



**Hy-Tec Industries Pty Limited**

ABN: 90 070 100 702

**Austen Quarry  
Stage 2 Extension Project**

**Indigenous Heritage  
Assessment**

Prepared by

**Niche Environment and Heritage Pty Ltd**

**September 2014**

**Specialist Consultant Studies Compendium  
Volume 2, Part 8**

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# Hy-Tec Industries Pty Limited

ABN: 90 070 100 702

## Indigenous Heritage Assessment

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## **SUMMARY**

This report presents the results of an Aboriginal heritage assessment for a proposed expansion of Austen Quarry approximately 3.5 km south of the town of Hartley in NSW.

The objectives of the assessment were:

- To identify whether Aboriginal sites, objects or places are present within the subject area, and if present whether these would be impacted by the proposed works;
- If such objects, sites or places are present, assess their cultural heritage significance via consultation with Registered Aboriginal Parties (RAPs); and
- Provide appropriate mitigation and management recommendations.

No Aboriginal objects or places were found during the assessment.

Ground surface visibility was high in the Stage 1 Extraction Area yet no Aboriginal objects or places were identified. It is very unlikely that the proposed works in this area would impact of Aboriginal heritage in that area.

The ground surface visibility in the Stage 2 Overburden Emplacement Area was very low (estimated at 5%). However, the results of this assessment suggest that the proposed works would be unlikely to impact on Aboriginal heritage in that area.

There are no Aboriginal heritage constraints for the proposed works. However, management measures, including a process for dealing with unexpected finds of Aboriginal objects and the inclusion of Aboriginal heritage management obligations in project inductions, are recommended to ensure ongoing statutory compliance.

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## **1. INTRODUCTION**

Niche Environment and Heritage Pty Ltd (Niche) was commissioned by RW Corkery & Co. Pty Ltd (Corkerys), on behalf of Hy-Tec Industries Pty Ltd (Hy-Tec), to produce an Aboriginal Heritage Assessment Report for a proposed expansion of Austen Quarry approximately 3.5 km south of the town of Hartley in NSW. The proposed quarry expansion would increase the mine extraction area by approximately 20 ha and the overburden emplacement by approximately 6 ha.

It is understood that the project will be classified as a State Significant Development (SSD) (in accordance with Schedule 1(7) of State Environmental Planning Policy (SEPP) for State and Regional Development (2011). As SSD, an Environmental Impact Statement (EIS) is required.

Director General's Requirements (DGRs) for the EIS have yet to be issued. However, to ensure no departure from current best practice in Aboriginal cultural heritage assessment in NSW, this report has been prepared to comply with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011); *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010a); and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b).

The objectives of this report are as follows:

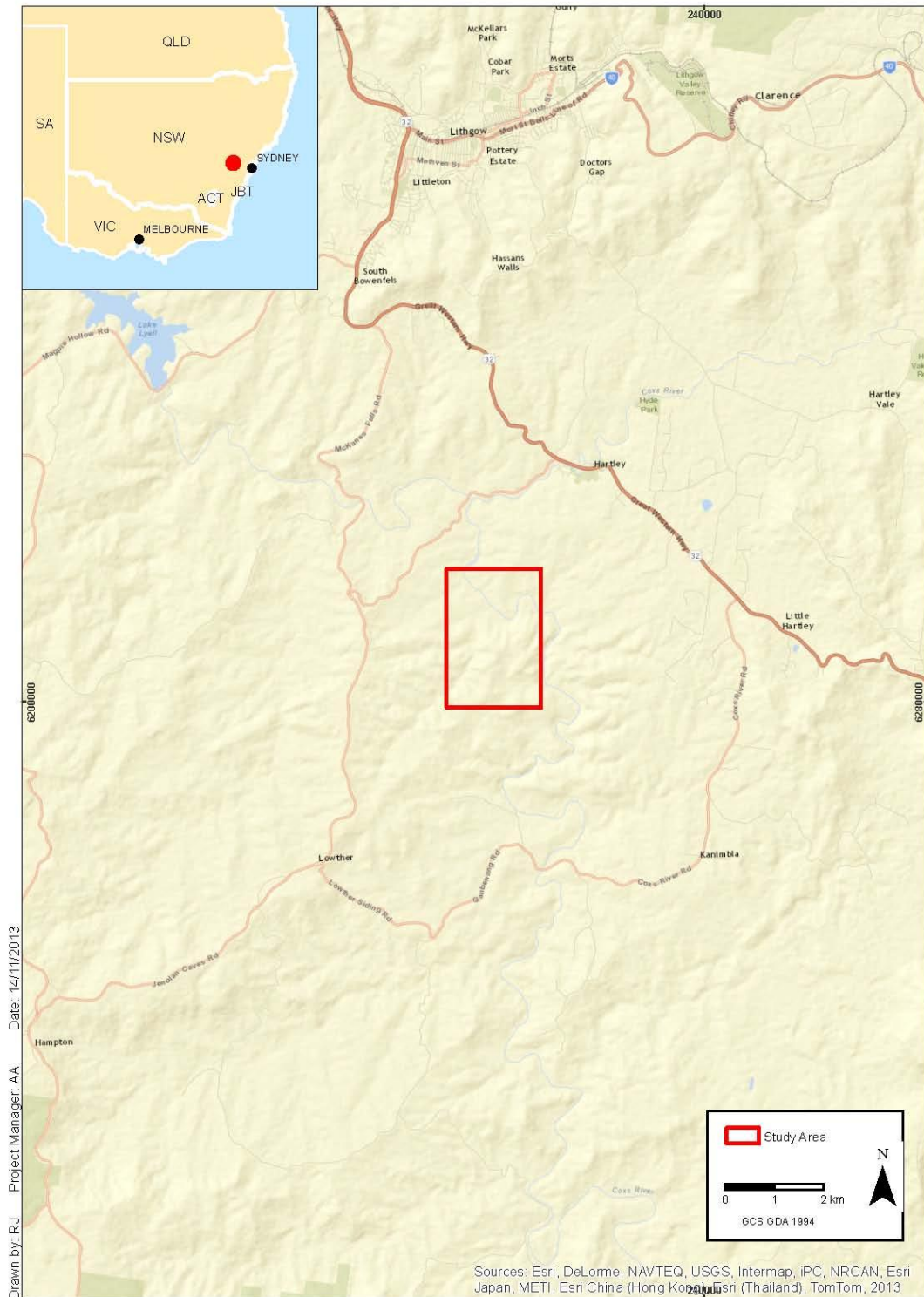
- to identify whether Aboriginal sites, objects or places are present within the subject area, and if present whether these would be impacted by the proposed works;
- If such objects, sites or places are present, assess their cultural heritage significance via consultation with Registered Aboriginal Parties (RAPs); and
- Provide appropriate mitigation and management recommendations.

This report presents the results of background research, Aboriginal community consultation and field survey.

## **2. SITE LOCATION**

Austen Quarry is operated by Hy-Tec and is located on Lot 1 DP1005511 which is owned by Hartley Pastoral Corporation (HPC). The quarry site is situated approximately 3.5 km south of Hartley and 5.5 km northwest of Little Hartley in the Lithgow City Council Local Government Area (LGA) (see Figure 1). Coxs River adjoins the quarry to the north, and lies approximately 600 m from the quarry on the eastern boundary. The quarry is operated under Development Consent No. 103/94 (DA 103/94) issued by the Council of the City of Greater Lithgow (now Lithgow City Council) in March 1995.

Figure 1: Location of the subject area within a regional context (Source: Niche, 2013)

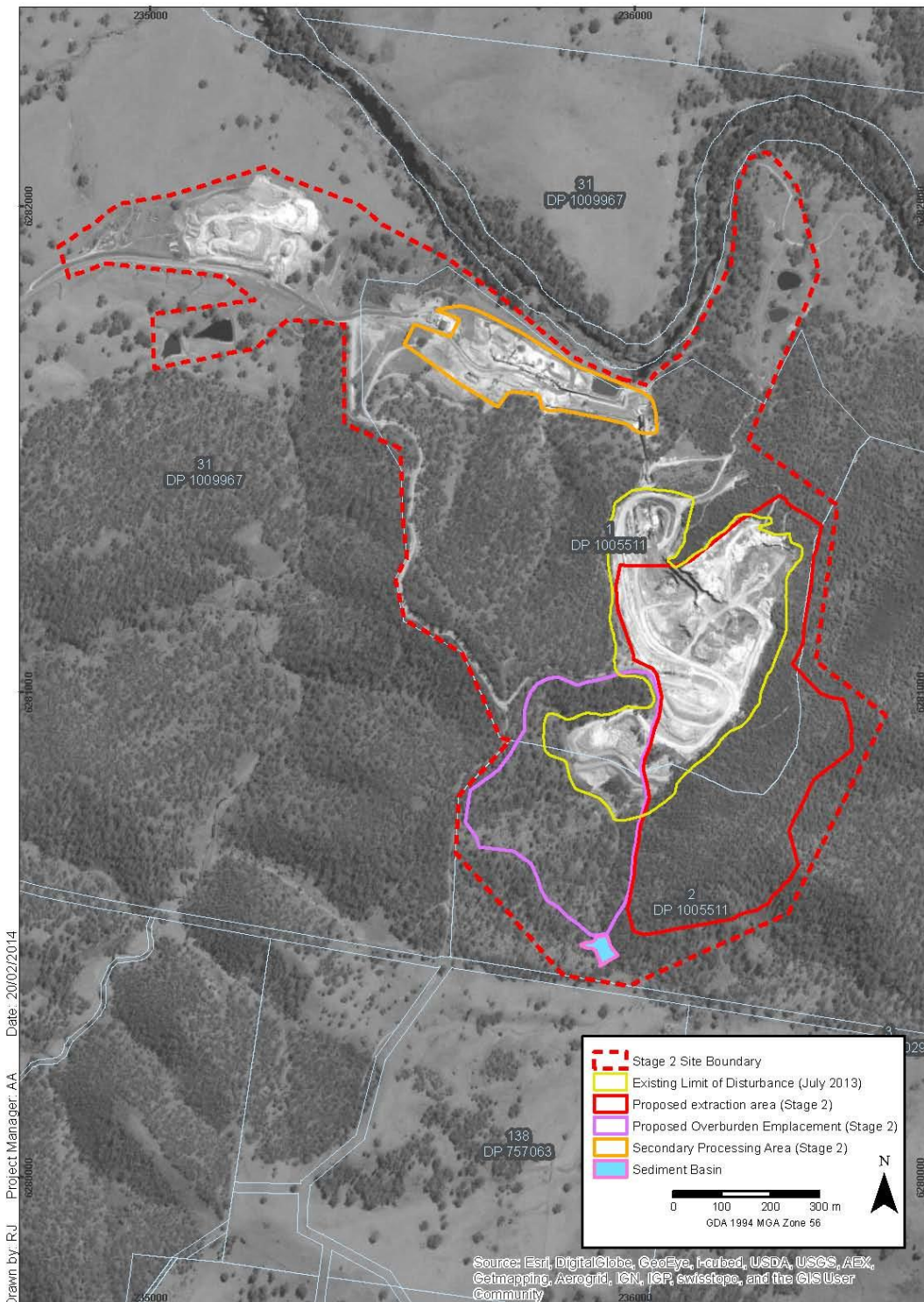


Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, Esri (Thailand), TomTom, 2013

Regional Project Location  
 1538 Austen Quarry Heritage Assessment

FIGURE 1

**Figure 2: Location of the subject area showing the proposed impact area**  
 (Source: Niche, 2013 and Corkerys 2013)



Site Map  
 1538 Austen Quarry Heritage Assessment

**FIGURE 2**

**niche**  
 Environment and Heritage  
 Path: P:\spatial\project\1500\1538\_AustenQuarry\Archeo\Map\1538\_Figure\_2\_Site.mxd



### 3. INVESTIGATORS AND CONTRIBUTORS

This investigation was conducted by Amanda Atkinson, Renée Regal, and Lydia Sivaraman of Niche Environment and Heritage. Two field surveys were conducted.

The first survey focused on the Proposed Stage 2 Extraction Area. It was undertaken by Amanda Atkinson, Lydia Sivaraman, Elwin Wolfenden (Mingaan Wiradjuri Aboriginal Corporation), Patsy Wolfenden (Wiray-dyraa Maying-gu Native Title Group), Kevin Williams (North East Wiradjuri Company) and Jack Pennell (Warrabinga Native Title Claimants).

An additional survey was undertaken by Renee Regal, with Kevin Williams (North East Wiradjuri) and Terri McConnell (Wiray-dyraa Maying-gu Native Title Group). Malcolm McDonald (Austin Quarry) was also present during the survey which concentrated on the Proposed Stage 2 Overburden Emplacement area.

This report was co-authored by Amanda Atkinson, Phil Roberts, Cameron Harvey and Lydia Sivaraman (Niche). It has been reviewed by Cameron Harvey (Heritage Team Leader, Niche) and Jamie Reeves (Director, Niche).

**Table 1: Table of Contributors**

Contributor	Company	Role
<b>Amanda Atkinson</b>	Niche	Project Management , Extraction Area survey, draft report, client & community consultation
<b>Lydia Sivaraman</b>	Niche	Extraction Area survey Community consultation, draft report.
<b>Cameron Harvey</b>	Niche	Draft reporting, report review and quality assurance.
<b>Renée Regal</b>	Niche	Overburden Emplacement survey, Community consultation
<b>Phil Roberts</b>	Niche	Draft reporting
<b>Elwin Wolfenden</b>	Mingaan Wiradjuri Aboriginal Corporation	Extraction Area survey, contribution to site significance discussion.
<b>Patsy Wolfenden</b>	Wiray-dyraa Maying-gu Native title group	Extraction Area survey, contribution to site significance discussion.
<b>Terri McConnell</b>	Wiray-dyraa Maying-gu Native title group	Overburden Emplacement survey
<b>Kevin Williams</b>	North East Wiradjuri Company	Both field surveys, contribution to site significance discussion.
<b>Jack Pennell</b>	Warrabinga Native Title Claimants	Extraction Area survey, contribution to site significance discussion.
<b>Dr Ross Jenkins</b>	Niche	GIS/Mapping.

## **4. DESCRIPTION OF DEVELOPMENT PROPOSAL**

The Austen Quarry ('the quarry') is located approximately 3.5 km south-southwest of the village of Hartley and 10 km south of Lithgow. The quarry is located on rural land, owned by the Hartley Pastoral Corporation Pty Ltd (HPC), and is currently operating under Development Consent No. 103/94 (DA 103/94), which approves the extraction, screening and despatch of up to 1.1 million tonnes of rhyolite products per year until March 2020.

Hy-Tec Industries Pty Limited ('the Applicant') proposes to extend the extraction area and overburden emplacement of the quarry in order to extend the operational life of the quarry (until 2050).

The Austen Quarry Stage 2 Extension Project ('the Proposal') covers an area of approximately 144 ha. The sub-sections below provide descriptions of the relevant component areas and activities for the Project.

### **4.1 PROPOSED STAGE 2 EXTRACTION AREA**

The proposed Stage 2 extraction area would incorporate a lateral extension and deepening of the existing Stage 1 extraction area along an adjacent southwest-northwest trending ridge. The northern side of the ridge within in the existing Stage 1 extraction area would remain as a visual barrier to views from the north. The area of the extension covers approximately 16.1 ha and lies immediately to the southeast and east of the Stage 1 extraction area. The combined area of the Stage 1 and Stage 2 extraction areas would be 28.2ha (Figure 2).

### **4.2 PROPOSED STAGE 2 OVERBURDEN EMPLACEMENT**

The proposed overburden emplacement would laterally extend (6.7 ha) and increase the elevation of the existing Stage 1 overburden emplacement. In total, the overburden emplacement would cover approximately 13.5 ha. The Stage 2 overburden emplacement would continue to in-fill the small valley to the southwest of the Stage 2 extraction area (Figure 2).

## 5. CONSULTATION PROCESS

Consultation has been conducted in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHCRs) (DECCW 2010). In accordance with Section 4.1.2 of the ACHCRs project notifications (Appendix 2) were sent on the 2<sup>nd</sup> July 2013 to:

- Office of Environment and Heritage (OEH);
- Bathurst Local Aboriginal Land Council (Bathurst LALC);
- The Registrar, National Native Title Tribunal on the 14<sup>th</sup> June 2013;
- NTS Corp Limited on the 2<sup>nd</sup> July 2013;
- Office of the Registrar, ALR Act 1983;
- Hawkesbury-Nepean Catchment Management Authority; and
- Lithgow City Council.

The purpose of the project notification was to identify potential cultural knowledge holders for the subject area. A list of potential cultural knowledge holders was compiled from the information collected above, and on the 11<sup>th</sup> July 2013, these were invited to register an interest in the project by mail. An advertisement was published in the following newspaper in accordance with Sections 4.12 - 4.13 of the consultation requirements, inviting Aboriginal parties to register an interest in the project:

- The Lithgow Mercury on the 4<sup>th</sup> July 2013.

As a result of the above consultation, the following organisations and persons have become registered Aboriginal parties (RAPs) to the project for the purposes of the *Aboriginal cultural heritage consultation requirements for proponents 2010*:

- Bathurst Local Aboriginal Land Council;
- Dhuuluu-Yala Aboriginal Corporation;
- Gundungurra Aboriginal Heritage Association;
- Mingaan Wiradjuri Aboriginal Corporation;
- Tocomwall;
- North East Wiradjuri Company;
- Warrabinga Native Title Claimants; and,
- Wiradjuri Traditional Owners.

On the 21<sup>st</sup> August 2013, the RAPs were provided with a letter providing the time and date the first field survey for the Proposed Stage 2 Extraction Area. RAPs that confirmed they would partake in the field survey were provided with details outlining the project information and meeting location. The survey was undertaken on the 27<sup>th</sup> August 2013. Representative of the following RAPs participated:

- Mingaan Wiradjuri Aboriginal Corporation;
- Wiray-dyraa Maying-gu Native Title Group;

- North East Wiradjuri Company; and
- Warrabinga Native Title Claimants.

On the 19<sup>th</sup> November 2013, the RAPs who participated in the first survey were again contacted to participate in the additional survey for Proposed Stage 2 Overburden Emplacement Area. The survey was undertaken on the 26<sup>th</sup> November 2013. Representatives of the following RAPs participated:

- Wiray-dyraa Maying-gu Native Title Group;
- North East Wiradjuri Company; and

This report was issued to the RAPs as a draft for review and comment on the 1<sup>st</sup> February 2014. No comments relating to the draft report or cultural values were received from registered stakeholders. At the date of the final report being issued (19 September 2014) no comments had been received from registered Aboriginal stakeholders.

## **6. LANDSCAPE CONTEXT**

### **6.1 SOILS, GEOLOGY AND TOPOGRAPHY**

The geology of the subject area is dominated by igneous (granite, micro-granite, diorite and rhyolite) and metamorphic (quartz hornfels) rock types (Figure 4). Within the subject area, rhyolite is noted to a depth of 80 m. This differs from the typical geology of the Blue Mountains, which is dominated by Triassic sandstones associated with the Narrabeen group and Permians of the Berry Formation (Mills and Wilkinson 1993).

The subject area is located within the Mount Walker Colluvial soil landscape (King 1994:65) (Figure 3). This soil landscape is associated with steep to very steep hills with narrow rounded crests on Lambie Group metasediments. Slopes are generally greater than 25%, with local relief between 40 m – 200 m. Soils are shallow (<50 cm), well-drained stony Lithosols and Yellow Earths on crests, with moderately deep to deep (80 cm – 200 cm), moderately well drained Red Earths, Yellow Earths and occasional Yellow Podzolic Soils, Leached Loams and Red Podzolic Soils on steep side slopes. Moderately deep to deep (>130 cm) imperfectly drained Soloths/Yellow Podzolic Soils are generally found on lower slopes near drainage lines (King 1994:65).

The subject area is located among gullies associated with the north western slope of a hill crest and spur (

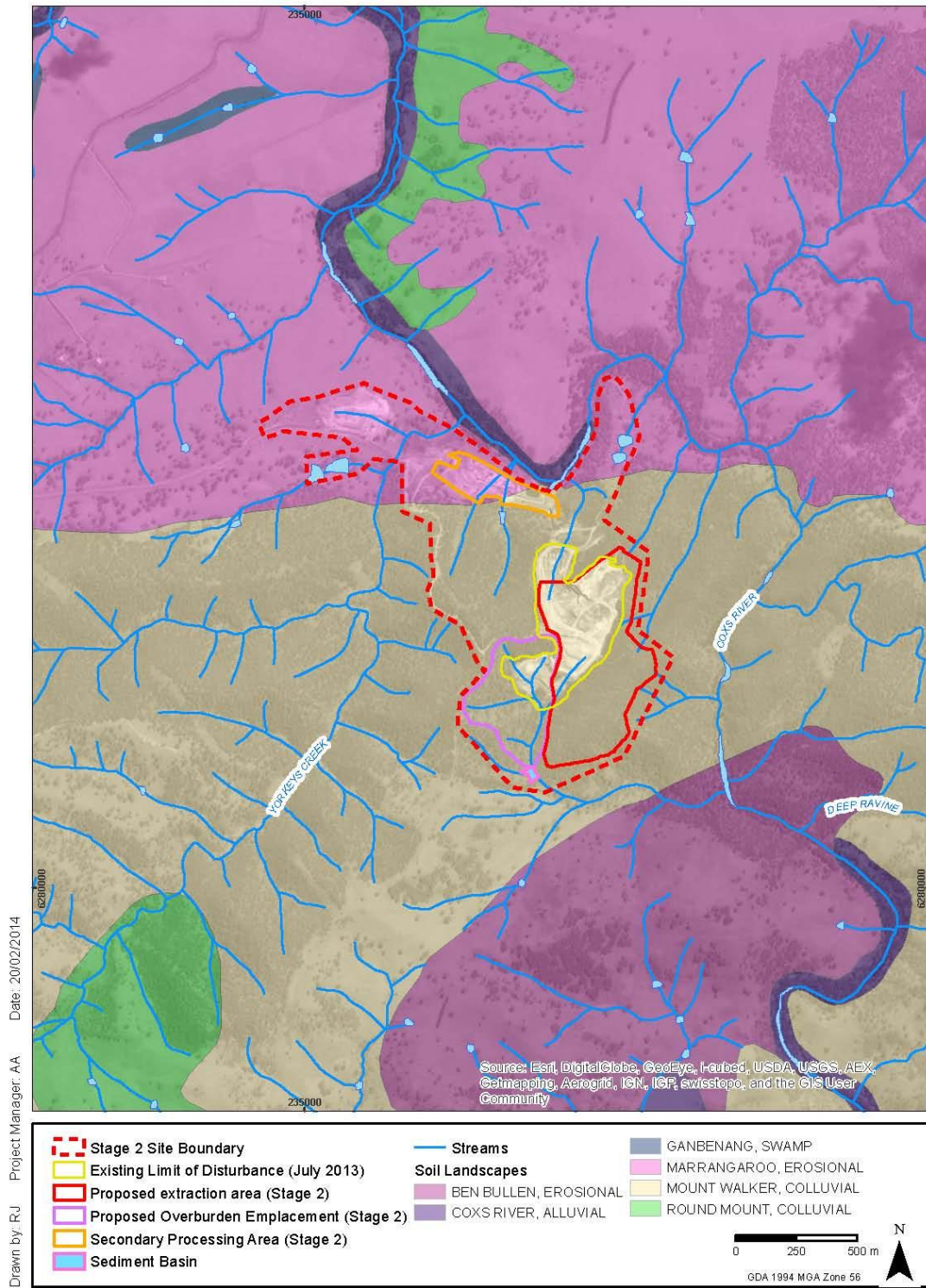
Figure 5). To the east the ground slopes steeply towards Coxs River but within the subject area the slopes are moderate.

To the north and south of the proposed subject area are erosional landscapes associated with Coxs River. In the past Aboriginal archaeological sites have been found among the rolling hills of this erosional landscape.

The local soils, geology and topography suggest that Aboriginal archaeological sites are most likely to be found close to drainage lines, where soils are potentially deepest.



Figure 3: Soils within the subject area (Source: Niche, 2013)

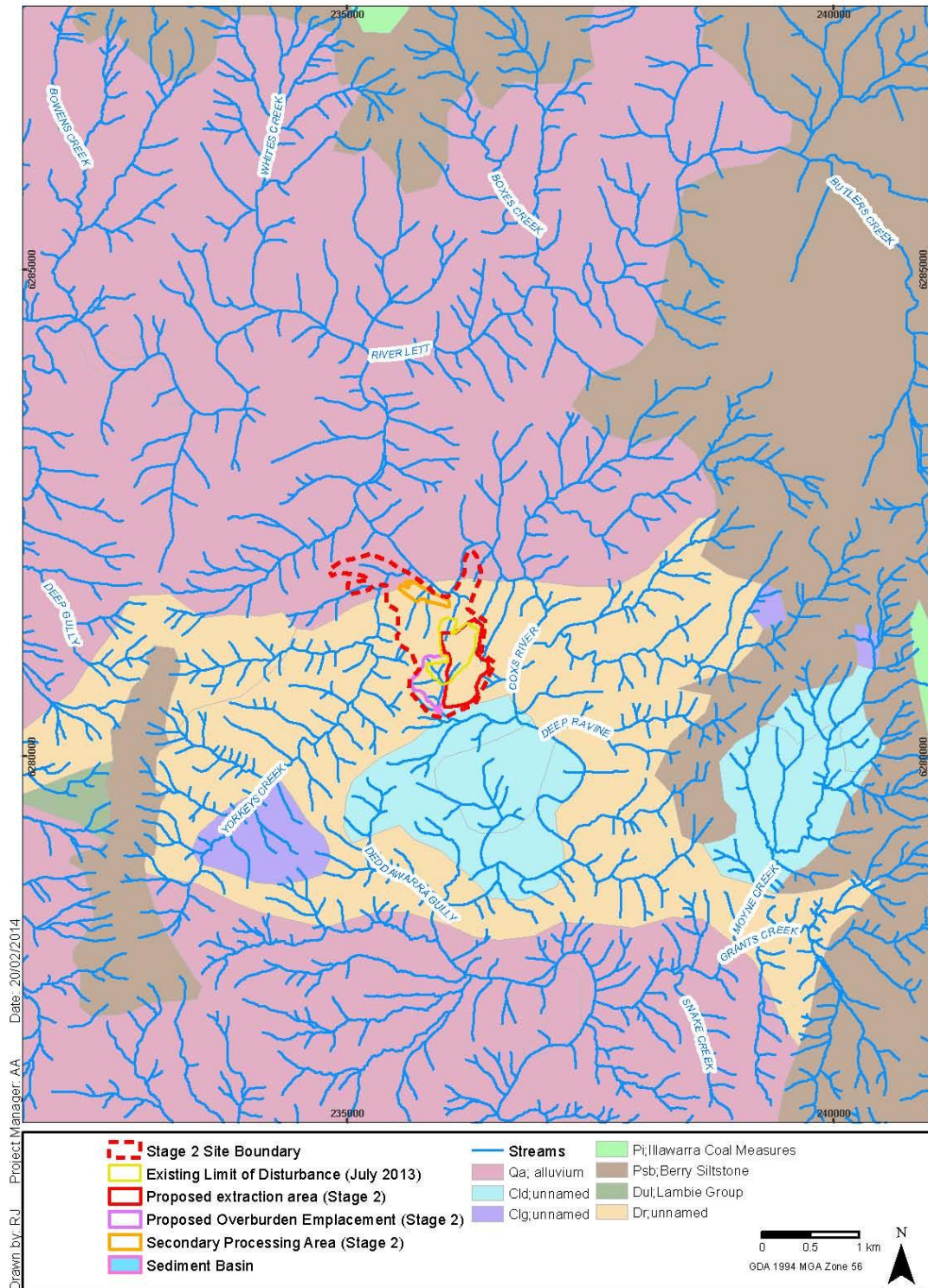


Drawn by: RJ Project Manager: AA Date: 20/02/2014

Soil Landscapes  
 1538 Austen Quarry Heritage Assessment

FIGURE 3

Figure 4: Geology associated with the subject area (Source: Niche, 2013)

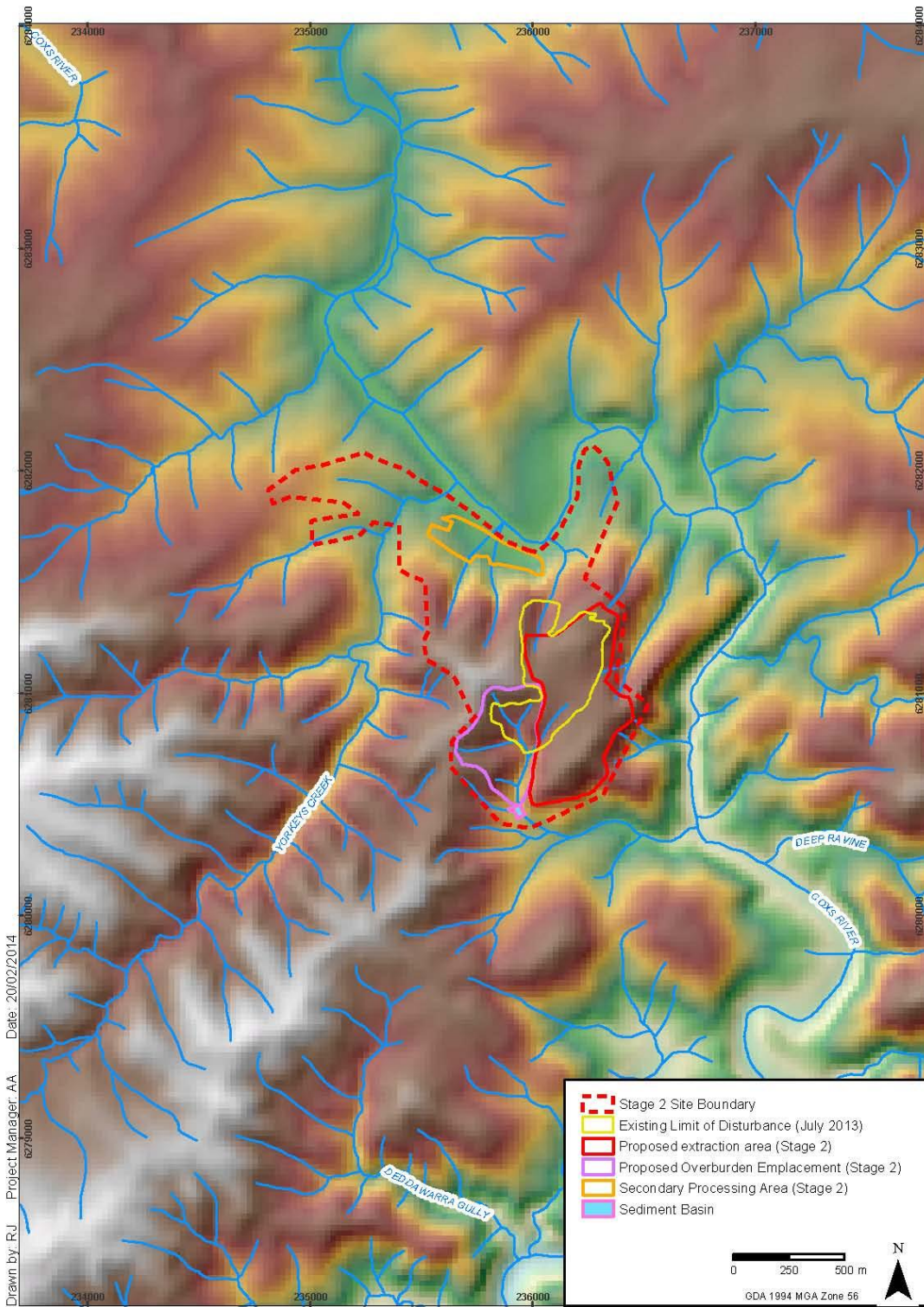


Surface Geology  
 1538 Austen Quarry Heritage Assessment

FIGURE 4



**Figure 5: Topography of the subject area (Source: Niche, 2013)**



Topography  
 1538 Austen Quarry Heritage Assessment

**FIGURE 5**

## 6.2 FLORA AND FAUNA

The major vegetation group growing on the granite soils of the Coxs Valley floor is open woodland with tree species including Ribbon Gum (*Eucalyptus viminalis*), Broad Leaf Peppermint (*Eucalyptus dives*), Mountain Gum (*Eucalyptus dairympleana*), Yellow Box (*Eucalyptus melliodora*), Mottled Gum (*Eucalyptus manniferd*) and Candlebark Gum (*Eucalyptus rubia*). On the Permian sandstone hills and slopes Black Ash (*Eucalyptus sieberi*), and Narrow-leaved Stringybark (*Eucalyptus oblonga*) also grow (Breckwoldt 1984: 8). Rough Bark Apple (*Angophora Floribunda*) is an additional species found on the lower slopes and ridges, and Candlebark Gum and Snow Gum (*Eucalyptus pauci-flora*) are common in hollows and colder drainage areas (Breckwoldt 1984: 8). The understory for this vegetation is primarily grasses with very few shrubs. The primary grasses are Wallaby Grasses (*Danthonia spp*) and Kangaroo Grass (*Themeda australis*) is less common. Shrubs include Prickly Shaggy-pea (*Oxylobium ilicifolium*), Blackthorn (*Bursaria spinosa*) and Coral pea (*Hardenbergia violacea*). The Coxs River is fringed with River Oak (*Casuarina cunninghamiana*) (Breckwoldt 1984: 9).

Many fauna species exist in and near the subject area due to the plentiful water and habitat resources. Along the Coxs River Valley five species of possums and gliders have been recorded along with five species of bats and five dasyurids including the Tiger Quoll (*Dasyurus maculatus*), four macropods, the common wombat and echidna have also been recorded. A colony of Brush-tailed Rock Wallaby (*petrogale penicillata*) occurs at Jenolan caves and the platypus is known to exist in the Coxs River (Breckwoldt 1984: 11). These species may have been utilized by Aboriginal people for food as well as many species of birds, fish, reptiles and amphibians.

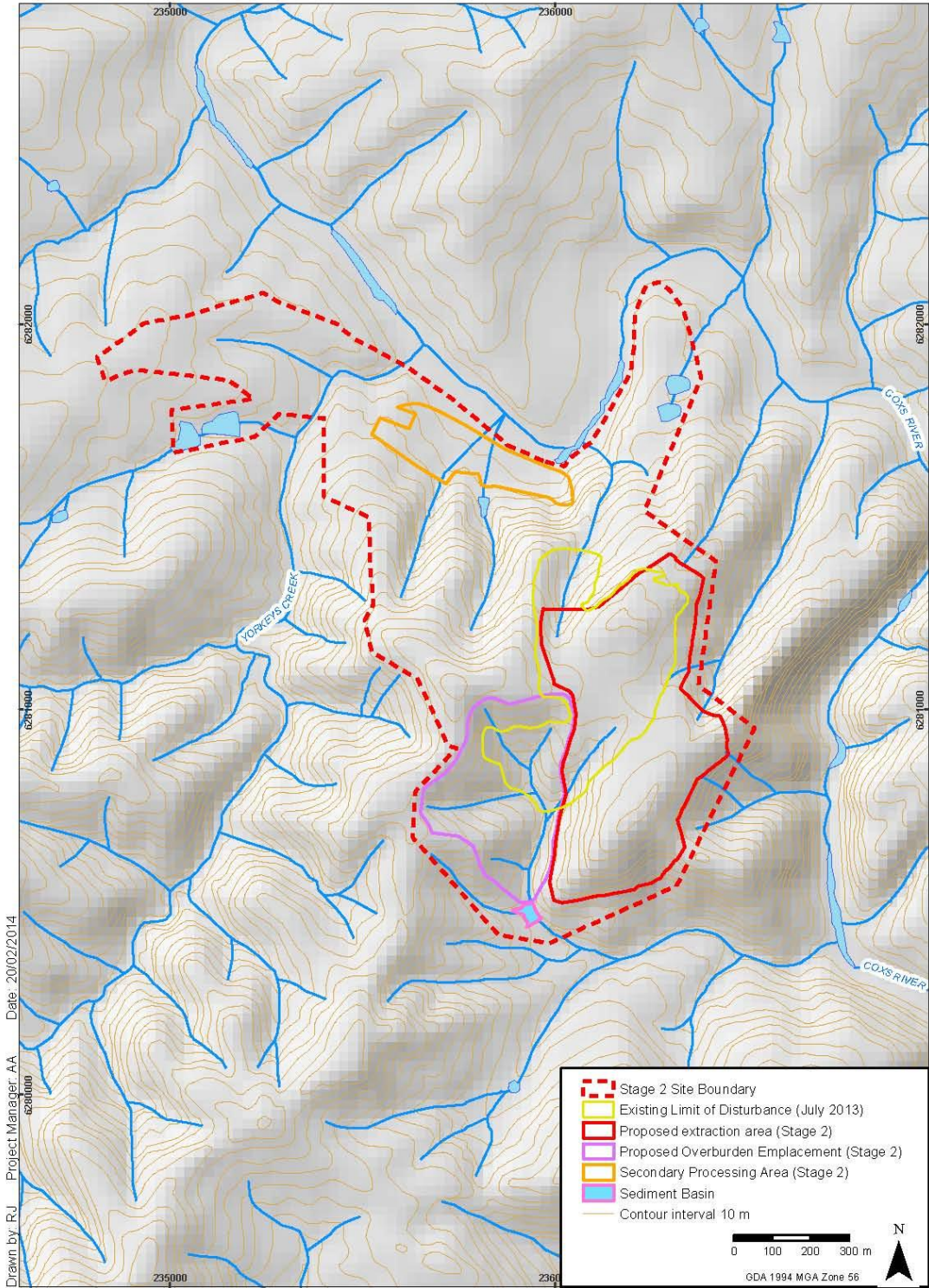
Many species within these vegetation communities are known to have been used by Aboriginal people in the past. Where remnant native vegetation occurs, it is possible that the vegetation may have significance to contemporary Aboriginal people as an example or link between the landscape of today and that inhabited by their ancestors. Coxs River and its tributary would have provided a varied and rich range of resources including fish, bird, mammal, reptile and amphibians.

## 6.3 HYDROLOGY

The Coxs River lies approximately 500 m to the east of the proposed quarry expansion area (Figure 6). The Coxs River valley along with the Jamieson and Grose River valleys constitute the three major drainage systems of the Blue Mountains. Yorkeys Creek lies to the west of the subject area. Numerous drainage channels are located throughout the subject area, these drain to the north and east into Coxs River. The presence of these drainage channels and the close proximity of Yorkeys Creek and Coxs River increases the potential for Aboriginal or non-Aboriginal items to occur in the subject area.



**Figure 6: Hydrology of the subject area (Source: Niche, 2013)**



Hydrology  
 1538 Austen Quarry Heritage Assessment

**FIGURE 6**

Imagery: (c) ESRI 2013

## 6.4 PRE-CONTACT ABORIGINAL OCCUPATION

The Sydney Basin was occupied and used by Aboriginal people for thousands of years prior to European settlement. In the Blue Mountains, sandstone gullies, creeks, floodplains, swamps and woodlands provided Aborigines with a rich and varied resource zone and occupation area.

There is considerable ongoing debate about the nature, territory and range of pre-contact Aboriginal language groups in the greater Sydney region. These debates have arisen largely because by the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Aboriginal people in the late 19th Century; pre-European Aboriginal groups had been broken up and reconfigured by European settlement activity. The following information relating to Aborigines in the Blue Mountains is based on such early detailed records. It should therefore be highlighted that these documents are inherently biased by the class and culture of the authors. When combined with archaeological information, however, they can provide a picture of traditional Aboriginal life in the region.

The first recorded sighting of Aboriginal people in the Blue Mountains was on the 26<sup>th</sup> May 1813 by Blaxland during the first successful crossing of the mountains, where he recorded in his journal that he saw about thirty men, women and children camped around their fires. The following day Blaxland recorded that they saw more native fires and about the same number of people, although believed it to be a different group (Breckwoldt 1984:18). Many of the other early recordings of Aboriginal people in the Blue Mountains give just as little detail.

It was observed by the early colonists that the Aboriginal groups living in the colder climates of the Blue Mountains and west of the mountains used rugs and cloaks. In 1815 Major Antill noticed some Aborigines from Bathurst wearing cloaks (Comber 2009:14). In 1817 John Oxley during his exploration of the Lachlan River observed of a group of Aborigines that there were *“a few cloaks among them made of the opossum skin”* (Oxley April 25 1817). Barron Field met a group of Aborigines from Bathurst in 1822 and observed that the cloaks were neatly sewn together with sinews of the Kangaroo and Emu and the insides were carved with figures (Comber 2009:28).

Early European accounts indicate that the subsistence practices of hinterland and coastal Aboriginal groups differed significantly. Coastal groups exploited marine and estuarine resources whilst the language groups of the Blue Mountains relied on freshwater and terrestrial animals and plants. Animals such as wallabies, kangaroos, possums, flying foxes, water birds, parrots, reptiles, freshwater fish and yabbies played a far greater role in the subsistence of hinterland groups than on the coast.

Observations made by the early European explorer Barrallier in 1802 provide further insights into food resources and hunting practices of inland tribes. In his journal Barrallier noted that swamps were important resource zones where *“enormous eels, fishes and various species of shell”* were consumed by Aboriginal people. Rivers were also *“teeming with different species of fishes and shells”* (Barrallier, 1802 in Martin, 1986: 46). Pointed fishing spears were used during fishing. Possums and kangaroos were also staple foods. Whilst spears, clubs and boomerangs were used to hunt possums and other small terrestrial animals hunting kangaroo required the co-operation of large numbers of people.

*“To hunt the kangaroo, they formed a circle....according to the number of natives assembled. They usually stand about 30 paces apart, armed with spears and tomahawks....each one of them holding a handful of lighted bark, at a given signal they set fire to the grass and brush...as the fire progresses they advance forward...narrowing the circle and making as much noise as possible, with deafening shouts. The kangaroo, which are thus shut into that circle and burn their feet... They*



*then try to escape in various directions and the natives throw their spears at the one passing nearest them” (Barrallier, 1802 in Martin, 1986: 46).*

While the method described above was suitable for wood and grassland, it was not suited to the more elevated, rockier land where a different method of catching macropods was utilised. Mrs Felton Mathews, wife of the famous 19th century surveyor, wrote about life on the Hawkesbury while journeying with her husband in 1833. On one occasion near the MacDonald River, she recorded Aboriginal wallaby hunting on rocky ground above the river:

*“The lofty rocky ranges which border this river on either side I have frequently described, and there is nothing either to describe or relate during this journey: the dead unbroken silence which prevailed all around was extremely oppressive, and the voices of some natives which broke on the ear after some time, was really quite a relief: on nearer approach we found they were hunting wallabi or what they call wallabunging, a number of them assemble, and while some run along the tops and sides of the rocky heights shouting and screaming, drive down the poor little frightened inhabitants to the flats below where others attack them with their spears and dogs; we saw three of these little creatures hopping along with speed, followed by dogs and blacks at full cry” (Mathews in Leslie, 2006: 19).*

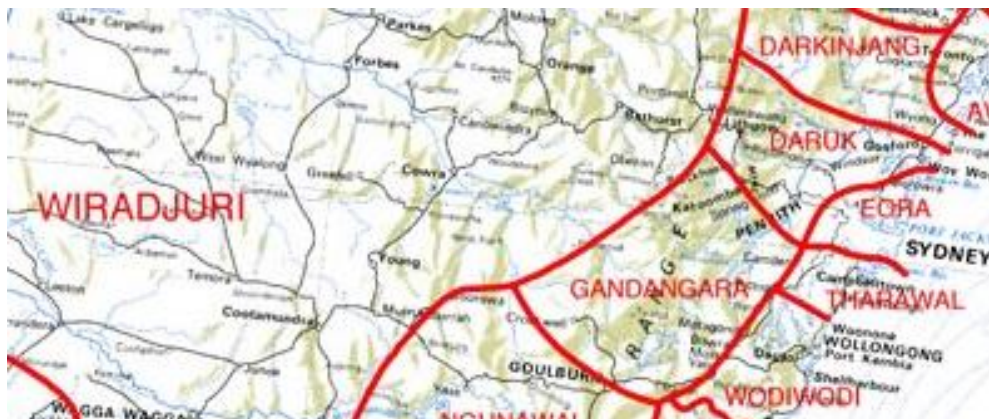
The passage above describes the use of dingos as hunting dogs. Major Antill recorded in his journal that the Bathurst Aborigines domesticated the ‘native dog’ and used them for hunting game (Comber 2009:13). Dingos were also food for Aborigines on occasion, as were other land animals including koalas, wombats, grubs and lizards (Attenbrow, 2002: 71). Tree climbing to catch possums was a common hunting technique whereby notches were carved into the tree for foot and hand holds (Comber 2009:13).

Swamps and lagoons were resource zones of great importance to hinterland Aborigines. Within these small freshwater bodies were eels, fish and a variety of shellfish including freshwater mussels (*Velesunio ambiguus*, *Hyridella australis* and *Hyridella depressa*). The swamps also harboured water rats, frogs, echidnas, as well as a variety of bird life including ducks. Birds in particular were targeted in a number of ways and were harvested by nets, spearing, ensnared in pit-traps and hand caught by stationary Aborigines using fish pieces as bait (Attenbrow, 2002: 88). Duck and quail were plentiful along the rivers, other bird species that may have been hunted include the wood duck (*Chenonetta jubata*), the chestnut teal (*Anas castanea*) the brown quail (*Coternix australis*), the black duck (*Anas superciliosa*) and the black swan (*Cygnus atratus*). In 1813 it was observed by Blaxland that the flowers from the honeysuckle tree were used for food by the Aborigines camped at the River Lett (Comber 2009:13).

The early recordings of the Aboriginal people in the Greater Sydney Region do not make note of different tribes or clans. However different language groups and differing customs were noted. Anthropologists such as N. B Tindale and R. H. Mathews have primarily focussed on language groups and differing customs to define the boundaries of Aboriginal tribes.

Tindale’s map of Tribal Boundaries below shows three tribes the “Daruk”, the “Gandangara” and the “Wiadjuri” with in the vicinity of the subject area.

Figure 7: Tindales Map of Tribal Boundaries of Australia (1974), reproduced by the South Australian Museum



Tindale's (1974) descriptions of the tribal groups relevant to the subject area are as follows,

- The Daruk: “Mouth of the Hawkesbury River; inland to Mount Victoria, Campbelltown, Liverpool, Camden, and Penrith; at Windsor” (<http://archives.samuseum.sa.gov.au/tindaletribes/daruk.htm>).
- The Gandangara: “At Goulburn and Berrima; down Hawkesbury River (Wollondilly) to about Camden” (<http://archives.samuseum.sa.gov.au/tindaletribes/gandangara.htm>).
- The Wiradjuri: “On the Lachlan River and south from Condobolin to Booligal; at Carrathool, Wagga-Wagga, Cootamundra, Cowra, Parkes, Trundle; east to Gundagai, Boorowa, and Rylstone; at Wellington, Mudgee, Bathurst, and Carcoar; west along Billabong Creek to beyond Mossiel; southwest to near Hay and Narrandera; south to Howlong on upper Murray; at Albury and east to about Tumbarumba” (<http://archives.samuseum.sa.gov.au/tindaletribes/wiradjuri.htm>).

It should be noted that Tindale's tribal boundaries produced in 1974 were an attempt to depict Aboriginal tribal distribution at the time of European contact. By the time anthropologists were making their observations of Aboriginal tribal boundaries Aboriginal people had already been largely impacted and relocated to fringe areas. The occupation of tribal lands by the colonial settlers, the decline in native animals for hunting, the clearing of lands, infectious diseases and hostilities all contributed to Aboriginal tribes moving beyond their traditional boundaries. Much of the data relating to Aboriginal language group distribution and definition has undergone revision since 1974 (<http://archives.samuseum.sa.gov.au/tindaletribes.htm>). Sandra Bowdler argues that the boundary between the Darug, Gundungurra and Wiradjuri was a 'zone of interaction' rather than a strictly defined area as indicated by Tindale (Bowdler 1983:334). Bowdler further argues that there were cultural similarities between the communities that used these 'zones of interaction'. The Cox's River and the subject area being at the junction of the boundaries for the Darug, Gundungurra and Wiradjuri would have been within an area of interaction as identified by Bowdler.

#### 6.4.1 THE WIRADJURI

The word 'Wiradjuri' is believed to mean 'people of the three rivers', the rivers being the Macquarie, Lachlan and Murrumbidgee Rivers (Comber 2009:41).



Wiradjuri was one of the largest tribal groupings in Australia, the language is believed at the time of contact to have been the most widely spoken language in NSW. The Wiadjuri language group contained regional variations and consisted of people who spoke a number of dialects. Several of these local groups noted by Howitt were “*Narrandera (prickly lizard), Cootamundra (Kuta-mundra) from kutamun turtle, Murranbulla or Murring-bulle (maring-bula, two bark canoes), and there were many others. Differences in dialect were evident in some areas, notably around Bathurst and near Albury*” (<http://archives.samuseum.sa.gov.au/tindaletribes/wiradjuri.htm>). Although there were different dialects the Wiradjuri language was spoken throughout uniting the smaller groups and was understood by some of the neighbouring tribes such as the Darug and the Gundungurra. Howitt wrote that the “*maintenance of a cycle of ceremonies that moved in a ring around the whole tribal area tended to assist tribal coherence despite the large occupied area*” (<http://archives.samuseum.sa.gov.au/tindaletribes/wiradjuri.htm>).

John Oxley recorded in his journal his encounters with Aboriginal people during his expedition to explore the Lachlan River in 1817. His recordings included the meaning of 25 words in the Wiadjuri language and observed that languages differed depending on the region “*The few words of which we were enabled to obtain the meaning from the natives who occasionally visited, it being different from those used by the natives on the east coast.*” (Oxley April 27 1817).

A glimpse of the lifestyles of the Wiadjuri at the time of contact can be gleaned from descriptions of Oxley’s early encounters

“*We had scarcely alighted from our horses, when natives were seen in considerable numbers on the other side of the river. I went down opposite to them, and after some little persuasion about twenty of them swam across, having their galengar or stone hatchet in one hand, which on their landing they threw at our feet, to show us that they were as much divested of arms as ourselves. After staying a short time they were presented with some kangaroo flesh, with which they re-crossed the river, and kindled their fires. They were very stout and manly, well featured, with long beards: there were a few cloaks among them made of the opossum skin, and it was evident that some of the party had been at Bathurst, from their making use of several English words, and from their readily comprehending many of our questions.*” (Oxley April 25 1817).

“*About a mile from this place we fell in with a small tribe of natives, consisting of eight men; their women we did not see. They did not appear any way alarmed at the sight of us, but came boldly up: they were covered with cloaks made of opossum skins; their faces daubed with a red and yellow pigment, with neatly worked nets bound round their hair: the front tooth in the upper row was wanting in them all: they were unarmed, having nothing with them but their stone hatchets. It appeared from their conduct that they had either seen or heard of white people before, and were anxious to depart, accompanying the motion of going with a wave of their hand*” (Oxley May 5 1817).

The Wiradjuri lived together in small separate family groups. Family groups or clans within the Wiadjuri language group shared similar kinship systems. The social system of the Wiadjuri was based on a matrilineal arrangement whereby, an individual’s totem differed from that of the mother but was the same as the grandmother (Comber 2009:42). Social interactions between kin groups and occasionally with neighbouring language groups occurred for marriage, ceremonies or trade (Comber 2009:42).

## 6.4.2 THE DARUG

*Darug* was first described as a language (or dialectic group) by pioneer surveyor, anthropologist and linguist R H Mathews in the early 20<sup>th</sup> century. He described the extensive range of this language group as follows:

*“The Dharruk speaking people adjoined the Thurralwal on the north, extending along the coast to the Hawkesbury River, and inland to what are now Windsor, Penrith, Campbelltown and intervening towns”*(Leslie 2006: 17).

Since then, most historic and linguistic research has suggested that the *Darug* were principally an ‘inland’ group, associated with the Cumberland Plain and distinct from the Aborigines of Coastal Sydney (Leslie 2006: 17).

Research into historical records suggests that the *Darug* people had different dialects depending on the location of the group. The dialect in the coastal areas varied from the mountains (Comber 2009:24). R.H Mathews noted that the *Darug* and *Gundungarra* people had little difficulty conversing (Comber 2009:24).

The *Darug* lived in kinship groups of around fifty people, with their own hunting grounds which they moved though seasonally depending on available resources. The *Darug* kinship ties were based on a patrilineal line whereby children inherited the totems of their fathers. Individuals had personal totems associated with a significant place. Totems were used for the selection of appropriate marriages (Comber 2009:26).

## 6.4.3 THE GUNDUNGARRA

The name *Gundungarra* incorporates the terms meaning ‘west’ and ‘east’ (<http://archives.samuseum.sa.gov.au/tindaletribes/gandangara.htm>).

The *Gundungarra* people lived in small kinship groups or clans and marriage patterns differed to that of other groups. It comprised of a complex system of betrothal based on “nanaree” which are prospective relationships selected by a council of male elders. Individuals with the same totem could not marry.

The initiation ceremonies of the *Gundungarra* were the same as or very similar to the *Darug*. Comber described a *Gundungarra* initiation ceremony recorded by Mathews near Berry in 1887 . The ground was prepared by building earth walls in connecting circles. Tree trunks were marked with patterns and animal forms. The head of the tribe led the ceremony and other bands attended “*Messengers were decorated with yellow and white ochre and carried a bullroarer and bag containing quartz crystals, weapons and sometimes a message stick*”. Secret rituals took place with the initiates and these included the knocking out of a tooth. At the same time the mothers of the initiates would take part in a separate ritual. A smoking ceremony would follow whereby the initiates were ranked as men and afterwards a corroboree would take place (Comber 2009:34).

Many myths of the *Gundungarra* people have been recorded by anthropologists. A *Gundungarra* creation myth recorded by Mathews explained during the dreamtime, known as the ‘*gun’-yung-ga’lung*’, all the animals had human attributes and were known as ‘*Burringilling*’. *Gu-rang’-atch* was one of the *Burringilling*, his form being partly fish and partly reptile. In this story ‘*Gurangatch*’ was responsible for the formation of a number of rivers including the Cox River (Mathews 1908).

#### **6.4.4 POST-CONTACT ABORIGINAL ASSOCIATIONS**

Aboriginal traditional life in the Sydney region was broken through the course of the early 19th century. The impact of smallpox and influenza decimated the Aboriginal population, with individual epidemics killing large numbers of people. Early white settlement of traditional hunting lands deprived Aboriginal groups of sources of food and access to camping and ceremonial sites. This forced individuals to either relocate into the potentially hostile lands of neighbouring Aboriginal groups, partially integrate into colonial society as fringe dwellers or to resist.

Resistance by Aboriginal groups was often met with retaliatory action by white settlers and the colonial administration. A combination of these factors led to the demise of traditional lifestyles and a decrease in the Aboriginal population.

Self defence attacks by Wiradjuri on stock and settlers in the Bathurst area led to the declaration of Martial Law in Bathurst in 1824 – the intensity of the brutal conflict led to the rapid decline of the Wiradjuri groups in the region and the gradual dispersion of the groups to different areas (Comber 2009:44).

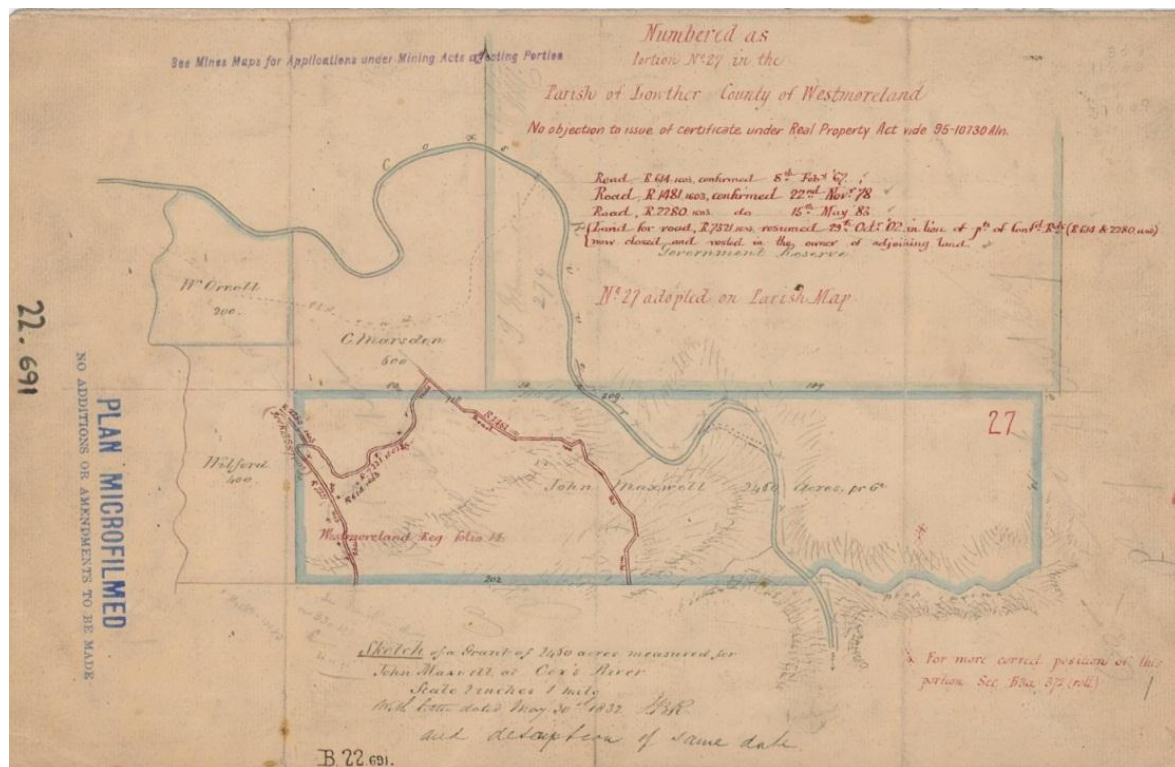
The 1841 count of Aborigines, taken during the provision of government blankets at Hartley, totalled 53, consisting of 17 men, 24 women and 12 children, all identified as living on the Coxs River in the Hartley district. In 1891 a census was carried out whereby 91 Aboriginal people were recorded as living in the County of Cook, 37 in the County of Bathurst and 10 in the County of Westmoreland (Comber 2009:13). However, the people recorded in the census would have only been those living in the settled areas and not those that were living a traditional life.

Many of the traditional groups broke up and scattered or re-aligned themselves by the time that colonial diarists, missionaries and early visitors to the area made detailed records of the Aboriginal inhabitants. The various 'tribes' referred to by colonists in the 19<sup>th</sup> Century were the result of major post-Contact social reorganisation. The displacement and dislocation from traditional lands that occurred soon after European settlement meant that remnant Aboriginal bands were forced to combine 'to provide mutual protection and to maintain viable social and economic units' (Kohen, 1986).

#### **6.5 POST-CONTACT LAND USE HISTORY**

Early landowners in the area ran sheep and cattle. John Maxwell was one of these early settlers and had been the superintendent of government stock at Bathurst in 1928, but then was transferred to Glenroy stockyards (Paridaens 1971) where he received a number of adjoining land grants along the Cox's River. His largest grant was 2,450 acres of land, measured specifically as a grant for John Maxwell. Maxwell named his estate "Liddleton". Austen Quarry is located within this land grant. The Crown Plan for this grant is dated 30<sup>th</sup> May 1832 and the Cox's River runs through the middle of the grant (Figure 8).

Figure 8: John Maxwells land Grant of 2450 acres (Source: LPI 1832. CP22.691)



Crown Plans (Portions 25 and 27) show the alignments of roads marked on them at a later date within Maxwell's property. O'Sullivan (1913:13) also wrote of Maxwell's property "roads connecting the estate with the main one were constructed by gangs of prisoners. And an extensive clearing of the estate was promptly carried out. Cattle and sheep were the chief pastoral industries, but farming and gardening to a limited extent were also fairly developed". The roads marked on the Crown Plans are possibly the original roads Maxwell had built by convicts, and were later marked on the plan when they were gazetted as government roads.

In 1854 Maxwell advertised the property for sale. The land described as 'Liddleton Estate' comprised of 3,100 acres, which must include all of his adjoining portions of land along the Cox's River including Portion 27 which the subject area is within. The *Sydney Morning Herald* (Saturday 22 April 1854:7) provides a description of the land use and 'improvement' made to the property, including its division into small farms, presence of brick and weatherboard cottages, outbuildings, woolshed, and stockyards.

The property was bought and sold several other times, though it continued to be used as for rural industries, primarily to graze sheep. No known buildings were erected within the subject area. Maxwell was one of the largest pastoral farmers in the area and his estate is known to have included his homestead plus numerous ancillary farming outbuildings, early roads and associated fencing. The homestead is still used residentially and is located on approximately 1 km north of Austen Quarry in the Cocks Valley.

"Liddleton" became part of a wildlife refuge in July 1978 before being purchased by the Hartley Pastoral Company and later being developed as a quarry. Austen Quarry has been in operation since March 1995.

In summary, some disturbance to the subject area has occurred through post-contact land use. Most of this disturbance would have occurred on the most usable land for pastoral activities – the lower slopes and Cocks Valley – and included some vegetation clearance. Some major disturbance has also occurred in relation to current quarrying activities at Austen Quarry. This includes disturbance through the creation of vehicular access tracks. The least disturbed parts



of the subject area would be on the steep upper and mid-slope landforms which are also the least likely landforms to contain evidence of Aboriginal occupation.

## **7. REGISTER AND DATABASE SEARCHES**

Commonwealth, State and local heritage registers, databases and schedules were searched for any heritage items that may be located within or in proximity to the subject area.

### **7.1 COMMONWEALTH**

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes two registers for listing exceptional natural and cultural places that contribute to Australia's national identity – the National Heritage List (NHL) and the Commonwealth Heritage List (CHL).

The NHL lists places of outstanding heritage significance to Australia. It includes natural, historic and Indigenous places. NHL listed places are protected by Australian Government laws and special agreements with state and territory governments and with Indigenous and private owners. The EPBC Act requires that approval be obtained before any action takes place that could have a significant impact on the national heritage values of a NHL place.

The CHL lists natural, Indigenous and historic heritage places which are either entirely within a Commonwealth area, or outside the Australian jurisdiction and owned or leased by the Commonwealth or a Commonwealth Authority; and which the Minister is satisfied have one or more Commonwealth Heritage values.

The NHL and CHL are searchable via the Australian Heritage Database (AHD) (<http://www.environment.gov.au/heritage/ahdb/>). The AHD contains information about more than 20,000 natural, historic and Indigenous places, including places:

- in the World Heritage List (WHL);
- in the NHL and CHL;
- in the Register of the National Estate (RNE);
- in the List of Overseas Places of Historic Significance to Australia; and
- under consideration, or that may have been considered for, any one of these lists.

There are no management constraints associated with listing on the RNE unless the listed place is owned by a Commonwealth agency.

A search of the AHD was conducted on the 3 June 2013. No items were identified within the subject area.

## 7.2 STATE

### 7.2.1 ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS)

An extensive AHIMS search was conducted on 11 June 2013 (AHIMS search ID #103109). The search covered an area of approximately 5 km x 5 km that encompassed the subject area. There were 49 previously recorded Aboriginal archaeological sites within the search area but no sites within the proposed extension area. Two open camp sites (artefact scatters) are located within 500m of the proposed quarry expansion area. The frequencies of site types within the search area are consistent with the regional trends identified through the previous studies (Mills and Wilkinson 1993). The AHIMS search results are presented in Table 2 and shown in Figure 9.

**Table 2: Results of AHIMS search #103091, within 5 km of the subject area.**

Site ID	Site Name	Site Type
45-4-0935	Hartley Historic Site	Isolated Find
45-4-0116	Hyde Park; Hyde Park Survey Area; Hartley;	Open Camp Site
45-4-0117	Hartley; Hartley Survey Area;	Open Camp Site
45-4-0128	Junction Rock; Katoomba;	Open Camp Site
45-4-0058	Mount Blaxland; Kylie Park.;	Burial/s.Open Camp Site
45-4-0900	Hartley 2;	Open Camp Site
45-4-0901	Hartley 1;	Open Camp Site
45-4-0989	Hyde Park Open Scatter	Scarred Tree, Isolated Find
45-4-0992	McKanes Bridge Cox's River	Open Camp Site, Water hole
45-4-0993	Lett River Jenolan Caves Rd	Isolated Find
45-4-1043	Hassan's Walls Burial Site	Burial
45-4-1044	Londonderry Reserve	Open Camp Site
45-4-1049	GWH5 Great Western Highway	PAD, Habitation Structure
45-4-1080	GWH17 Great Western Highway	Open Camp Site
45-4-1081	GWH18 Great Western Highway	Open Camp Site
45-4-1082	GWH19 Great Western Highway	Open Camp Site
45-4-1071	GWH8 Great Western Highway	Isolated Find
45-4-1072	GWH9 Great Western Highway	Open Camp Site
45-4-1073	GWH10 Great Western Highway	Open Camp Site
45-4-1074	GWH11 Great Western Highway	Open Camp Site
45-4-1075	GWH12 Great Western Highway	Open Camp Site
45-4-1076	GWH13 Great Western Highway	Isolated Find
45-4-1077	GWH14 Great Western Highway	Open Camp Site
45-4-1078	GWH15 Great Western Highway	Isolated Find
45-4-1079	GWH16 Great Western Highway	Open Camp Site
45-4-1098	Great Western Highway (GWH) 21	Isolated Find
45-4-1099	Great Western Highway (GWH) 23	Isolated Find

**Table 2: Results of AHIMS search #103091, within 5 km of the subject area (Cont'd)**

Site ID	Site Name	Site Type
45-4-1100	Great Western Highway (GWH) 25	Isolated Find
45-4-1101	Great Western Highway (GWH) 26	Isolated Find
45-4-1102	Great Western Highway (GWH) 29	Isolated Find
45-4-1103	Great Western Highway (GWH) 31	Isolated Find
45-4-1104	Great Western Highway (GWH) 32	Isolated Find
45-4-1105	Great Western Highway (GWH) 33	Isolated Find
45-4-1106	Great Western Highway (GWH) 34	Isolated Find
45-4-1109	Great Western Highway (GWH) 40	Scarred Tree
45-4-1110	Great Western Highway (GWH) 41	Scarred Tree
45-4-1111	Great Western Highway (GWH) 42	PAD, Habitation Structure
45-4-1112	Great Western Highway (GWH) 44a	Isolated Find, Scarred Tree
45-4-1088	GREAT WESTERN HIGHWAY (GWH) 30	Isolated Find
45-4-1089	GREAT WESTERN HIGHWAY (GWH) 22	Isolated Find
45-4-1090	GREAT WESTERN HIGHWAY (GWH) 44	Isolated Find
45-4-1092	GREAT WESTERN HIGHWAY (GWH) 28	Isolated Find
45-4-1093	Great Western Highway (GWH) 20	Isolated Find
45-4-1094	Great Western Highway (GWH) 43	Isolated Find
45-4-1095	Great Western Highway (GWH) 35	Isolated Find
45-4-1096	Great Western Highway (GWH) 27	Isolated Find
45-4-1097	GWH7	Isolated Find
45-4-1086	GREAT WESTEREN HIGHWAY (GWH) 23	Isolated Find
45-4-1084	GWH6 Great Western Highway	Open Camp Site

## 7.2.2 STATE HERITAGE REGISTER AND STATE HERITAGE INVENTORY

The State Heritage Register (SHR) holds items that have been assessed as being of State Significance to New South Wales. The State Heritage Inventory (SHI) contains items that are listed on Local Environmental Plans and/or on a State Government Agency's Section 170 registers (NSW Office of Environment and Heritage Website – [www.heritage.nsw.gov.au/index.html](http://www.heritage.nsw.gov.au/index.html) - accessed 11 June 2013). Items appearing on either the SHR or SHI have a defined level of statutory protection under NSW legislation.

No Aboriginal heritage items were registered on the SHR or SHI within, or in close proximity, to the subject area.

## 7.3 LOCAL

Each Local Government Area in New South Wales is required to create and maintain a schedule to their Local Environmental Plan (LEP) that identifies heritage items. Impacts to these items are managed through approvals under the *Environmental Planning and Assessment Act 1979* and the *Heritage Act 1977*.

A search of the Lithgow City Council LEP (1994) was undertaken on the 11 June 2013. No Aboriginal heritage items listed on the LEP are located within, or in close proximity to, the subject area.

#### **7.4 UNREPORTED SITES FROM PREVIOUS SURVEYS**

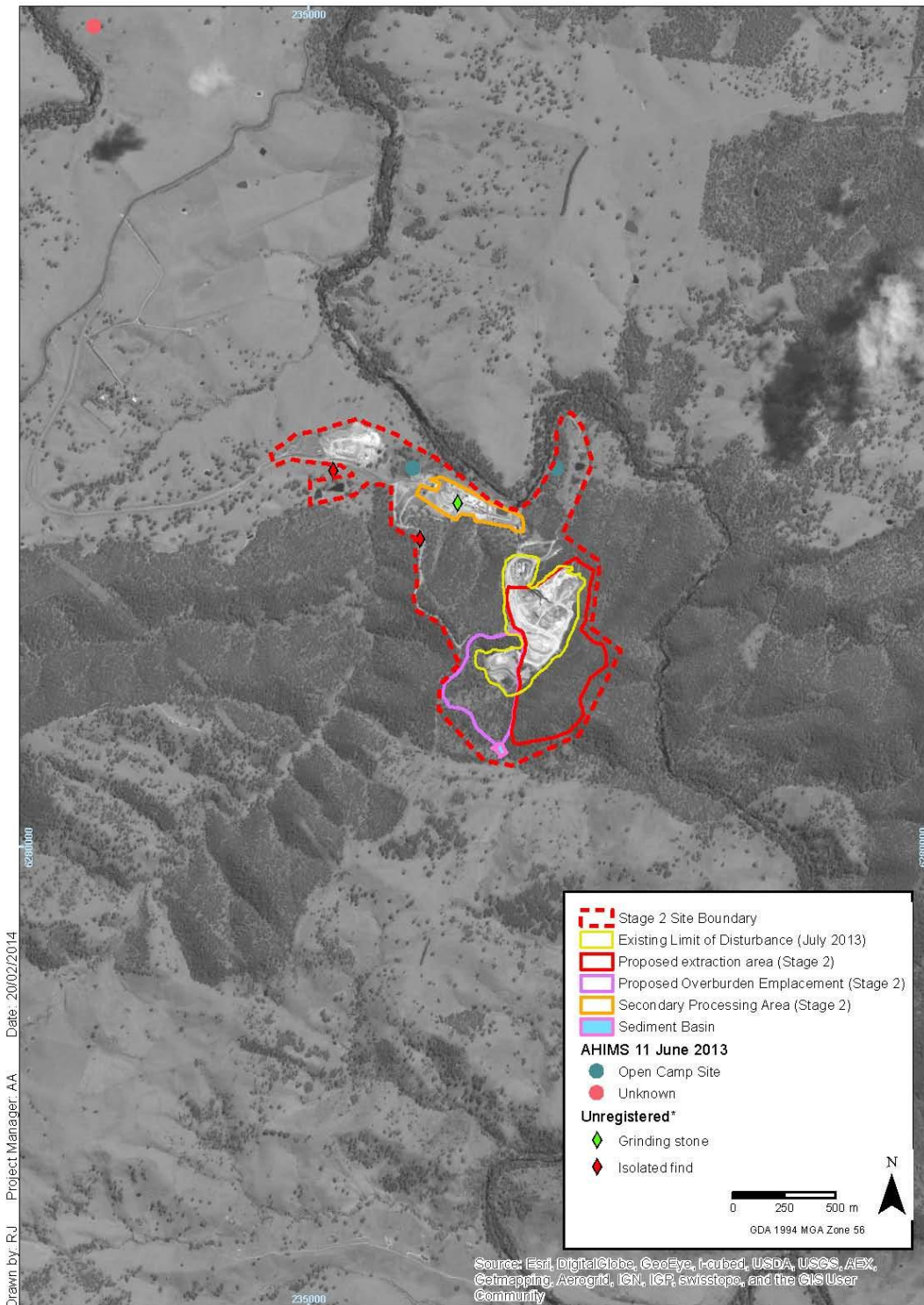
While undertaking a two day survey of the initial footprint of the Austen Quarry for the Hartley Pastoral Company, Mills and Wilkinson (1993) discovered two open artefact scatters and four isolated artefacts identified within the proposed quarry area and haul road. Only the two artefact scatter sites appear to have been registered on AHIMS (Hartley 1 and 2 registered as #45-4-0900 and #45-4-0901). The remaining isolated artefacts were located beside the haul road leading to the quarry. These artefacts included a grinding stone (described also as a 'basalt anvil') and three flaked artefacts. Mills and Wilkinson (1993) did not provide map co-ordinate references for the isolated artefacts. This report recommended that these isolated artefacts be salvaged and displayed in the local NPWS office in Hartley. It is not known if this occurred.

These isolated artefacts constitute the closest evidence for past Aboriginal occupation of the subject area and their presence increases the potential for material culture being located within the proposed quarry expansion footprint.

The Australian Museum Aboriginal Collection contains a number of clubs or 'nulla-nulla' whose provenience is given as 'Hartley' (Patrick and Simmons 1994:25).



**Figure 9: AHIMS registered sites within a regional context (Source: Niche and OEH, 2013)**



AHIMS

1538 Austin Quarry Heritage Assessment

## 8. ARCHAEOLOGICAL BACKGROUND

### 8.1 PREVIOUS ARCHAEOLOGICAL WORK

In terms of its regional archaeological setting, the subject area falls within the Upper Blue Mountains. Rock shelters are common in this geological region. Numerous shelters have been investigated in the Upper Blue Mountains including Lyre Bird Dell at Leura and Walls Cave at Blackheath. In contrast open camp sites are the most common site type in the Bathurst Plains, and also the most common site found around the River Lett and Hartley Vale.

The Sydney Basin was occupied and used by Aboriginal people for thousands of years prior to European settlement. In the Blue Mountains, sandstone gullies, creeks, floodplains, swamps and woodlands provided Aborigines with a rich and varied resource zone and occupation area.

**Mills and Wilkinson (1993)** conducted an archaeological survey for Aboriginal sites for the then proposed Austen Quarry site; the current report is for stage two of the same subject area. During the survey different landforms were identified and searched for Aboriginal sites. No archaeological sites were located in the Cox's River bed and its floodplains landform. Two sites and four isolated artefacts were located on land rising between a road and the 700 m contour level within the project area. An artefact scatter was located on a gently sloping spur at an elevation of 690 metres above Yorkeys Creek. A basalt anvil and some isolated artefacts were also identified along the haul road leading to the quarry site.

The results of the survey confirm that Aboriginal people generally camped on slightly elevated land within close proximity to Coxs River. One artefact scatter (Hartley 1) was found at an elevation of 670 m elevation, comprising ten stone artefacts and covering an area of 15 m<sup>2</sup>. The site was situated on the edge of a spur that fell steeply to the river to the west but more gently to the north and east. The other artefact scatter (Hartley 2) was identified on the junction of the proposed haul road and a farm track near Yorkeys Creek crossing. This site was situated on a gently sloping spur at roughly the same elevation as Hartley 1 (670 m elevation). No Aboriginal sites or objects were identified within the current subject area. Various recommendations were made by Mills and Wilkinson (1993) to protect Hartley 1 from further damage including relocating the loop access road and flagging the location of the site so it could easily be identified and avoided by construction workers. Given the location of Hartley 2, it was recommended that exposed artefacts be collected and remaining portions of the site be flagged so they could remain undisturbed.

**Niche Environment and Heritage (2012)** undertook a heritage due diligence assessment ahead of a diamond drilling program at the Austin Quarry in 2012 to determine if the drilling would, or could, cause harm to Aboriginal objects and sites or Non-Aboriginal heritage items. This assessment was done in accordance with the Due Diligence Code of Practice (DECCW, 2010c) and included database searches and on-site inspections of the proposed drill locations. All of these drilling sites are located within the subject area of this report. No additional Aboriginal sites or non-Aboriginal heritage items were identified in this report and it found that there was a low likelihood of such items being located within the subject area.

Further away from the proposed subject area Ridgeway (nd), Australian Museum Business Services (2002) and Comber (2009) have conducted recent archaeological surveys around the township of Harley.

**Ridgeway (nd)** was an archaeological survey for Aboriginal sites undertaken within the lands owned by NSW National Parks and Wildlife Service. The survey methodology comprised a series of transects 15 m to 20 m apart. The report identified four open campsites, six isolated finds and one sacred/ceremonial site.

**Australian Museum Business Services (2002)** surveyed Hyde Park Reserve at Hartley to identify Aboriginal archaeological sites. During the survey 154 stone artefacts were uncovered all of which were located in exposed surface areas of the eroded vehicle wheel tracks. Silicified tuff was the most common stone raw material observed during the survey, quartz was the next most common stone material type, chert, basalt and mudstone were also observed. The finds included a Burin flake, a hammer stone, a backed artefact and a 'blade' with use wear. The investigations revealed that archaeological material covered much of the reserve and that there exists potential for sub-surface in situ artefacts to exist.

**Comber (2009)** undertook a study to aid the New South Wales Road Traffic Authority in the heritage assessment of a proposed upgrade of the Great Western Highway from Mt. Victoria to Lithgow. Comber Consultants were subcontracted by Sinclair Knight Mertz to do this work. The background description of this report is quite extensive, containing a comprehensive overview of pre-historic and historic Aboriginal occupation of the Blue Mountains. The report recommended a survey and cultural heritage assessment be undertaken in accordance with the identified constraints when the new highway route is chosen.

In addition a number of other studies have been undertaken in the more regional area that have to potential to be relevant to the current study.

**Stockton and Holland (1974)** conducted excavations at King's Tableland and Greeves Creek rock shelter. These are approximately 40 km and 16 km in a direct line to the south-east of the subject area, respectively. This report records radiocarbon dates of 22,000 years B.P. and 12,000 years B.P. for these sites (respectively) showing that occupation in the area extended into the late Pleistocene (Tarantian 126,000 years B.P to 11,700 years B.P.). As the last glacial maximum (ice age) occurred between 26,500 and 19,000 years ago in Australia (Clark et. al. 2009) the date from the King's Tableland appears to indicate occupation during this time also.

Excavations of sites 45-1-2573 and 45-1-2574 at Lidsdale, located approximately 20 km to the north west of the subject area, by **OzArk (2003, 2004)** recovered approximately 6,000 artefacts from a 150 m<sup>2</sup> of excavation. Sites 45-1-2573 and 45-1-2574 had been identified as Potential Archaeological Deposits only prior to excavation.

## **8.2 SUMMARY**

In the landscape surrounding the subject area a rich Aboriginal material culture has been uncovered which may extend into the Pleistocene period. Open camp sites are the most common site type within 5 km of the subject area, but scarred trees and burials have also been found. A wide variety of stone material sources have been shown in the Australian Museum Business Services (2002) study to have been utilised.

Coxs River, which flows to the north and east of the subject area, has been identified as an important feature for the people who lived there before European arrival. The vast majority of the sites found in the region to date are associated with this major water source and its tributaries.

Excavations in the regional area have shown that stone artefacts can exist in moderate numbers in areas identified to have potential archaeological deposits from predictive models.

## 9. PREDICTIVE MODEL

Archaeologists examine regional and local trends in the distribution of known Aboriginal sites in relation to environment and topography to make predictions about Aboriginal site types and locations within a given area.

As discussed in Section 7, as part of its due diligence for this project, Niche conducted a search for previous Aboriginal sites found within 5 km of the subject area. This search has returned a result of 49 previously recorded sites within this area. These include isolated finds, open camp sites, scarred trees and two burials.

Unfortunately archaeological sites are not always visible on the surface and therefore a predictive model is created for the proposed landscape. A predictive model assesses different landforms and their likelihood of containing archaeological material. Predictive models for similar areas to the subject area have been completed previously by Pearson (1981 in Cserhalmi 2002: 29) and Comber (2009).

Pearson (1981 in Cserhalmi 2002: 29) conducted an investigation of the characteristics of the Aboriginal occupation of the western mountain slopes and adjoining plains; Hartley is located in such a geographic location. In this study Pearson forwarded the following predictive model:

- There is a strong relationship between the open camp site location and distance from water sources ranging from 10 m to 500 m; the closer to water the larger the site tended to be;
- Good drainage and views over watercourses and river flats are important site location criteria;
- Burial sites and grinding grooves are situated close to open camp sites and are related to the local geography;
- Ceremonial sites such as earth rings or bora grounds are situated away from open camp sites;
- Stone arrangements are also located away from campsites in isolated places and tended to be associated with small hills or were on flat land;
- Quarry sites are located where stone outcrops with desirable working qualities were recognised and were reasonably accessible.

The predictive model described by Comber (2009:70) suggests that the following landforms have the potential to contain archaeological material:

- The head of open valleys where easy access to the plateau is available;
- Where upland swamp resources are concentrated;
- The areas around major creek lines and around swamps;
- The areas above tributaries;
- Elevated positions above creeks and swamps;
- Rock shelters and associated rock art will be located along sandstone escarpments;
- Scarred trees are associated with old growth forest and open artefact scatters; and
- In addition ridgelines, creek lines and valley corridors were used as transit routes between areas of occupation and these may contain sites associated with this activity.

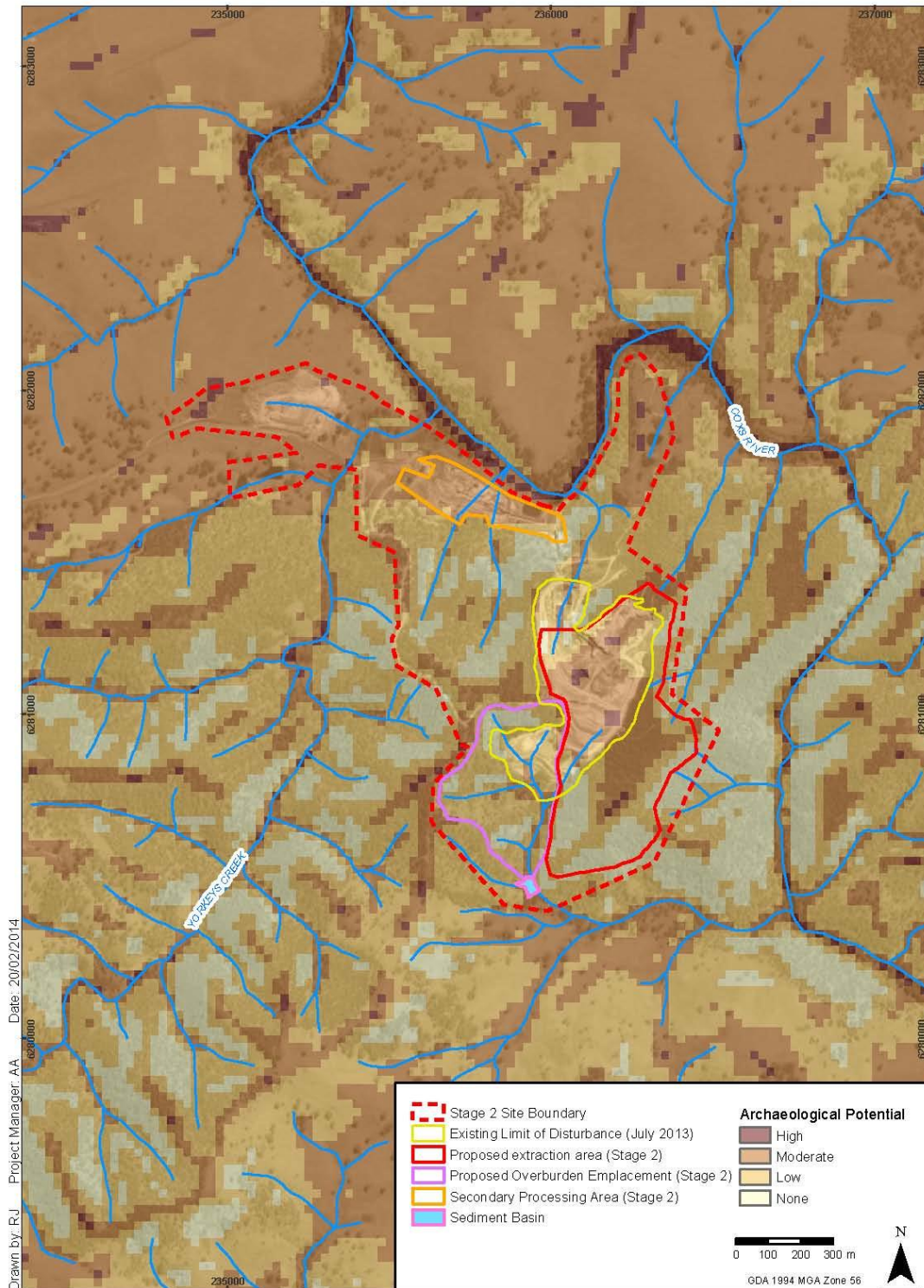
As part of the AHIMS analysis it was found that all of the previously recorded sites, within 5 km of the Austen Quarry, were recorded within 1 km from permanent water. 71% of these sites were with 500 m of water. The majority of the sites (37%) were located on an undulating plain, with slight hill slopes (12%) and mountainous regions (10%) also being prominent. 18% of site cards did not record the terrain type where the site was located. While few site cards recorded the slope angle on which the site was located, all recorded less than 5% gradients.



In accordance with Pearson (1981 in Cserhalmi 2002: 29) and Comber (2009:70) and taking into consideration the observations by Niche (2012) and in compiling this report, it is understood that previously recorded sites identified in the region surrounding the subject area have a strong correlation with erosional landscapes that are found in association with water sources. Known sites were also located on low hills featuring low to moderate slopes leading towards a drainage channel.

While the subject area is located on high ground within 500 m from the perennial water source of Coxs River, the subject area is mostly located on moderate to steep side slopes of hill and ridge lines which are unsuitable for camp sites and activities associated with these camps. However, the bottom of lower order drainage channels, any areas of flat ground, rock outcrops and sandstone escarpments should be inspected as they retain potential for the presence of Aboriginal cultural material.

Figure 10: Archaeological predictive model (Source: Niche, 2013)



Archaeological predictive model for the Subject Area  
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## **10. FIELD METHODS**

The field methods included pedestrian surveys of both areas. Each of the landforms noted to exist within the project area were targeted. A particular focus for investigation was placed on areas where natural resources were rich, such as any areas with a permanent water source.

The surveys also focused on identifying shelter sites with evidence of Aboriginal occupation, open artefact scatters and large rock platforms which may contain evidence of Aboriginal occupation. The landform units and topographic areas within which these site types may be expected to occur were targeted during this assessment as previous assessments in the region had demonstrated that these would be the most prominent and likely site types to be located within the project area.

The field method also aimed to collect and information relating to the cultural values of the area. During the field survey, Aboriginal stakeholders were given the opportunity to express their opinion or share any knowledge of cultural values of the subject area.

## **11. RESULTS**

### **11.1 PROPOSED STAGE 2 EXTRACTION AREA**

The field survey for this area was conducted on the 27<sup>th</sup> August 2013. The survey team consisted of Amanda Atkinson and Lydia Sivaraman (Archaeologists, Niche), with Elwin Wolfenden (Mingaan Wiradjuri Aboriginal Corporation), Patsy Wolfenden (Wiray-dyraa Maying-gu Native Title Group), Kevin Williams (North East Wiradjuri Company) and Jack Pennell (Warrabinga Native Title Claimants). Lee Attard (Austen Quarry Mine) was also present and drove the survey team through the Austen Quarry site to points of access within the proposed extraction area.

The Proposed Stage 2 Extraction Area was characterized by steep slopes (Plate 1) and a ridgeline. The ridgeline was surveyed extensively in transects however the slopes were too steep to be safely surveyed. The ridgeline surveyed contained mostly intact Mallee Heath Woodland. Species of trees were sparsely distributed and the understory was mostly tall shrubs such as banksia. The woodland floor was littered with leaves, and stones and boulders of outcropping Rhyolite. There was an absence of low lying scrub in the understory and minimal grass resulting in excellent ground surface visibility. The ridgeline had excellent exposure (50%) and visibility (80%) which allowed for a thorough assessment of the landform (Plate 2).





Plate 1. Extraction Area showing terrain (Niche, 2013)



Plate 2. Extraction Area showing high ground surface visibility (Niche, 2013)

## 11.2 PROPOSED STAGE 2 OVERBURDEN EMPLACEMENT AREA

The overburden emplacement area was surveyed 25<sup>th</sup> November 2013. The entire impact area was surveyed by a team consisting of Renée Regal (Archaeologist, Niche), with Kevin Williams (North East Wiradjuri) and Terri McConnell (Wiray-dyraa Maying-gu Native Title Group). Malcolm McDonald (Austen Quarry) was also present during the survey.

The terrain and flora was much like that encountered during the Extraction Area survey. Ground surface visibility was very low in contrast to the Extraction Area and was estimated at being around 5% (Plate 3, Plate 4).



Plate 3. Overburden Area, looking towards existing quarry; note poor ground surface visibility (Niche, 2013)



Plate 4. Overburden Area, showing terrain, view looking west (Niche, 2013)



### 11.3 RESULTS

No Aboriginal objects or places were found during either survey. The survey coverage and landform summary are shown below in

**Table 3. Survey Coverage**

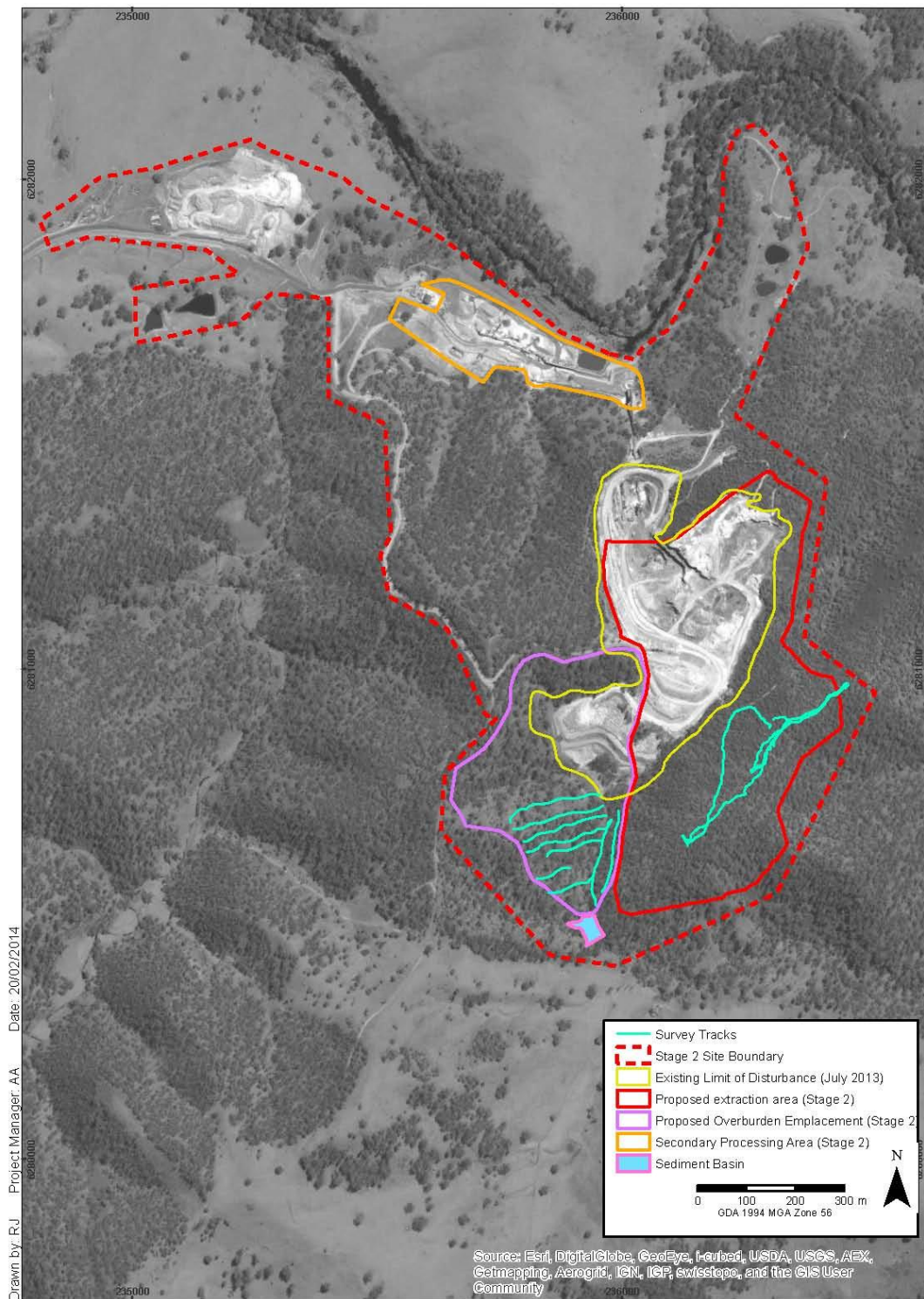
Survey unit	Landform	Survey unit area (sq m)	Visibility %	Exposure %	Effective coverage area (sq m)	Effective coverage %
Expansion Area	Ridge	20400	50	80	8160	40%
Overburden Emplacement	Ridge	1800	10	5	9	0.5%
	Slope	900	5	0	0	0%
	Drainage	800	5	5	2%	0.25%

**Table 4. Landform summary – sampled areas**

Landform	Landform Area (sq m)	Area effectively surveyed (sq m)	% of landform effectively surveyed	Number of sites	Number of artefacts or features
Ridge	22200	8169	37	0	0
Slope*	900	5	0	0	0
Drainage	800	5	5	0	0

\* Due to steep slopes and for safety reasons, it was not possible to survey the slope landform within the expansion area.

Figure 11: Survey coverage, Proposed Stage 2 Extraction and Overburden Emplacement Areas (Niche, 2013)



Drawn by: R.J. Project Manager: AA  
 Date: 20/02/2014

Field Results

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FIGURE 11

## 12. SCIENTIFIC VALUES AND SIGNIFICANCE ASSESSMENT

### 12.1 UNDERSTANDING SIGNIFICANCE

In accordance with significance assessment guidelines, including the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011), the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010a) and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b), any Aboriginal cultural heritage identified is assessed with respect to:

- The cultural and social significance of Aboriginal objects and/or places to Aboriginal people; determined through consultation with Aboriginal stakeholders; and
- A determination of scientific (archaeological) significance; information about scientific values must be gathered through archaeological investigation to “identify the archaeological values and assess their significance”.

The Burra Charter (Australia ICOMOS 1999) also provides a primary and ‘best-practice’ framework within which decisions about the management of heritage sites in Australia should be made. A number of values are also considered when making assessments including aesthetic, historic, social and scientific values/significance.

**Aesthetic** - Includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use.

**Historic** - Encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in-situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

**Social** - The qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group.

**Scientific** - The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality or representativeness, and on the degree to which the place may contribute further substantial information.

### 12.2 STATEMENT OF SIGNIFICANCE

No Aboriginal heritage has been identified within the subject area. The subject area is therefore not of significance for Aboriginal heritage values.

### **13. IMPACT ASSESSMENT**

No Aboriginal objects or places were identified within either of the areas surveyed.

Ground surface visibility was high in the Stage 1 Extraction Area yet no Aboriginal objects or places were identified. When combined with the results of the desktop assessment, including our understanding of the landforms present, previous heritage assessments in the region, and our predictive model for the subject area, it is very unlikely that the proposed works in this area would impact of Aboriginal heritage.

The ground surface visibility in the Stage 2 Overburden Emplacement Area was very low (estimated at 5%). The results of the desktop assessment, our predictive model for the subject area, and the results of the field surveys suggest that the proposed works would be unlikely to impact on Aboriginal heritage.

### **14. MANAGEMENT AND MITIGATION MEASURES**

While this assessment indicates that the proposed works are unlikely to impact on Aboriginal cultural heritage values, an appropriate management process for the discovery and management of Aboriginal objects should be in place prior to the commencement of works, particularly within the Proposed Stage 2 Overburden Emplacement Area. This is recommended as ground surface visibility during the field survey for that area was very low (5%) and vegetation may conceal the presence of Aboriginal objects. The process put in place should include appropriate incident reporting procedure during initial ground disturbance works (e.g. any vegetation clearance that may occur) to ensure that unexpected finds of Aboriginal objects are reported to OEH and then managed to meet regulatory requirements.

All Hy-Tec personnel and sub-contractors involved with the proposed works should complete a relevant cultural heritage induction, training or information session prior to commencing work on-site. This induction could form part of the broader induction program for project personnel. The induction should include making personnel aware of the potential for Aboriginal objects, types of objects and places that might be found, and why they are important.

## **15. CONCLUSIONS**

The results of this assessment indicate that previously recorded Aboriginal sites in the region surrounding the subject area were located in strong correlation with erosional landscapes found in association with water sources. Sites were also located on low hills featuring low to moderate slopes leading towards drainage channels. The subject area consists mostly of moderate to steep side slopes of hills and ridge lines. The presence of smaller drainage channels, any areas of flat ground, rock outcrops and sandstone escarpments within the subject area had potential to contain Aboriginal objects and places.

The field surveys by Niche in August and November 2013 failed to locate any Aboriginal objects or places within the subject area. Poor visibility and few exposure areas in the Stage 2 Overburden Emplacement Area was a limitation for the survey. Aboriginal stakeholders were given an opportunity during the field survey to share knowledge or opinion on cultural values of the subject area, no cultural values were made known to Niche during the fieldwork and no comments were received on the draft report.

There are no Aboriginal heritage constraints for the proposed works. However, management measures, including a process for dealing with unexpected finds of Aboriginal objects and the inclusion of Aboriginal heritage management obligations in project inductions, are recommended to ensure ongoing statutory compliance.



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### **Land and Property Information**

1832. *Numbered as portion 27 in the Parish of Lowther County of Westmoreland.* CP22.691



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