 1m	SV50% AV50%	Artefact located in small exposure on a gentle slope. 1x mudstone flake
NV76	Haul Rd/Rail Corridor Flood Plain	216773 6607827			Modified tree, located on level flood plain in cleared heavily grassed grazing approx. 40m from the Namoi River. One scar identified: Length1570mm, Width at mid point 210mm, regrowth left 180mm, regrowth right 220mm. Scar commences 850mm from base of tree. Fire damage, rot and limb fall also noted.
NV11	Leard Forest Ridge Line	225126 6612750	3m x 3m	SV90% AV80%	Isolated artefact, 1 x chalcedony flake located on track way through forest.
NV12	Leard Forest Ridge Line	223805 6610902	4m x 4m	SV90% AV80%	Isolated chalcedony flake located in track way.
NV13	Leard Forest Ridge Line	223477 6609967	5m x 5m	SV90% AV80%	Artefact scatter (3 broken flakes in total) along approx 70m of track way. Loci 1 at 223482, 6610023 quartz broken flake. Loci 2 223477,6609967 1x silcrete broken flake, Loci 3 223476,6609949 1x chalcedony flake.
NV2	Leard Forest Ridge Line	223572 6609722	25m x 5m	SV75% AV70%	Two flakes of mudstone and chalcedony located in forest track way located approx. 20m apart.

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
NV3	Leard Forest Ridge Line	223650 6609605	15m x 5m	SV75% AV70%	Continues on to NV4 located approx 60m SE. Artefact scatter in track way approx 4.5m wide. Scatter located at intersection of two forest track ways. Site comprises of two Loci of artefacts several meters apart. 1x mudstone flake at 223650, 6609605 and 5x flakes of chalcedony at 223658, 6609601
NV14	Leard Forest Ridge Line	229522 6612412	4m x 4m	SV70% AV60%	Mudstone broken flake located in exposure in forest track way.
NV15	Leard Forest Ridge Line	228138 6612774	4m x 4m	SV70% AV60%	2x chalcedony flakes located approximately in a fairly steep forestry track.
NV16	Leard Forest Ridge Line	227717 6612483	5.5 x 4m	SV50% AV40%	Small mudstone flake located in exposure on gentle slope.
NV18	Leard Forest Ridge Line	228700 6612330	5m x 5m	SV60% AV60%	Site located approx. 5m south of forest trackway in cleared area on a gentle slope. One artefact, a mudstone flake, located in cleared area, and a small silcrete flake located in track offshoot nearby.
NV19	Leard Forest ridge Line	228350 6612270	5m x 5m	SV60% AV60%	Isolated artefact located in forest track way offshoot which terminates in a cleared area approx. 40x50m in size.
NV20	Haul Rd/Rail Corridor Flood plain	217315 6607905	5m x 5m	SV<30% AV<30%	Located in exposure in thick grass cover, west of property 'Daisymead'. 2x flakes of chalcedony and mudstone and 2x angular fragments of chalcedony noted.
NV21	Haul Rd/Rail Corridor	218459 6608295	100m x 10m	SV50% AV50%	Located adjacent to Haul Rd. Visibility poor due to thick grass cover. Artefacts located area approx. 100m. 8 Artefacts and 10 angular fragments identified. Angular fragments noted included 6x chalcedony, 1x quartz, 3x chert, 1x silcrete.
NV22	Haul Rd/Rail Corridor Lower Slopes	217588 6607848	270m x 90m	SV20% AV20%	Artefacts recorded over an approx. 270 x 90m area (217588 6607848 - 215317,6605940). Located near corner of property 'Daisymead'. 7 artefacts in total: 1x silcrete flake, 1x volcanic flake, 2x chalcedony flakes, 3x chalcedony broken flakes, 4x angular fragments of chalcedony, 2x angular fragments of quartz.
NV23	Haul Rd/Rail corridor Lower Slopes	215017 6605133	10m x 10m		Located on lower forest slopes on the west side of the Haul Rd. 1x chalcedony scraper and 1x chalcedony broken flake. 4x mudstone angular fragments also noted.
NV24	Haul Rd/Rail Corridor Flood Plain/Wetland	224865 6608124	3m x 300m	SV80% AV10%	Located in a disturbed context on a contour bank. Closest water ephemeral depression located approx. 50m. Loci 1 225330, 6608190 3 x mudstone flake, 1 x chalcedony flake. Loci 2 225260,66082051 flake, 1 broken flake FGS Loci 3 225067, 6608198 1 chalcedony flake Loci 4224913, 6608182 1 chalcedony flake, 1 chalcedony angular fragment Loci 5 224900, 6608119 1 chalcedony flake, 1 mudstone core, 1 mudstone flake Loci 6 224897, 6608109 1 mudstone flake, 1 chalcedony flake
NV24	Haul Rd/Rail corridor Lower Slopes - Flood Plain			SV60% AV60%	Continuation of site in eroded exposures approx. 50m south of the Haul Rd Loci (224491,6608238) Chalcedony Broken flake, 2 mudstone Broken Flake Loci (224692,6608607) Mudstone Flake
NV24				SV60-80% AV60-80%	Loci (224865, 6608124). 101 artefacts identified at this location and 39 angular fragments. Artefacts identified: 44x Flakes (16x chalcedony, 1x chert, 1x FGS, 21x mudstone, 1x silcrete, 1x volcanic). 38 Broken flakes (15x chalcedony, 2x chert, 21x mudstone), 4 cores (2x chalcedony, 2 xmudstone), 11 broken cores (7x chalcedony, 4x mudstone) and 4 implements (1x mudstone scraper, 1x possible quartzite hammerstone, 1x sandstone manuport, 1x sandstone axe head). Broken hammerstone

Site Name	Landform	Location GPS (UTM, datum WGS84)	Exposure (Approx. m)	Visibility	Description
					located at (224841,6608086). Angular fragments noted at the site: 33x Chalcedony, 2x Silcrete, 3x Mudstone, 1x Quartz 1.
NV77		223825 6608155	10m x 10m	SV40% AV60%	Site located in grassed area south of Haul Rd. 1x core and 1x broken core of chalcedony noted. Poor visibility between road and adjacent fence line due to grass cover. 1x angular fragment of chalcedony also recorded.
NV78		223463,6608033	150 x 15m	SV50% Av80%	Site located in exposure in grassed stony paddock. 8x artefacts identified. 4x flakes (3x mudstone, 1x chalcedony), 1x silcrete possible core, 1x basalt possible core, 3x broken cores (quartz, volcanic, chalcedony). Angular fragments noted: 7x chalcedony, 1x volcanic.
NV25		225651 6610109			Modified tree. 1 scar identified on a 'White Box'. 580mm x 120 mm x 90mm. Located 1100mm above ground level.
NV26		225649 6610101			1x scar identified on a 'White Box'. 800x250x300mm located <100mm above ground level
NV27		225661 6610119			1x scar identified on a 'White Box' 780x100x100mm located on tree <100mm from ground level.
NV28		227436 6612395			1x scar identified on an iron bark. Tree has fallen over. 520x195x65mm. Scar located approx 2.3m above ground level.
NV29		227556 6612564			1x scar located on iron bark 1260x250x80mm approx 6.5m from ground level. Tree is lying on ground.
NV30		227321 6611700			1x scar located on a 'White Box'. 750x160x350mm. circumference of tree at breast height 2.03m. Scar located 350mm above ground level
NV31		227602 6612176			1x scar located on a 'White Box' 1600x140x250mm. Scar located 250mm above ground level. Circumference at breast height 2.32m
NV32		225740 6611543			1 scar located on an 'Ironbark' 650mm above ground level. 940x230x70mm. Lateral axe mark at top of scar
NV33		225971 6611066			1x scar located on White Box 450mm above ground level. 1650x210x120mm. Circumference of tree at breast height 2.13-1.75m.
NV34		216897 6607795			3x scars located on a river red gum. Tree located at a base of knoll on the flood plain. Circumference of tree at breast height 4.90m. Scar 1 1250x420x280mm at 150mm above ground level. Scar 2 1410x650x220 at 300mm above ground level. Scar 3 approx 8m from ground level - not measured.

Appendix F – Artefact Details

Table 12 Artefact Details – excludes scarred trees

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
NV1	Chalcedony		Flake	<30mm				
	Chalcedony		Core	<50mm				
	Chalcedony		Core	<50mm				6 negative scars
	Chalcedony		Core	<50mm				
	Chalcedony		Core	<50mm				
	Chalcedony		Flake	<40mm				
NV2	Mudstone		Broken Flake		32	19	15	Distal end, feather termination
	Chalcedony		Flake		23	21	5	Feather termination
NV3	Mudstone		Broken Flake		31	23	7	Distal snap, 2negative scars
	Chalcedony		Flake		32	20	15	
	Chalcedony		Flake		26	10	6	
	Chalcedony		Flake	<10mm				
	Chalcedony		Flake	<10mm				
	Chalcedony		Flake	<10mm				
NV4	Chalcedony		Broken Flake		32	16	9	Proximal
	Quartz		Broken Flake		19	14	4	Feather termination
	Quartz		Broken Flake		20	12	5	Medial section
	Quartz		Broken Flake		17	14	5	Medial section
	Quartz		Broken Flake		17	14	5	Medial section
	Chalcedony		Broken Flake		22	20	5	3 negative scars
	Chalcedony		Broken Flake		17	10	5	2 negative scars
	Quartz		Broken Flake		12	11	3	
	Silcrete		Broken Flake		35	27	6	4 negative scars
	Chert		Flake		32	31	15	
	Quartz		Flake		12	12	3	
	Quartz		Flake		12	12	3	
	Volcanic		Broken Flake		35	25	10	Use wear of left lateral margin. proximal end
	Chalcedony		Broken Flake		13	10	3	Proximal end
	Quartz	White/Milky	Flake		15	22	10	
	FGS		Flake		40	28	8	
	Volcanic	Green	Flaked Piece		30	25	8	
	Chert		Broken Flake		30	30	10	Banded chert. proximal section
	FGS		Broken Flake		22	20	5	Hinge termination
	Silcrete	Grey	Flake		22	13	3	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	FGS		Flake		17	22	3	
	Chalcedony		Flake		20	22	5	
	Chalcedony		Flake		28	20	5	
	Chalcedony		Flake		18	15	3	Proximal
	Chalcedony		Flake		10	10	3	
	FGS	Pink	Flake		30	35	15	
	Quartz		Core		20	35	20	4 negative scars
	Quartz		Blade		22	8	2	
	FGS		Flake		30	20	10	
	Quartz		Flake	<5mm				
	Quartz		Flake		5	4	2	
	Quartz		Flaked Piece	<10mm				
	Quartz		Flaked Piece	<10mm				
	Silcrete	Grey	Broken Flake		30	30	5	
	Quartz		Flaked Piece		20	10	10	
	Quartz		Flake		20	10	3	
	Quartz		Flake		10	2	2	
	Volcanic		Flake		23	15	3	Usewear
	Silcrete		Flake	<10mm				Fine grained silcrete
NV5	Volcanic	Black/Grey	Broken Flake		50	25	13	Distal end snap
	Volcanic		Broken Axe		70	40	30	Pecked on one side 50% cortex, 4 retouch scars
NV6	Mudstone	Brown	Broken Flake		40	30	13	9 negative scars on dorsal surface, possible redirecting flake
NV7	Silcrete	White/Pink	Scraper		30	27	10	Prepared platform, steep edge on all margins
NV8	Mudstone		Broken Flake		40	32	15	Multi directional dorsal scars
NV9	Silcrete	Grey	Broken Flake	<30mm				Distal end
NV10	FGS		Flake	<50mm				Use wear both margins, 25% cortex on dorsal surface
	FGS		Broken Flake		25	22	12	Use wear on distal margin
	FGS		Broken Flake		20	25	5	Proximal end
	FGS	Grey	Broken Flake		12	8	4	Grey, banded

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
NV11	Chalcedony	White/clear	Flake	<30mm				
NV12	Chalcedony	White/clear	Broken Flake	<20mm				Distal end
NV13	Quartz	White	Broken Flake		42	25	14	Medial section
	Silcrete		Broken Flake		21	16	5	Feather termination
	Chalcedony		Broken Flake		13	10	3	Proximal & medial
NV14	Mudstone	Brown	Broken Flake		35	32	15	Proximal end, right margin longitudinal snap.2 negative scars
NV15	Chalcedony		Broken Flake		13	11	2	Medial segment
	Chalcedony		Flake		24	20	4	Feather termination
NV16	Mudstone	White	Flake		12	11	2	Feather Termination
NV18	Mudstone	Cream	Flake		38	30	10	Feather termination, 3 negative scars
	Silcrete		Flake		10	8	2	Feather termination
NV 19	Silcrete	Grey	Scraper		35	21	15	Backed
NV20	Chalcedony		Broken Flake		20	14	6	Medial portion, 3 negative flake scars
	Mudstone		Flake		45	35	14	50% weathered cortex, usewear right margin.
NV21	Chalcedony	White	Flake		15	12	3	2 negative scars, stepped termination
	Mudstone	Brown	Flake		25	25	13	3 negative scars
	Mudstone	Grey	Broken Flake		20	38	12	Distal end
	Mudstone	Grey	Broken Flake		28	21	8	Proximal end. 3 negative scars
	Chalcedony	Clear	Flake		5	12	5	5% cortex
	Mudstone	Grey	Broken Flake		17	15	3	3 negative scars, distal end.
	Sandstone	Grey-Brown	Possible Grinding Stone		28	14	6	
	Silcrete	Grey	Flake		56	21	12	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
NV 22	Volcanic	Dark Grey	Flake		35	28	11	50% cortex, axial termination
	Chalcedony	White/Pink	Flake		38	27	13	10% cortex, banded.
	Chalcedony	Clear/White	Broken Flake		7	12	2	Distal end, feather termination
	Chalcedony	White	Broken Flake		15	21	5	Medial section
	Chalcedony	White	Broken Flake		17	18	6	Proximal end, 3 negative scars
	Silcrete	Grey	Flake		28	12	7	
	Chalcedony	White	Flake		15	24	5	Feather termination
NV23	Chalcedony	White	Broken Flake		32	24	8	Longitudinal Snap
	Chalcedony	White	Scraper		50	35	20	90% Cortex
NV24 (224491,6608230)	Chalcedony	Grey	Broken Flake		25	20	5	Proximal end, 50% pebble cortex
	Mudstone	Grey-Brown	Flaked Piece		33	28	14	5 negative scars
	Mudstone	Brown	Broken Flake		40	20	12	
NV24 (224692,6608607)	Mudstone	Light Grey	Flake		24	23	4	2 negative scars
NV 24 (224865,6608124)	Chalcedony	White	Broken Flake		20	8	3	Proximal end
	Chalcedony	White	Broken Core		42	33	30	3 negative scars
	Mudstone	Brown	Broken Flake		35	20	10	Proximal end
	Mudstone	Pink	Flake		15	15	3	Feather termination
	Mudstone	Brown	Broken Flake		40	18	5	50% cortex
	Chalcedony	White	Broken Flake		22	15	10	Feather termination
	Mudstone	Grey	Flake		20	14	3	2 negative scars, 50% cortex, feather termination
	FGS	Grey	Flake		34	18	5	2 negative scars, 5% cortex
	Chalcedony	White	Flake		20	11	5	Feather termination
	Chalcedony	White	Broken Core		30	29	15	10% cortex, 7 negative scars
	Chalcedony	White	Broken Flake		20	15	4	Left margin longitudinal snap
	Chalcedony	White	Broken Flake		12	19	5	Medial section
	Chalcedony	White	Broken Flake		30	18	6	Feather termination
	Chalcedony	White	Flake		10	11	2	Feather termination, 10% cortex
	Mudstone	Grey	Flake		32	22	9	15% cortex, 2 negative scars
	Mudstone	Brown	Broken Flake		12	23	8	Distal end
	Mudstone	Brown	Broken Core		40	30	20	5 negative scars
	Mudstone	Brown	Broken Flake		44	23	9	Distal snap
	Chalcedony	Pink	Flake		19	12	3	20% cortex feather termination
	Chalcedony	White	Core		35		29	25% cortex, 6 negative scars

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Chalcedony	White	Flake		17	3	8	5% cortex
	Mudstone	Brown	Core		55	60	41	10 negative scars, 20% cortex
	Chalcedony	White	Broken Flake	<20mm				Medial snap
	Mudstone	Grey	Flake		18	22	6	3 negative scars
	Mudstone	Grey	Flake		33	20	8	Hinge termination, 3 negative scars
	Chalcedony	White	Broken Flake		15	40	10	Distal snap, plunge termination
	Mudstone	Grey	Flake		45	32	18	20% cortex
	Mudstone	Brown	Broken Core	25mm				6 negative scars
	Chalcedony	White	Flake		39	9	8	5 negative scars,
	Silcrete	Brown	Flake		50	31	11	Hinge termination
	Volcanic	Pink-Grey	Flake		30	15	11	4 negative scars
	Chalcedony	White	Broken Flake		18	19	5	Proximal end
	Mudstone	Grey	Broken flake		25	20	9	Distal end
	Mudstone	Pink	Flake		30	23	9	4 negative scars, step termination
	Chalcedony	White	Broken Flake		19	22	5	Distal snap
	Chalcedony	White	Flake		24	25	10	2 negative scars
	Mudstone	Pale Grey	Flake	<50mm				3 negative 10% cortex
	Mudstone				35	12	10	
	Chalcedony	White	Flake		21	12	7	3 negative scars, plunge termination
	Chalcedony	White-Orange	Broken Core		32	23	20	
	Chalcedony	White	Broken Flake		13	15	5	Distal end, hinge termination
	Mudstone	Cream	Broken Flake		22	30	7	Distal end, hinge termination
	Chalcedony	Pink	Broken Flake		20	12	4	Distal end, hinge termination
	Mudstone	Grey	Broken Flake		29	21	9	Usewear right margin, 5% cortex
	Chalcedony	White	Flake		8	10	2	Distal end, feather termination
	Mudstone	Grey	Scraper		43	20	6	20% cortex, usewear right margin
	Chalcedony	White	Broken Core	25mm				8 negative scars
	Mudstone	Brown	Broken Flake		21	10	3	50% cortex. Left margin snap
	Mudstone	Grey	Broken Flake		12	9	2	Mid section
	Chalcedony	White	Flake		9	11	2	Distal end, feather termination
	Mudstone	White	Broken Flake		20	6	3	Proximal end
	Chalcedony	White	Flake		14	10	3	3 negative scars
	Sandstone	Brown	Axe		130	80	40	Possible axe head. 50% cortex, large flake scars
	Chert	Red	Broken Flake		33	22	8	Distal end
	Mudstone	Grey	Flake		20	13	4	5% cortex, 2 negative scars
	Mudstone	Grey	Flake		35	18	8	3 negative scars, plunging termination
	Chalcedony	White	Flake		12	10	3	Feather termination

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Mudstone	Grey	Broken Core		43	35	20	5 negative scars
	Mudstone	Grey	Broken Flake		11	10	4	Mid section
	Mudstone	Grey	Broken flake		15	10	3	Left margin longitudinal snap
	Chalcedony	White	Broken Flake		15	10	3	4 negative scars, distal end
	Mudstone	Grey	Flake		22	13	4	4 negative scars
	Volcanic	Grey	Flake		70	50	22	20% cortex
	Mudstone	Yellow	Broken Flake		44	50	12	2 distal snaps
	Chalcedony	White	Flake		24	15	6	
	Mudstone	Red	Flake		24	40	9	
	Mudstone	Grey	Flake		14	9	2	
	Chalcedony	White	Core		24	14	8	3 negative scars
	Sandstone	Pink	Manuport		80	55	22	Possible grindstone
	Chalcedony	White	Flake		12	10	4	
	Mudstone	Cream	Flake		18	14	4	
	Mudstone	Cream	Flake		16	28	4	
	Mudstone	Brown	Flake		25	23	8	
	Mudstone	Grey	Broken Flake		14	12	3	Distal portion
	Mudstone	Grey	Flake		30	22	6	
	Mudstone	Grey	Flake		41	20	7	10% cortex, edge damage, usewear
	Chalcedony	White	Flake		23	7	4	
	Mudstone	Grey	Broken Flake		25	20	10	Proximal end
	Chalcedony	White	Broken Core		26	24	23	3 negative scars
	Chalcedony	Grey	Broken Core		24	18	11	4 negative scars
	Volcanic	Dark Grey	Flake		16	27	9	3 negative scars
	Mudstone	Grey	Broken Flake		26	28	8	
	Mudstone	Grey	Core		65	50	30	30% cortex, 9 negative scars, 2 platforms
	Mudstone	Grey	Flake		22	13	7	
	Mudstone	Grey	Broken Flake		22	15	7	
	Chalcedony	White	Broken Flake		9	16	5	Mid section
	Mudstone	Grey	Broken Flake		19	12	4	Mid section
	Volcanic	Brown	Flake		22	16	8	
	Chert	Grey	Flake		30	25	10	Proximal end
	Chert	Grey	Broken Flake		13	13	3	Proximal end
	Chalcedony	White	Broken Flake		17	15	8	Distal portion
	Mudstone	Brown	Broken Flake		35	24	12	10% Cortex
	Chalcedony	White	Flake		24	9	5	
	Mudstone	Grey	Broken Flake		22	15	5	Mid section
	Chalcedony	White	Flake		11	10	3	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Mudstone	Grey	Broken Flake		11	10	2	Distal end
	Mudstone	Grey	Flake		20	15	3	2 negative scars
	Mudstone	Grey	Broken Core		32	22	12	5 negative scars 10% cortex
	Mudstone	Cream	Flake		28	17	6	
	Chalcedony	Pink	Broken Core		26	18	2	4 negative scars
	Chalcedony	White	Broken Flake		16	12	4	Proximal section
	Quartzite	Brown	Hammerstone		95	52	42	Possible hammerstone, broken in half
NV24	Mudstone	Grey	Flake		30	15	7	Edge damage on 2 margins, usewear
	Mudstone	Grey	Flake		32	25	8	Usewear, edge damage
	Chalcedony	Clear/white	Flake		12	7	2	
	Mudstone	Cream	Flake		38	29	7	Usewear along distal margin
	FGS	Brown	Flake		35	40	10	
	FGS	Brown	Broken flake		35	12	9	Lateral portion
	Chalcedony	White	Flake		22	14	4	
	Chalcedony	White	Flake		25	15	8	
	Chalcedony	White	Flake		25	18	6	
	Chalcedony	White	Flake		10	7	2	
	Mudstone	Brown	Core		32	22	17	Fragment, 4 neg scars
	Mudstone	Brown	Flake		37	32	6	Edge damage, usewear
	Mudstone	Cream	Flake		21	10	4	
	Chalcedony	White	Flake		24	15	6	
NV38	Volcanic	Red	Flake		42	49	20	
NV39	Volcanic	Green	Flake		35	30	9	
	Volcanic		Core		65	55	30	4 negative scars
NV40	Chalcedony		Core		30	20	10	8 negative flake scars
	Chalcedony		Core		60	70	50	45% cortex
	Chert		Broken Flake		13	12	5	Distal portion
NV41	FGS	White	Core		38	45	32	Steep edged, 8 negative scars
NV42	Chalcedony		Core		80	55	40	Weathered cortex
NV43	Chalcedony		Core		30	25	15	Bi polar, 5 negative scars, distal break, left margin damage.
	Chalcedony		Core		35	28	20	3 negative scars, cortex

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
NV44	Silcrete	Red-Grey	Core		45	40	40	10 negative scars, 10% cortex, steep edged
NV45	Chalcedony		Flake	<50mm				20% cortex
NV46	Chalcedony		Broken Flake		43	30	9	Mid section
NV47	Chalcedony		Flake		70	30	30	30% cortex
	Chalcedony		Flake		12	9	5	
NV48	Chalcedony		Flake		25	15	5	
	Chalcedony		Broken Flake		15	10	5	
	FGS	Light grey	Flake		21	15	8	
	Chalcedony		Flake		12	10	4	
	Chalcedony		Flake		12	10	3	Usewear
	FGS	Cream/Pink	Broken Flake		25	20	8	Distal end
	FGS		Broken Flake	<50mm				Possible blade, usewear both margins, distal snap
	Quartz	Cream/Pink	Flake		40	25	12	
	Chalcedony		Broken Flake		40	30	15	Distal end
	Chalcedony		Flake		50	65	20	50% cortex
	Chalcedony		Broken Flake		28	20	8	Proximal end
	Chalcedony		Broken Flake		29	22	7	Proximal end 10% cortex.
NV49	Mudstone	Grey	Broken Flake		15	12	4	Lateral portion
	Mudstone	Orange	Broken flake		18	11	3	Mid section, retouch
	Chalcedony	Clear/White	Flake		11	7	3	
	Mudstone	Light grey	Broken flake		21	15	7	Mid section blade
	Mudstone	Light grey	Broken flake		21	15	5	Mid section
	Mudstone	Light grey	Flake		60	55	22	
	Chert	Dark grey	Flake		42	25	16	
	FGS	Green	Broken flake		15	16	4	Mid section
	Mudstone	Orange/red	Blade core		46	25	28	4 scars, 2 opposing,
	Chalcedony	Clear/white	Core		23	16	13	Fragment, 4 scars, rotated
	FGS	Green	Flake		47	32	19	
	Chert	grey	Flake		30	17	9	
	Mudstone	grey	Flake		27	19	6	
	Chalcedony	Clear/white	Flake		14	9	6	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Chalcedony	Clear white	Flake		22	12	9	
NV50	Chalcedony	Clear/white	Flake		17	8	3	
	Chalcedony	Clear/white	flake		12	9	4	
	Chalcedony	Clear/white	Flake		14	9	6	40% cortex weathered
	Mudstone	Cream	Core		50	36	20	Fragment. 4 scars, opposing
	Fine Grained Volcanic	Dark grey	Flake		20	21	4	Mid section
	Mudstone	Green/blue	Broken flake		15	11	2	Prox. portion
	FGS	Green	Broken Flake		25	19	6	Proximal portion
NV51	Mudstone	Cream	Broken Flake		18	21	4	Distal portion
NV52	Chalcedony	White/Cream	Flake		18	13	3	
NV53	Chalcedony	Clear/White	Flake		21	17	4	
NV54	Chalcedony	White	Broken Flake		22	17	6	Longitudinal snap
	Mudstone	Grey	Core		32	30	14	Fragment. 3 scars
	Mudstone	Yellow	Flake		28	19	4	
	Chalcedony	Clear/white	Flake		22	19	6	
	Chalcedony	Clear/white	Flake		17	12	6	
	Chalcedony	Clear/white	Flake		27	17	7	
	Mudstone	Grey	Broken Flake		18	12	3	Proximal portion
NV55	Chalcedony	Clear/white	Flake		19	14	6	
	Silcrete	Brown	Flake		25	24	8	
NV57	Mudstone	Cream	Flake		33	20	12	10% cortex
	Chalcedony	White	Flake		10	6	2	
	Mudstone	Cream	Core		40	22	18	Fragment. 3 negative scars
	Silcrete	Brown	Core		25	17	9	Fragment 4 negative scars
	Chalcedony	White	Flake		27	14	6	
NV58	Mudstone	Yellow	Flake		27	18	6	
NV59	Mudstone	Yellow	Flake		12	8	3	
	Mudstone	Yellow	Flake		27	14	4	
NV60	Chalcedony	White	Flake		12	8	2	
	Chalcedony	White	Flake		18	12	6	40% weathered cortex

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Mudstone	Cream	Core		42	31	22	4 negative scars, rotated
	Chalcedony	White	Flake		12	5	2	
	Chalcedony	White	Flake		23	12	5	
	Chalcedony	White	Flake		15	9	2	
	Mudstone	Cream	flake		16	9	2	
	Chalcedony	White	Flake		9	6	2	
	Chalcedony	White	Flake		18	12	6	
NV61	Volcanic	Cream	Flake		50	36	16	10% pebble cortex
NV62	Volcanic	Grey	Broken flake		21	29	10	Fine grained. Mid section
	Volcanic	Grey	Flake		25	17	9	Fine grained.
	Mudstone	Cream	Flake		22	14	2	
	Mudstone	Grey	Core		35	28	19	Fragment, 5 negative scars
NV63	Chalcedony	Clear/grey	Broken Flake		42	20	12	Lateral portion
	Chalcedony	White	Flake		12	10	4	
	Chalcedony	White	Flake		12	8	3	
	Chalcedony	White	Flake		11	9	4	
	Mudstone	Cream	Broken flake		24	19	6	Distal portion
	Chalcedony	White	Flake		18	7	2	
NV64	Chalcedony	White	Flake		12	11	4	
NV65	Chalcedony	Grey	Broken flake		15	9	3	Distal portion
	Mudstone	Cream	Flake		22	13	5	
	Chalcedony	White	Flake		12	10	4	
	Volcanic	Cream	Flake		24	12	8	2 conjoin fragments
	Volcanic	Cream	Core		50	40	38	50% pebble cortex, 3negative scars
	Chalcedony	White	Core		42	28	18	Fragment. 2 negative scars
	Mudstone	Yellow	Flake		12	8	2	
	Mudstone	Cream	Core		25	14	9	Fragment 4 negative scars
NV66	Chalcedony	White	Core		80	65	50	25% weathered cortex, good quality material
	Chalcedony	White	Flake		25	15	5	3 negative scars
	Chalcedony	orange	Core		40	30	15	Fragment 1 negative scar
NV67	Chalcedony	White	Flake		10	8	2	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Chalcedony	White	Flake		19	11	4	
	Chalcedony	White	Flake		9	3	2	
	Chalcedony	White	Flake		12	8	2	
	Chalcedony	Orange	Flake		28	18	7	
NV68	Chalcedony	White	Core		28	22	12	1 negative scar, 10% cortex
	Chalcedony	White	Flake		18	9	4	
NV69	Mudstone	Brown	Flake		36	30	9	
NV70	Mudstone	Brown	Flake		29	21	8	
NV71	Mudstone	Cream	Flake		45	32	10	
NV72	Chalcedony	Pink	Flake		22	9	5	
NV73	Chalcedony	White	Flake		30	26	6	
	Mudstone	Grey	Flake		56	30	12	10% pebble cortex
NV74	Mudstone	Grey	Flake		55	35	14	25% pebble cortex
NV75	Mudstone	Grey	Flake		28	30	8	
NV77	Chalcedony	White	Core		55	47	38	
	Chalcedony	White	Broken Core		60	38	30	20% cortex, 5 negative scars
NV78	Silcrete	Brown	Core		53	50	43	Possible core, 5% cortex
	Volcanic	Dark Grey	Core		60	45	37	7 negative scars
	Quartz	White-Grey	Broken Core		65	50	35	45% cortex, 7 negative scars
	Chalcedony	White	Broken Flake		33	17	9	Right longitudinal margin snap
	Volcanic	Cream	Broken Core		85	80	60	5 negative scars
	Mudstone	Cream	Flake		32	22	8	2 negative scars
	Mudstone	Yellow	Flake		45	35	10	50% cortex, usewear left margin
	Chalcedony	White	Flake		22	20	6	Feather termination
	Mudstone		Flake		45	39	29	4 negative scars
BC 34 (re recording)	Fgs	White/cream	Flake		38	35	8	Hinge termination, transverse dorsal scars
	fgs	Cream	flake		9	12	5	Transverse dorsal scars, redirecting flake, long blade like

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Fgs	White	Flake		27	22	15	
	Fgs	Grey/white	Flake		35	20	10	Transverse dorsal scars
	Chalcedony		Flake		10	8	3	
	Chalcedony	White/translucent	Flake		30	31	10	20% cortex
BC 34(225915, 6611661)	Chalcedony		Flake	<50mm				
	Mudstone		Flaked Piece	<30mm				
BC54(225654,6611616-225662,6611570)	Silcrete	Grey	Blade		60	33	8	1 negative scar
	Mudstone		Flake		40	33	17	
	Mudstone		Flake	<50mm				Distal end, feather termination, 4 negative scars, some usewear
	Silcrete	Cream	Blade		31	11	4	5 negative scars
	Mudstone		Flake		33	13	7	
	Chalcedony		Flake		17	5	3	Feather Termination
	Chalcedony		Flake	<30mm				Distal end, feather termination
	Mudstone		Flake		20	12	3	Longitudinal snap, 2 negative scars
	Silcrete		Flake		35	22	5	3 negative scars
	Mudstone		Flake	<30mm				3 negative scars
	Mudstone		Flake		42	28	7	Plunging termination
	Chalcedony		Flake		19	18	4	3 negative scars, proximal end
BC54 (225670,6611557)	Chalcedony		Flake		20	14	4	4 negative scars, feather termination
	Chalcedony		Broken Flake		21	15	6	Medial segment, 2 lateral snaps
	Mudstone		Flake		43	28	10	Usewear left margin, 1 negative scar, 10% cortex, plunging termination
	Chalcedony		Flake	<50mm				4 negative scars
	Mudstone		Flake		26	17	5	Feather termination, 1 negative scar
	Chalcedony		Flake		22	18	4	Feather termination, 3 negative scars
	Chalcedony		Broken Flake		20	12	5	Distal end
	Chalcedony		Blade		23	7	5	2 negative scars
BC54	Mudstone		Broken Flake		28	19	5	Distal end, 3negative scars, stepped termination
	Mudstone		Broken Flake		14	19	1	Lateral snap, feather termination, 3 negative scars
	Mudstone		Flake		18	18	3	Feather termination

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Chalcedony		Flake		17	11	3	2 negative scars
	Mudstone		Broken Flake		14	8	2	Proximal end, 3 negative scars
	Chalcedony		Broken Flake		15	10	2	Medial section. 3 negative scars
	Mudstone		Broken Flake		27	22	6	Proximal end, 2 negative scars
BC54 (225778,6611540)	Chalcedony		Flaked Piece		12	10	3	
	FGS		Flake		40	50	12	50% Cortex
	Quartz		Flake		12	15	2	
	Chalcedony		Broken Flake		8	8	2	Distal end
	Chalcedony		Broken Flake		21	10	3	
	FGS		Flake		19	27	6	
	FGS		Broken Flake		22	21	8	Usewear right margin
	Silcrete	grey	Flake		25	30	8	Edge damage
	Chalcedony		Flaked Piece		23	11	5	
	FGS		Broken Flake		32	33	10	Distal end
	Silcrete		Core		48	55	30	5% cortex
	FGS		Flake		28	18	7	
	Chalcedony		Flake		12	10	4	Feather termination
	Chalcedony		Flake		10	10	2	
	Silcrete		Broken Flake		29	28	7	
	Chalcedony		Flake		31	12	8	
	Silcrete	Grey	Broken Flake		12	20	4	Proximal
	Chalcedony		Broken Flake		28	11	10	
	Silcrete	Grey	Broken Flake		21	10	7	
	Volcanic	Black	Flake		24	28	5	
	Chalcedony		Flake		14	8	6	
	Chalcedony		Flake		19	28	3	
	Chalcedony		Broken Flake		18	8	2	Backed, proximal section
	Chalcedony		Broken Flake		12	8	2	Proximal end
	FGS		Flake		22	18	3	
	FGS		Broken Flake		12	20	3	Mid section
	FGS		Flake		33	28	12	Flake/possible steep edged scraper
	Chalcedony		Broken Flake		22	18	5	Distal end
	Chalcedony		Flake		36	20	10	
	FGS		Flake		32	32	8	Hinge termination
	Chalcedony		Flaked Piece		20	10	10	
	FGS		Scraper		20	22	10	Usewear both margins
	Chalcedony		Flake		20	21	10	Multi faceted
BC54 225632,6611566	Quartz		Core		37	32	22	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
BC54 (225785,6611456)	Volcanic?		Broken Axe		75	55	40	Right margin broken
BC54	quartz		Angular Fragment					
	Quartz	White	Flake		15	20	5	
	Silcrete	Grey	Flake		20	27	3	50% cortex
	Silcrete	Cream	Flake		25	15	8	Usewear on left and right margin and distal
	Chalcedony	Clear	Flake		9	17	2	
	chalcedony		Core		30	25	10	
	Chalcedony		Flake		18	10	5	
	FGS		Flake		29	20	6	
	FGS		flake		30	30	20	20% cortex hinge termination on dorsal
	chalcedony		Flaked piece		20	15	5	
	FGS		Flake		40	25	6	
	Chalcedony		Core		30	20	20	3 negative scars
	Chalcedony		Flaked piece		20	19	2	5% cortex
	Chalcedony		Flake		16	15	5	
	Silcrete	grey	Core		30.	30	20	10 negative scars
	FGS	grey	Flake		23	16	8	
	Roes quartz	Pink/white	Flake		30	40	10	
	FGS		Flake		20	20	8	Conchoidal
	FGS	Grey	Flake		20	20	5	
	Chalcedony		Flake		16	10	4	
	Chalcedony		Flake		12	15	4	Medial
	Chalcedony		Flake		10	15	5	medial
	Chalcedony		Flake		16	10	2	proximal
	Sandstone		Manuport		80	55	30	Edge damage, pecked under dorsal surface
	Chalcedony		Flake		10	10	3	Usewear
	Chert	White	Flake		15	15	3	Edge damage
	FGS	Grey	Flake		28	14	6	
	FGS	Dark grey	Core		40	30	25	19 negative scars, hinge termination, some blade scars noted
	Quartz		Flake		22	10	5	
	Chalcedony		Flake		20	12	5	

Site Name	Material	Colour	Class	Max Dimension	L (mm)	W	T	Comments
	Chert	Orange	Flake		12	15	5	
	Quartz		Flake		20	12	8	
	Silcrete	Pink	Flake		30	33	16	
	FGS		Flake		20	20	5	Mid section
	FGS		Flake		32	20	5	Distal, 5% cortex
	Quartz		Flake		10	11	3	Mid section
	Chalcedony		Flake		12	10	3	
	Chalcedony		Flake		11	8	4	
	Chalcedony		Flake		15	6	4	Left margin snap
	Chalcedony		Flake		18	16	4	
	Chalcedony		Core		22	25	25	4 scars
	Chalcedony	White & orange	Flake		25	22	6	Mid section
	FGS	Grey	Flake		30	15	8	Axial termination

Appendix G – Community Report Reviews

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4th February 2010

Ben Eastwood
Senior Environmental Scientist
Hansen and Bailey
Environmental Consultants

Re: Boggabri Coal Mine Draft Aboriginal Archaeological Cultural and Heritage Assessment

Dear Ben

I am writing in regards to the above and wish to advise you that at this point in time Gunida Gunyah Aboriginal Corporation do not feel they are in a position to provide an adequate response to the report.

Unfortunately past assessments have required hurried responses limiting community consultation in determining the most appropriate levels of mitigations conservation or destruction of our heritage. A majority of our membership is concerned that the report does not clearly outline what is to occur with the items of interest that have been located

Gunida Gunyah Aboriginal Corporation is at present in the process of negotiating an Alliance with 3 other local organisations (stakeholders) to deal with all issues relating to cultural heritage issues. It is envisaged that the "Alliance" when finalised, will allow the Aboriginal community to deal with cultural heritage issues more respectfully and effectively.

We would appreciate a further period of four to five weeks to provide an appropriate response to the report once community consultation has occurred.

Regards

Jane Bender

Jane Bender
CEO
Gunida Gunyah

RED CHIEF LOCAL ABORIGINAL LAND COUNCIL

P.O. Box 745
Gunnedah NSW 2380

Phone: (02) 6742 3602
Fax: (02) 6742 3815
Email: redchief@westnet.com.au
ABN: 11 825 966 870

Ben Eastwood
Senior Environmental Scientist
Hansen and Bailey

Re: Draft Aboriginal Archaeological Cultural and Heritage assessment

Dear Ben

I am writing in regards to the above and wish to advise you that at this point of time the Red Chief LALC is not in a position to submit a reply.
Unfortunately past assessments have required hurried responses therefore limiting community consultation insofar as determining the best levels of mitigations conservation or destruction of a small but meaningful window to their past.

Fortunately though, Red Chief LALC is currently in the process of forming an Alliance with 3 other key local organisations to deal with cultural heritage issues within it's area. The "Alliance" when finalised, will in turn better be able to deal with the cultural heritage issues more effectively and respectfully for the Aboriginal community.

Therefore, so as to allow the community consultation the time needed, I respectfully request an extension of four to six weeks from your desired time (08/02/10).

Your favourable response to this request would oblige

Kind Regards

Robert Horne
CEO Red Chief LALC

Cacatua Culture Consultants

Entity of Cacatua General Services

ABN 83 774 580 518

5 February 2010

Your Ref:

Ben Eastwood
Senior Environmental Scientist
Hansen Bailey
6/127 John Street
SINGLETON NSW 2330

RE: **Aboriginal Archaeological Impact Assessment for the Continuation of Boggabri Coal Mine**

Ben,

Thank you for your letter and draft dated 15th January 2010. We have read and discussed the above draft and has been approved under a Part 3A and that this draft still has only shown positive point when it came to the protection of Aboriginal significant items were possible within the draft is an advantage.

With this in mind we feel that all involved have made an effort and we at this stage support this draft.

Yours truly

George Sampson
Manager

22 Ibis Parade, Woodberry NSW 2322
Ph: 02 4964 4685 • Fax: 02 4964 4635

ELLI LEWIS

02 · 65731875

Fax 0422780463

I Steven Hands agree with the Aboriginal Acchaeological impact Assessment for the continuation of Boggabri Coal Mine.
I would like any artefact or scarred trees to Be picked up and taken cared off and to be placed Back at further date.

Thank you

S Hands

5 · 2 · 2010.

05/02 2010 13:29 FAX

Cultural Heritage Consultants

ELLILEWIS

Phone - 02 - 65731875
0422780463

Kamillaroi.

E-mail -
Jean.h@huntherlink.NET.AU

Cultural Heritage Consultants

ELLILEWIS

20 Acaica Circuit
Singleton NSW 2330
6^{TH} February 2010
0422780463

Dear Ben

Sorry for the delay in the reply, Steven has hand written and signed he's comments if you need it to be type please let me know

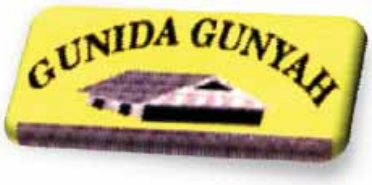
Again I apologise for the delay.

Regards

[signature]

Jean Hands
ELLILEWIS.

34-36 Farrar Road
PO Box 439
GUNNEDAH NSW 2380



Phone: 02 6742 7038
Fax: 02 6742 6670
Email: cdep@northnet.com.au
ABN: 99561430099

21st February 2010

Ben Eastwood
Senior Environmental Scientist
Hansen and Bailey
Environmental Consultants

Re: Boggabri Coal Mine Draft Aboriginal Archaeological Cultural and Heritage Assessment

Dear Ben

Whilst there may be no written Aboriginal linkages to Laird State Forest we consider this area like many others in our region to play an important role in the seasonal calendar of our tribal ancestors. The flora and fauna within the forest area would have played a vital role in the survival and sustainability of our people. The forest water not only would have provided life but like all water ways it is the life blood of all of our existence. Within Laird Forest there are a number of springs, the most sacred water source of all. In the Laird Forest assessment a large amount of artefacts were discovered and this would lead us to believe that pre European occupation was predominant in this area and with the high level of open camp sites we strongly believe that Laird State Forest holds significant cultural value to the Aboriginal community.

Gunida Gunyah Aboriginal Corporation does not and cannot support any destruction of any significant cultural sites that hold importance to our community and culture. It is imperative that this Corporation does all that it can to ensure the protection and conservation of our culture for the future social, cultural and economic wellbeing of the Aboriginal community.

Gunida Gunyah also considers that large mining companies allow Aboriginal stake holders 21 days to assess, consult and respond to these assessments, yet our heritage dates back thousands of years we find 21 days inadequate to appropriately respond to these assessments.

Regards

Jane Bender

Jane Bender
CEO
Gunida Gunyah

RED CHIEF LOCAL ABORIGINAL LAND COUNCIL

P.O. Box 715
Singleton NSW 2330
Phone: (02) 6742 3602 Fax: (02) 6742 3815
Email: redchief@westnet.com.au

19 February 2010

Ben Eastwood
Senior Environmental Scientist
Hansen Bailey
PO Box 473
Singleton NSW 2330

Dear Ben

Response to Aboriginal Archaeological and Cultural Heritage Draft Report

Firstly thank you for the extension of time to allow the relevant local Aboriginal organisations to confer in relation to the above and the proposed Management Recommendations.
The Draft Report has highlighted some interesting views, possibly none more then the significance criteria however it is our peoples solum belief that it is impossible to over emphasise the continued cultural, spiritual and sacred importance of all sites within our area.
The Executive summary stated "whilst no direct stories or linkages have been made to the Laird State Forest as a cultural entity the sites provide a cultural link to the area for the Aboriginal stakeholders".

These sites are just small windows of a cultural link to our forbearers the natural landforms became creation stories, formed boundaries and had spiritual meanings.

The Laird Forest vegetation it self not only provided shelter from the harsh conditions but also contributed to the day to day food gathering as part of a migratory rout of a seasonal calendar. Every living plant and animal in the forest and surrounds was a potential meal and many plants contained medicinal qualities.
The forest trees provided the hard timbers for weapon tool and utensil manufacture and debris used as fire fuel for cooking warmth repelling insects and ceremonies.
Sap excreted or extracted was used as resins to affix the stone flakes into timber handles to produce axes gauges chisels incising tools and spears when set into the end of a timber shaft.

The bark of the trees was removed to make shelters, build canoes used as food patters and also used in burials.
The forest's many springs, seeps and washes that flow downward from the ridges to form the wetlands, fill the creeks and billabongs that eventually flow the rivers. An integral part of culture and the lifeblood of all existence, all places of water hold significance but the most sacred of all are the springs and seeps.

The methodologies used for cultural mapping are more then often restricted by elements such as vegetation density, ground cover, accessibility time and cost and only managers to reveal snippets of the real extent of cultural evidence available.

It is predominantly evident that **the gap** will never close, seemingly as quickly as we are able to discover a connection to our past, and the level and the length of occupation that gives us a glimpse of how our people lived and what the landscape was like. Tens of thousands of years of a people's culture is permanently and knowingly been destroyed.

Nothing written can describe or replace the loss of our only remnant links to the creator and the dreamtime. Stories passed down in song and dance, culture and language all but gone. Culture that was not lost through the harsh impacts of European settlement in the form of government policies and displacement of our people will inevitably be lost to more development.

In conclusion the Red Chief Local Aboriginal Land Council can not support any plan that causes the destruction of sites that are of cultural significance to our community.

Yours truly,

Robert Horne CEO

Min-Min Aboriginal Corporation
1-55 Elgin Street
Gunnedah NSW 2380
Po Box 877,
Gunnedah NSW 2380

Phone No.: (02) 67424121
Fax No.: (02) 67425152

Date: 23/02/2010

22 February 2010

Ben Eastwood
Senior Environmental Scientist
Hansen Bailey
PO Box 473
Singleton NSW 2330

Dear Ben,

Response to Aboriginal Archaeological and Cultural Heritage Draft Report

Min Min would firstly thank you for the extension of time to allow our organisation to confer with the other groups about the proposed Management recommendations.

Min Min met with Gunida Gunyah & Red Chief LALC and agreed with most of what was discussed, highlighting some very interesting views on the draft report, however it is the Aboriginal peoples solemn belief that it is impossible to over emphasise the continued cultural, spiritual, and sacred importance of all sites within all our areas.

Min Min agrees with the other groups which your executive summary stated "whilst no direct stories or linkages have been made to the Laird State Forest as a cultural entity the sites provide a cultural link to the area for the Aboriginal stakeholders."

Those sites may all be small windows of cultural entity, we believe the sites provide a cultural link to our forbearers the natural landforms became creative stories, and formed boundaries with spiritual meanings.

Min Min also agrees with RCLALC that the Laird Forest vegetation itself not only provided shelter from the harsh conditions, but also provided food which was a day to day survival for Aboriginal people, as you would be aware the forest, animals, wildlife, and so on was a meal to survive, plants, also contained medicinal remedies for a quality of life

The trees provided timber for weapons, and utensils, sap excreted was used as resins to affix the stone flakes into timber handles, to produce tool and spears, when set into a timber shaft, the bark was removed to make shelters, build canoes, and also used for funerals.

The METHODLOGIES used for cultural mapping are often restricted by elements such as vegetation, ground cover, accessibility, and do not reveal snippets of the real extent of cultural availability.

The GAP will never cease the connection of the Aborigines past, and the level and strength of how Aborigines lived and survived, it has been thousands of years, of the oldest (Aboriginal) culture that is permanently and knowingly been destroyed.

Our communities are not just where we come from, but who we are. They represent our family connections, proud history and rich culture.

The Aboriginal community and the Min Min Aboriginal Corporation in Gunnedah would not support any plan that causes destruction of sites that are of cultural significance to our community.

Min Min is happy to sit and consult with your company,??? Min Min also believes all Aboriginal Organisations in our community should have an input into any IMPORTANT discussions; the mining companies in the surrounding areas have about the future developments and to identify cultural areas of importance and significance.

Thanking you kindly Ben
Have a good day.
Gwen Griffen (Chairperson)

G a Griffen

From: Michelle Griffiths [mailto:wallis.griffiths@bigpond.com]
Sent: Monday, 1 March 2010 9:16 PM
To: Ben Eastwood
Subject: Cultural & Heritage Assessment Boggabri Coal Mine

Mr Ben Eastwood
Hansen Bailey
Environmental Consultants
PO Box 473
Singleton NSW 2330

Dear Ben

I have read the proposed draft report re the above mine.

There are many parts of the report I agree to, but there certain parts I wish to discuss further. e.g. We agree that excavation should be conducted over certain sections of the mine to further investigate the occupation and transition of aboriginal people through that immediate area

I would like to further discuss the cultural integrity of the mine area with continued destruction and desecration of Aboriginal sites and artefacts from high impact mining, there needs to be a further recognition of shared responsibility the Aboriginal Cultural and heritage management of the proposed mining area.

I would appreciate if we could arrange a meeting to discuss this further as I know this is a matter of urgency, could you please ring me and advise of an appropriate time

I may contacted at anytime on 0409 220 756

Wayne Griffiths

Traditional owner
Bigundi Biame Traditional People
PO BOX 254
Gunnedah NSW 2380
Tel: 02 6742 0311

Mob: 0409 220 756

Appendix H – AHIMS Site Registration Details

Table 13 AHIMS Site Registration Details

AHIMS Site Card Name	Sites Included
LFNV1,2,3,4 &13	NV1, NV2, NV3, NV4, NV13
LFNV5,6,14,15,16,18 &19	NV5, NV6, NV14, NV15, NV16, NV18, NV19
LF NV 7,8,9	NV7, NV8, NV9
LF NV10	NV10
LFNV11	NV11
LFNV12	NV12
LFNV25,26,27	NV25, NV26, NV27
LFNV28,29,31	NV28, NV29, NV31
LF NV 24,51-61 & 63	NV24, NV51, NV52, NV53, NV54, NV55, NV56, NV57, NV58, NV59, NV60, NV61, NV63
LFNV30	NV30
LFNV32	NV32
LFNV33	NV33
LFNV 49,50 & 62	NV49, NV50, NV62
LFNV 77, 78	NV77, NV78
HR NV64, 66-70	NV64, NV66, NV67, NV68, NV69, NV70
HRNV20&75	NV20, NV75
HRNV21	NV21
HRNV22	NV22
HRNV34	NV34
HRNV 35 & 36	NV35, NV36
HRNV 37-39	NV37, NV38, NV39
HR NV 65	NV65
HR NV 71-74	NV71, NV72, NV73, NV74
HRNV76	NV76
HRNV 40	NV40
HRNV 41-44	NV41, NV42, NV43, NV44
HRNV 45	NV45
HRNV 46,47&23	NV46, NV47, NV23
HRNV 48	NV48