Aboriginal Heritage Impact Assessment

White Rock Wind Farm

Prepared by:

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Disclaimers

Executive Summary

RPS has been commissioned by Epuron Pty Ltd to prepare a Cultural Heritage Impact Assessment (CHIA) for the proposed White Rock Wind Farm. This report has considered the environmental and archaeological context of the study area, developed a predictive model and reported on the results of an archaeological survey of the study area for Aboriginal and non-Indigenous heritage items.

A survey of the study area was undertaken by RPS archaeologist, Tessa Boer-Mah and Aboriginal community representative Hilda Connors on the 18th October to the 22nd of October, 2010. Five Aboriginal sites were identified during the survey. No non- Indigenous heritage items were identified during heritage register searches, nor during the survey. The following management recommendations have been formulated with consideration of the significance of Aboriginal heritage, as well as, potential impacts and have been prepared in accordance with the relevant legislation.

Scarred tree sites RPS WR01A, RPS WR01B and RPS WR04 have been identified in close proximity to the development footprint. In order to conserve these sites and protect from accidental impact a buffer zone of 30 metres should be placed around these sites, using the GDA co-ordinates for these sites as tabled in Section 6. To ensure that the correct location of the site has been identified visual confirmation should be sought matching the photos provided with the site descriptions.

Recommendation 1

A 30m buffer zone should be maintained around scarred tree sites RPS WR01A, RPS WR01B and RPS WR04 and demarcated by temporary fencing during construction and associated plant movement.

Recommendation 2

The locations of sites identified RPS WR01A, RPS WR01B, RPS WR02, RPS WR03 and RPS WR04 should be stored within the Proponents' environmental management system to ensure their conservation

Recommendation 3

All relevant staff and contractors should be made aware of their statutory obligations for heritage under NSW NPW Act (1974) and the NSW Heritage Act (1977), which may be implemented as a heritage induction.

Recommendation 4

If additional Aboriginal site/s or non-Indigenous heritage items are identified in the study area pre-construction or during, then all works in the area should cease, the area cordoned off and contact made with DECCW Enviroline 131 555, a suitably qualified archaeologist and the relevant Aboriginal stakeholders, so that it can be adequately assessed and managed.

Recommendation 5

In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area cordoned off. The proponent will need to contact the NSW Police Coroner to determine if the material is of Aboriginal origin. If determined to be Aboriginal, the proponent, must contact the DECCW Enviroline 131 555, a suitably qualified archaeologist and representatives of the local Aboriginal Community Stakeholders to determine an action plan for the management of the skeletal remains, formulate management recommendations and to ascertain when work can recommence.

Contents

Figures

Tables

Plates

Appendices

1 Introduction

RPS has been commissioned by Epuron Pty Ltd, the Proponent, to prepare a Cultural Heritage Impact Assessment (CHIA) for the proposed White Rock wind farm in accordance with the Director Generals Requirements (DGR's), DECCW's requirements and the relevant legislation.

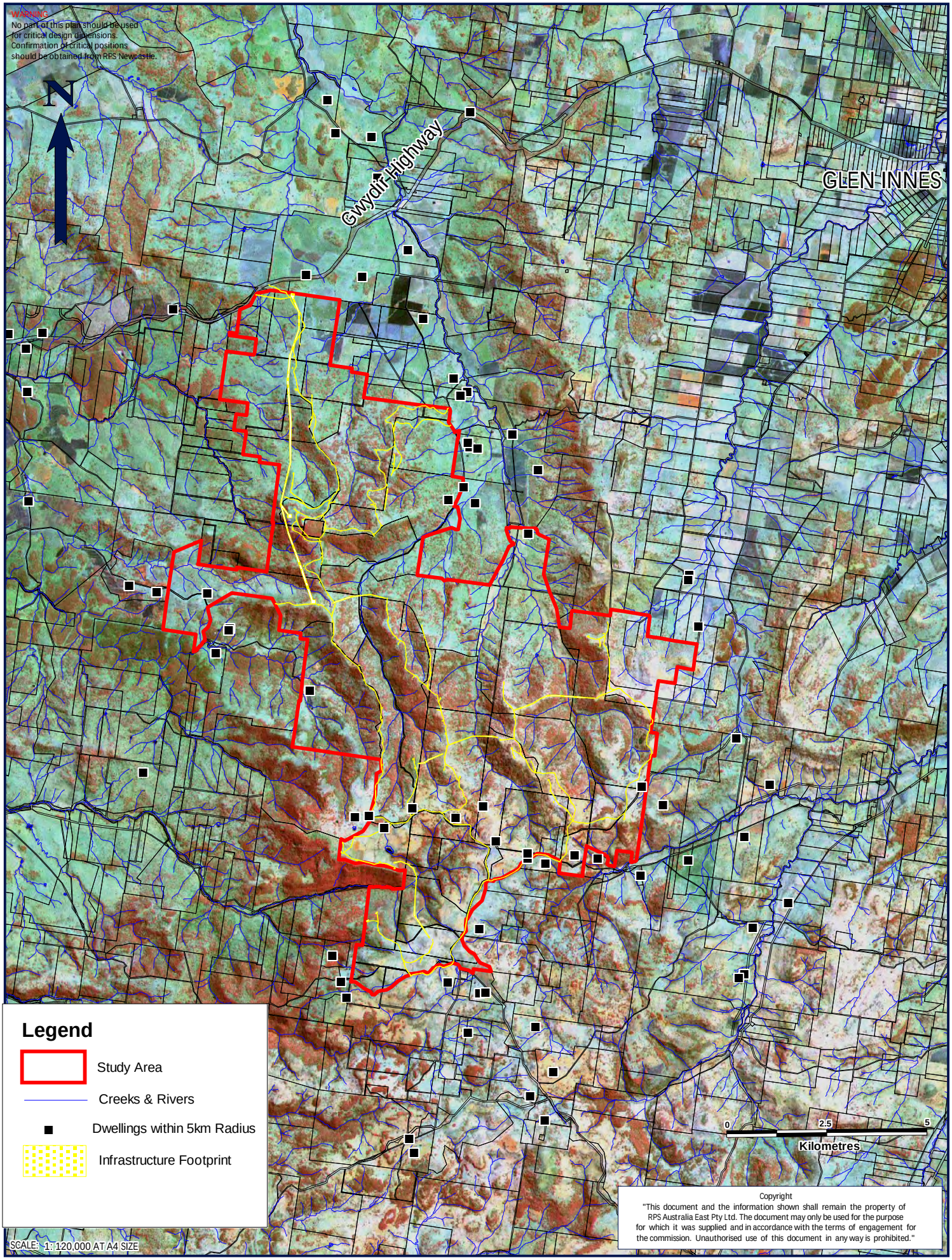
This report has considered the environmental and archaeological context of the study area, developed a predictive model and reported on the results of an archaeological survey of the study area for Aboriginal and non-Indigenous heritage items. Management recommendations have been formulated with consideration of the significance of Aboriginal heritage, as well as, potential impacts and have been prepared in accordance with the relevant legislation.

1.1 The Study Area

The study area is located to the south west of the town of Glen Innes in the Glen Innes Severn and Inverell Local Government Areas (LGA). The study area is approximately 104 square kilometres (Figure 1-1). The study area is bisected by mountainous terrain with a number of major creeks flowing across the study area.

1.2 Background

This AHIA has been prepared to address potential impacts of a new wind farm proposal located at White Rock, in the Northern Region of New South Wales. This project is being assessed as a Major Project by the NSW Department of Planning (DoP) under Part 3A of the NSW Environmental Planning and Assessment Act (1979).



TITLE: FIGURE 1-1 STUDY AREA FOR WHITE ROCK

LOCATION: GLEN INNES

DATUM: N/A
PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 6/12/2010
PURPOSE: ARCHAEOLOGY

LAYOUT REF: J:\JOBS\104k\104226 Glen Innes\10- Dr .... \ MapInfo Workspaces\White Rock\Arch\ 104229 Fig 1-1 Study Area 4 White Rock B A4
VERSION (PLAN BY): B A4 (NW-TBM)

CLIENT: EPURON
JOB REF: 104226

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1.3 Legislative Context

Aboriginal heritage (places, sites and objects) within NSW are protected by *National Parks and Wildlife Act (1974, as amended).* In some cases, Aboriginal heritage may also be protected under the *Heritage Act (1977)*. The *Environmental Planning and Assessment Act (1979)*, along with other environmental planning instruments, trigger the requirement for the investigation and assessment of Aboriginal heritage as part of the development approval process. For crown land, provisions under the Native Title Act (1993) may also apply.

1.3.1 National Parks and Wildlife Act (1974, as amended)

The primary state legislation relating to Aboriginal cultural heritage in NSW is the National Parks and Wildlife Act (1974), as amended. The legislation is overseen by the Department of Environment, Climate Change and Water (DECCW), and specifically the Director-General of the DECCW.

The NPW Act provides statutory protection for Aboriginal objects, with penalties levied for breaches of the Act. Part 6 of the Act particularly sections 86 and 90 relate to the protection of Aboriginal objects. In 2010, this Act was substantially amended, particularly with respect to Aboriginal cultural heritage requirements and consultation requirements in particular.

There are now four major offences:

(1) A person must not harm an object that the person knows is an Aboriginal object;

(2) A person must not harm an Aboriginal object;

(3) For the purposes of s86, “circumstances of aggravation” include (a) the offence being committed during the course of a commercial activity; or (b) that the offence was the second or subsequent offence committed by the person.

(4) A person must not harm or desecrate an Aboriginal place.

Offences under s86 (2) and (4) are now strict liability offences, i.e., knowledge that the object or place harmed was an Aboriginal object or place needs to be proven. Penalties for all offences under Part 6 of this Act have also been substantially increased, depending on the nature and severity of the offence.

Further changes to the NPWS legislation made effective on 1 October 2010 include:

- increased penalties for Aboriginal heritage offences, in some cases from $22,000 to up to $1.1 million in the case of companies who do the wrong thing;
- ensures companies or individuals cannot claim ‘no knowledge’ in cases of serious harm to Aboriginal heritage places and objects by creating new strict liability offences under the Act;
- introduces remediation provisions to ensure people who illegally harm significant Aboriginal sites are forced to repair the damage, without need for a court order;

- Unite Aboriginal heritage permits into a single, more flexible permit and strengthen offences around breaches of Aboriginal heritage permit conditions.

Along with the new offences summarised above there are new defences that have been introduced which will apply where a person harms an Aboriginal object without knowing what it was and without a permit from DECCW, these include:

- A 'due diligence' defence will be available if a person follows the process steps to determine if an Aboriginal site exists and/or;
- A 'low impact' defence will be available if a person was performing a designated low impact activity listed in the Regulations.

1.3.2 Heritage Act 1977

Historical archaeological relics, buildings, structures, archaeological deposits and features are protected under the Heritage Act 1977 (as amended 1999) and may be identified on the State Heritage Register (SHR) or by and active Interim Heritage Order. Certain types of historic Aboriginal sites may be listed on the SHR or subject to an active Interim Heritage Order; in such cases they would be protected under the Heritage Act 1977 and may require approvals or excavation permits from the NSW Heritage Branch.

1.3.3 Environmental Planning & Assessment Act 1979 (EP&A ACT)

This Act regulates a system of environmental planning and assessment for NSW. Land use planning requires that environmental impacts are considered, including the impact on cultural heritage and specifically Aboriginal heritage. Assessment documents prepared to meet the requirements of the EP&A Act including: Review of Environmental Factors (REF), Environmental Impact Statements (EIS) and Environmental Impact Assessments (EIA), should address Aboriginal heritage, and planning documents such as Local Environment Plans (LEP) and Regional Environmental Plans (REP) typically contain provisions for Aboriginal heritage where relevant.

Further details on the relevant legislative Acts are provided in Appendix 1.

1.4 Authorship and Acknowledgements

This report was prepared by Tessa Boer-Mah (BA(Hons), MPhil), with assistance from Anna Nardis and reviewed by Darrell Rigby.

1.5 Abbreviations and Terms

Abbreviation	Description
ACH Consultation Requirements	Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010), were released by DECCW on the 12th of April, 2010. These consultation requirements are triggered if an AHIP is needed.
AHIMS	Aboriginal Heritage Information Management System

Abbreviation	Description
AHIP	Aboriginal Heritage Impact Permit
BP	Before present (as in years before present)
cal. years BP	Calibrated years before present, indicates a radiocarbon date has been calibrated using the dendochronology curves, making the date more accurate than an uncalibrated date
DECCW	Department of Environment, Climate Change and Water
GIS	Geographic Information System
LEP	Local Environment Plan
PAD	Potential Archaeological Deposit
REP	Regional Environment Plan
REF	Review of Environmental Factors

2 Aboriginal Consultation

The purpose of Aboriginal community consultation is to provide an opportunity for the relevant Aboriginal stakeholders to have input into the heritage management process. DECCW encourages consultation with Aboriginal people for matters relating to Aboriginal heritage.

This project is being assessed under Part 3A of the Environmental Planning and Assessment Act (EP&A) 1979. Whilst Aboriginal Heritage Impact Permits (AHIPS) under the NSW National Parks and Wildlife Act (1979) do not apply under Part 3A of the EP&A 1979 (Section 75U (1) d); Aboriginal consultation is still required. The Department of Planning Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation 2005 and DECCW Fact Sheet 5: Landuse Planning Consultation Requirements for proponents indicate that the *Interim Community Consultation Requirements* (DEC 2005) apply; however, the *Aboriginal Cultural Heritage Consultation Requirements (ACHCRs) for Proponents* (DECCW 2010) are considered to be more comprehensive and demonstrate an exemplary approach to Aboriginal consultation; therefore were followed for undertaking Aboriginal consultation in this assessment.

In accordance with the ACHCRS, letters were sent to the DECCW Environmental Protection and Regulation Group, Glen Innes Local Aboriginal Land Council, the Registrar of Aboriginal Owners, Native Title Services Corporation Limited, Glen Innes Severn Local Council and the Border Rivers - Gwydir Catchment Management Authority on the 31st of August, 2010 requesting information and contact details for interested local Aboriginal parties, authorities were asked to respond within 14 days (14/9/2010). DECCW did not respond until the 28th of September 2010. Despite repeated phone calls and letters, the Glen Innes Local Aboriginal Land Council did not respond. The registrar of Aboriginal owners indicated there were no registered owners for this area. The Glen Innes Severn Council provided a list of names, but no contact details making contact with those identified difficult.

As a result of the invitation for expression of interest letters and the advertisement published in the Glen Innes Examiner (26/8/2010) the following Aboriginal Community Stakeholders registered their interest in the project by the due date (14/10/2010) (Table 2-1). Another Aboriginal organisation registered their interest after the due date (Table 2-2). The Glen Innes Local Aboriginal Land Council did not register their expression of interest.

Table 2-1: Aboriginal stakeholders which registered their interest in the project by the due date.

Organisation	Name of Representative	Organisation	Date of Registration
Kwieambal Traditional Owner	Hilda Connors	Kwieambal Traditional Owner	02/09/2010
Kwieambal Traditional Owner	Merve Connors	Kwieambal Traditional Owner	24/09/2010
Kwieambal Traditional Owner	Faron Connors	Kwieambal Traditional Owner	05/10/2010
Edgerton-Kwiembal Aboriginal Corporation	Representative of corporation (further details available on request)	Edgerton-Kwiembal Aboriginal Corporation	05/10/2010

Table 2-2: Aboriginal stakeholders which registered their interest in the project after the due date.

Name of Representative	Organisation	Date of Registration
Cedric Talbot	Kwiembal Elders Group	25/10/2010

Information regarding the proposed heritage assessment methodology and strategy for collecting information on cultural heritage significance was provided in writing to the Aboriginal stakeholders on the on the 16/9/2010. Four groups returned their comments on the methodology (Table 2-3).

Table 2-3: Aboriginal stakeholders who responded to the methodology

Organisation	Name of Representative	Date of Reply for Methodology
Kwieambal Traditional Owner	Hilda Connors	16/9/2010
Kwieambal Traditional Owner	Faron Connors	5/10/2010
Kwiembal Environmental, Heritage and Cultural Aboriginal Corporation	Representative of corporation (further details available on request)	15/10/2010
Kwiembal Elders Group	Cedric Talbot	25/10/2010

Due to the size of the development only one stakeholder was able to participate in the survey.

Table 2-4: Stakeholders who participated in the survey

Organisation	Name of Representative	Dates
Hilda Connors	Kwieambal Traditional Owner	18-22/10/2010

All the registered stakeholders were sent a copy of this report and provided the opportunity for comment. All stakeholders provided verbal agreement with the draft report, as per Table 2-5, full details available in Appendix 2.

Table 2-5: Stakeholders who responded to the draft report

Organisation	Name of Representative	Organisation	Date of Reply for Methodology
Kwieambal Traditional Owner	Hilda Connors	Kwieambal Traditional Owner	10/2/2011
Kwieambal Traditional Owner	Faron Connors	Kwieambal Traditional Owner	10/2/2011
Kwieambal Traditional Owner	Merve Connors	Kwieambal Traditional Owner	10/2/2011
Kwiembal Environmental, Heritage and Cultural Aboriginal Corporation	Representative of corporation (further details available on request)	Kwiembal Environmental, Heritage and Cultural Aboriginal Corporation	24/2/2011
Kwiembal Elders Group	Cedric Talbot	Kwiembal Elders Group	24/2/2011

3 Non-Indigenous Heritage Context

This section overview the historical context of the local region and has searched the relevant registers for non-Indigenous heritage items within the study area.

3.1 Historical Context

Cunningham and Oxley are attributed as being the first to cross the New England Region, with subsequent explorations undertaken by Sturt in 1828-9 and Hume and Mitchell in 1831-2 (Atchison 1977: 142). Cunningham journeyed through the rugged western area of New England from his exploration of the Darling Downs in 1827, whilst Oxley traversed the narrow southern end in 1818 before descending into the Hastings Valley from Mount Seaview (Atchison 1977: 142). The first European to explore this part of the New England, Oxley immediately saw its potential as a major agricultural centre. John Oxley passionately described the area as being "the finest open country, or rather, park imaginable" (Walker 1966). It was this expedition, carried out in 1821, which fully identified the upper Hunter and New England as areas of considerable agricultural potential and hastened authorities to move the Newcastle convict settlement to Port Macquarie. The extensive well watered flat plains attracted early settlers and squatting pastoralists alike and they started to occupy the area in the 1830's (Campbell 1978).

With the penal colony gone, settlers quickly established themselves in the hunter region throughout the 1820's. Henry Baldwin was the first to drive his stock over the Liverpool ranges in 1826, but it was not until the 1830's that New England experienced an influx of free settlers (Molyneux 1965). The era of squatting was emerging and it was to have a profound impact on the shaping of N.S.W. In 1829 the Legal Limits of Location were introduced. '…within these limits land could be alienated and settlement was encouraged; but beyond them both were strictly prohibited. Despite these and other governmental edicts, however, pastoral settlement in the second quarter of the nineteenth century spread rapidly over all but the least desirable parts of the inland grazing country of south-eastern Australia.'(Walker 1966). Squatters went on to establish themselves extensively throughout New England and quickly became some of the wealthiest land 'owners' in New South Wales. The following describes the strange situation role of squatters in the early settlement of the region:

"…a visitor to one station in 1847 recorded that the squatter employed about one hundred persons and ran about 50,000 sheep, though he had not a single acre of purchased or granted land."(Mundy 1855)

The Dangar family who, being Huguenots, left Jersey amidst persecution, became one of the most significant names in the early settlement of New England. By 1848 Henry Dangar had secured 'Gostwyck', an area of 89,000 acres. This estate alone was amongst the largest and most valuable in New England, and it was only one of seven which he held claims to (Walker 1966). With the ports of the Hunter providing trade access to Sydney, the tablelands of New England flourished and by the end of the 1840's the districts of

Walcha, Armidale, Glenn Innes and Tenterfields had been established. In April of 1842 the first races were held in which the squatters rode their finest mounts around a furrow ploughed near the commissioners camp, early the next year a post office was erected in the same place bearing the name 'Armidale', this being the first recording of the name. New England nearly doubled its population within 5 years, from 2231 in 1846 to 4197 in 1851 (Walker 1966). Henry Dangar (Gostwyck), William Dumaresq (Tilbuster) and his brother Henry Dumaresq (Saumarez) (Campbell 1978) dominated the establishment of the pastoral industry in the New England Regions. These early squatters were established landholders from the Hunter Valley who had sent teams of men and cattle north to establish new runs.

The Robertson Land Acts were passed in 1861 and from this point on the sparsely inhabited pastoral grounds (previously populated by largely free roaming sheep) became a hive of agricultural developments. This was the era of the 'Free Selector', vast swathes of land became 'unlocked' and anyone in the colony could lay claim acres of land without having even to enter the Land Office. The era of the squatter was challenged by the introduction of the Robertson Land Acts which sought to break the monopoly on landholdings. Many of the larger runs survived the impact of the Land Act, however, in some areas there was a pattern of large landholdings shrinking as a result of problems with fencing and staffing. The new landholders with smaller acreages diversified establishing cash crops and orchards along with sheep and cattle grazing (Ferry 1999:57). In New England, between 60 and 70% of claims were made with a genuine intention of settlement and by 1901, the number of agricultural workers rose from 805 to 4,071 and the area cultivated had grown fourteenfold (Walker 1966).

In the mid to late nineteenth century the Tablelands gained a major boost with the discovery of gold, tin and antimony. This resulted in the intermittent and widespread establishment of small mines across the New England area where bismuth, molybdenite, manganese and sapphires were also mined with gemstone production developing through the 1920's to the 1960's (Campbell 1978). Some mining towns that grew to meet the demands of the miners reverted back to villages when deposits diminished. Other towns, such as Armidale continued to grow as a service centre for the surrounding area.

Rumours and excitement gathered momentum in 1851 as the goldrush came to capture the public imagination. Small deposits were found in New England that year, however, they were mostly too small to be considered payable. This would change the very next year as the Windeyer brothers washed five ounces of gold in five days. In their article 'Evolution of an Australian Rural Settlement Pattern,' Smailes and Molyneux comment that 'The most important event in this period was the discovery of alluvial gold at Rocky River, some fourteen miles south-west of Armidale' (Molyneux 1965). After a few years of simple diggings in the area, Thomas Jones sunk shafts in Mount Jones to depths between 20 and 60ft. His operations yielded on average 1 ounce of gold per 8 inches of wash-dirt (Walker 1966). Spurred by such success, masses descended upon the mountain to make their fortune, by May the population of the field had reached 1,200 and by September it more than doubled to 4,500. The peak year of the goldrush was 1856 in terms of yield with 40,000 ounces being retrieved.

There had been small number of Chinese arriving at the gold fields from about 1856. Initially, at least, the Chinese were regarded with great curiosity and were observed as possessing 'great industry, frugality and unlimited perseverance' (Walker 1966). These characteristics lent the Chinese great success in the fields and earned them the jealousy of the Europeans. This jealousy would culminate in a grotesque display of violence. A Chinese worker, after being continuously provoked, struck a white boy in August 1856. This sparked vicious riots in which the 'diggers' indiscriminately attacked the Chinese miners. Examples of the inhuman attacks include one Chinese having his 'belly ripped up', and another being 'roasted on the fire and then cooled, as they call it, with boiling water' (Mackay 1953).

Joseph Wills was responsible for identifying the first payable tinfield in New South Wales in 1866. C.S McGlew, a miner previously working at Bungonia, rushed to the fields upon seeing a sample of the ore that Wills had discovered. He immediately set up a claim and between the 25th of June and the 8th of July he had retrieved 6,396 lbs of clean tin (Walker 1966). Thomas Carline found an extensive field at Vegetable Creek, about 20 kilometres from Glen Innes. The Vegetable Creek Tin Mining company stayed in business until September 1942. A local smelting works, (Glen Smelting Works) was set up in 1875, which allowed for the high cost of carriage to be reduced dramatically. The total worth of the Tin exports in New South Wales from the year 1872 to 1883 was £5.9 million.

Gold resurfaced in the area of Enmore, and by the end of 1889 a small settlement of 500 people had sprung up along with the related hotels and stores. During this same period, a miner at Bear Hill found flakes of gold in a piece of quartz he had intended to throw at a koala (approximately 50km south-east of Glen Innes). The resultant mine employed about 200 miners over the next eight years(Walker 1966). The arrival of the main north railway in Glen Innes from Sydney in 1884 aided the mining (both tin and gold) boom of the late 19th century.

3.2 Local History of Glen Innes District

In 1838 Archibald Boyd registered the first run in the Glen Innes district. In 1838 two Bushmen William Chandler and John Duval, both with long flowing beards, were working as stockmen on Tilbuster station (Donald 1987). Chandler and Duval led the first settlers into Beardy Plains, which was called "Boyd's Plains" and which afterwards became "Stonehenge Station". When E C Sommerlad wrote the history of the area in 1922 he coined the name "The Land of the Beardies" (Donald 1987). In 1844, Major Archibald Clunes Innes of Port Macquarie acquired a 25,000 acre station in the Glen Innes district (Donald 1987). The station was then sold to Archibald Mosman. The name Glen Innes is believed to be bestowed by Mosman in honour of Major Innes.

Glen Innes was gazetted as a town in 1852 and the first lots were sold in 1854 (Cameron 1987). The post office was established in 1854 and the court in 1858 when they replaced the Wellingrove offices. In 1866 the population was about 350, with a telegraph station, lands office, police barracks, courthouse, post office and two hotels (Cameron 1987). While there was still no coach service at this time, a road was constructed to Grafton in the 1870's.

Tin was first discovered at Emmaville in 1872 and Glen Innes became the centre of a mining bonanza during the late 1800s (Donald 1987). In 1875 the population had swelled to about 1,500 and the town had a two teacher school, three churches, five hotels, two weekly newspapers, seven stores and a variety of societies and associations (Cameron 1987). On 19 August 1884 the new Main North railway from Sydney opened (Cameron 2002). The arrival of the rail service and the expansion of mining contributed to the prosperity of the town. Today Glen Innes industries are now wool, sheep, cattle, agriculture, and sapphires.

The district of Inverell, 60 kilometres east of Glen Innes was first explored by Allan Cunningham in 1827, however, Alexander Campbell on behalf of Peter Macintyre, discovered and claimed Byron Plains in 1848 and established Inverell Station for himself (Wiedemann 1998). The name Inverell derives from the name of Mr. MacIntyre's estate in Scotland. Wheat growers, Colin and Rosanna Ross established a store there in 1853 and the area was surveyed by P.H. Henderson on 1856 (Wiedermann 1998). Inverell was proclaimed a municipality in 1872. Diamonds were discovered at Copes Creek in 1875 and were mined at Copeton from 1883-1922. Commercial sapphire mining was commenced in 1919 at Frazers Creek near Inverell (Wiedermann 1998). Rich alluvial deposits in streams were worked initially by hand miners up until approximately the 1960's (Wiedermann 1998).

3.3 Heritage Register Searches

The Australian Heritage Database, the NSW Heritage Inventory and the Glen Innes Local Evironmental Plan were searched, to identify whether there were non-Indigenous heritage listed in the study area.

The Australian Heritage Database

The Australian Heritage Database (AHD) is managed by the Australian Government Department of the Environment, Water, Heritage and the Arts. It contains more than 20,000 places of natural, historic and Indigenous significance. The Australian Heritage Database is an online database of items listed under the Commonwealth Heritage List, National Heritage List and the Register of the National Estate.

A search of this database has shown that there are no items listed within the study area.

The NSW Heritage Inventory

The State Heritage Inventory database is maintained by the NSW Heritage Office and lists all items that have been identified as of heritage value throughout NSW. Items listed on the Heritage Inventory include those which have been listed by local councils and also those which are listed on the State Heritage Register (items of state significance).

A search of the inventory has indicated that there are no items listed within the study area.

Glen Innes Local Environmental Plan

The Glenn Innes Local Environmental Plan (LEP) provides a list of non-Indigenous items which have been listed with council as having heritage value. In some cases items of Aboriginal heritage are also listed.

A search of the LEP has indicated that there are no items listed within the study area.

4 Environmental Context

An understanding of environmental context is important for the predictive modelling of Aboriginal sites, as well as for their interpretation. The local environment provided natural resources for Aboriginal people, such as, stone (for manufacturing stone tools), food and medicines, wood and bark (for implements such as shields, spears, canoes, bowls, shelters, amongst others), as well as, areas for camping and other activities. The nature of Aboriginal occupation and resource procurement is related to the local environment and it therefore needs to be considered as part of the cultural heritage assessment process.

4.1 Geology and Soils

Aboriginal people often made stone tools using siliceous, metamorphic or igneous rocks and therefore understanding the local geology can provide important information regarding resources in a study area. The nature of stone exploitation by Aboriginal people depends on the characteristics of the source, for example whether it outcrops on the surface (a primary) source, or whether it occurs as gravels (secondary source) (Doelman, Torrence et al. 2008).

Tertiary basalt geology dominates the study area, rock is mafic and extrusive in character and has been formed through basalt flows, basaltic vents, minor basaltic volcaniclastics; breccias are also present (Geology 1:250,000 Glen Innes). Soils in the area have high components of clay and thus once, wet drain slowly leading to boggy and inundated soils on lower slopes and valley floors, although water is also retained in areas on ridgelines and upper slopes in many cases.

4.2 Climate

Approximately 18,000 years ago, climatic conditions began to alter which affected the movement and behaviour of past populations within their environs. During this time, notably at the start of the Holocene (more than 11,000 years ago), the melting of the ice sheets in the Northern Hemisphere and Antarctica caused the sea levels to rise, with a corresponding increase in rainfall and temperature. The change in climatic conditions reached its peak about 6,000 years ago (Short, 2000:19-21). Up until 1,500 years ago, temperatures decreased slightly and then stabilised about 1,000 years ago, which is similar to the temperatures currently experienced. Consequently, the climate of the study area for the past 1,000 years would probably have been much the same as present day, providing a year round habitable environment.

The study area has a temperate climate with mild to warm summer and with cold and windy winters with regular frosts and snowfalls. The study area also has an average annual rainfall of 857 mm.

4.3 Flora and Fauna

The study area is situated in the Tableland Clay Grassy Woodlands which comprise of trees such as white sally (*Eucalyptus pauciflora*), black sally (*Eucalyptus stellulata*), ribbon rum (*Eucalyptus viminalis*) and yellow box (*Eucalyptus melliodora*) (Keith 2006:89). Other vegetation in the study area include silver wattle (*Acacia dealbata*) and native raspberry (*Rubus parvifoulis*) shrubs and golden everlasting (*Bracteantha bracteata*), kidney weed (*Dichondra repens*) and mountain violet (*Viola betocinifolia*) herbs (Keith 2006:89).

The Table Clay Grassy Woodlands is a host to a variety of animals including Eastern Grey Kangaroo, wood ducks, gliders, echidna, birds and the native bee regent honeyeater (*Xanthomyza phrygia*) (NSW NPWS 2010).

5 Aboriginal Heritage Context

Aboriginal heritage assessment process requires that the significance of Aboriginal sites within a study area is assessed. It is important that Aboriginal sites are contextualised within the local and regional landscape, in order to inform the assessment of significance. The Aboriginal heritage context is also needed in order to develop a predictive model of Aboriginal sites in the study area. Historical information also provides additional information for the interpretation of archaeological sites.

5.1 Historic Records of Aboriginal Occupation

It is important to acknowledge that early historical documents were produced for a number of reasons and thus may contain inaccuracies and/or bias in their reporting of events or other aspects of Aboriginal culture. Nonetheless, some historical documents provide important information and insights into local Aboriginal customs and material culture at the time of non-Indigenous settlement and occupation of region.

5.1.1 The Traditional Owners

The Aboriginal groups whose traditional lands lie in the New England Tablelands area include the Anaiwan in the area around Armidale and the Kwaimbul in the north. The Banbai inhabited areas around Ben Lomond and Mt Mitchell are at the centre of the region (NSW NPWS 2008).

Bundjalung people also inhabited the north-eastern side and Ngarrabul people were located from Glencoe, north to Bolivia then slightly east to the Bundjalung border and west to take in the Beardy plains and the top of the Seven River area (NPWS 2008). The area around Kingsplains, Wellingrove and Strathbogie stations have also been home to the Ngarrabul (NSW NPWS 2008).

5.1.2 Implements for gathering food and weapons

Archaeological evidence suggests the Aborigines in the New England Tablelands traded with groups on the Western slopes and that a range of stone tools such as jagged spears, boomerangs and waddies were developed with local and traded stone and local hardwood (NSW NPWS 2008).

5.1.3 Food and Useful Plants

Mammals such as kangaroo and possum were used for food, clothing and decoration. A broad range of plants were used including bracken fern, orchids, tubers, lilies and daisy yams (McBride 1974).

5.1.4 Campsites and Shelters

It is believed that these Aboriginal groups were not restricted to the riverine margins and evidence of extensive occupation has been observed in a variety of landform units away from major water sources, although still determined by the availability of reliable fresh

water supplies (McBride 1974). The tablelands were occupied during summer and autumn, communities moving either to the coast or the western river systems for winter (McBride 1974).

5.1.5 Post – Contact Phase

The initial contact between the Aborigines and new settlers were amicable with the Aborigines co – operating with and assisting the squatters. The impact on the livelihood of the Aboriginal people was soon realised with the alteration of the environment by grazing and farming practices and reduced local food resources. Violence erupted in 1836 with the massacre at Myall Creek at Inverell (Campbell 1978). While a number of the perpetrators were found guilty and hanged for the murder of the Aborigines, further atrocities still occurred such as the Bluff Rock massacre in 1842. (Campbell 1978)

Despite the Bluff Rock massacre in 1842, the Commissioner of Crown Lands recorded a marked decrease in incidents. This may be due the Aboriginal population decreasing as many died through disease or retreated to the gorge areas on the eastern edge of the Tablelands in search for resources. Those of the Aboriginal population that remained found employment as stockmen on the large stations right up to the 1960's.

5.2 Local Archaeological Heritage Context

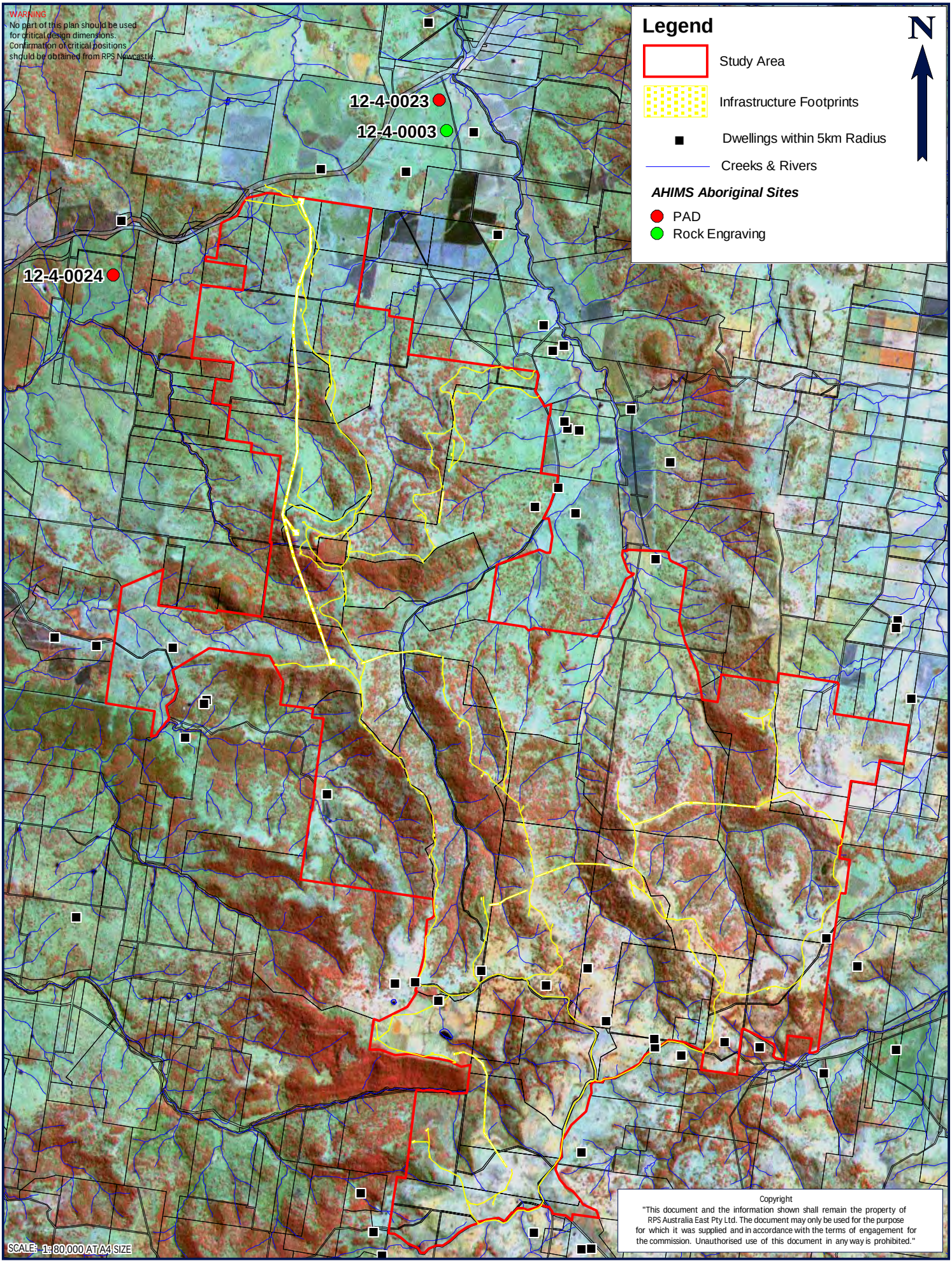
The local Aboriginal heritage context provides a review of previous archaeological work conducted in the local landscape, identifies whether Aboriginal sites have been previously identified (AHIMS search) in the study area and informs the predictive model of Aboriginal sites for the study area. The review of previous archaeological work includes relevant local research publications, as well as, archaeological consultancy reports. Two types of archaeological investigations are generally undertaken; excavations and surveys. Archaeological excavations can provide high resolution data regarding specific sites, such as the dates or chronology of Aboriginal occupation, as well as, information on stone tool technology (reduction sequences, raw material use, tool production, usewear and similar). Archaeological surveys generally cover wider areas than excavations and can provide important information on the spatial distribution of sites. The detection of sites during survey can be influenced by the amount of disturbance or erosion and therefore sensitivity mapping is sometimes also required to interpret survey results. The local Aboriginal heritage context also provides a framework for assessing local significance.

5.2.1 Aboriginal Heritage Information Management System (AHIMS)

A search was undertaken of the DECCW Aboriginal Heritage Information Management System (AHIMS) for a 20km x 10km area centred on the study area on the 22/9/2010 (Figure 5-1). Only three Aboriginal sites have been previously recorded in the local area. They comprise two potential archaeological deposits (PADs) and one rock engraving site. The low frequency of previously recorded Aboriginal sites in the local area may be due lack of extensive archaeological investigation, and/or that Aboriginal people occupied the area infrequently.

Table 5-1: Summary of AHIMS Results Ordered by Site Types and Frequency.

Site Type	Frequency	Percent
PAD	2	66.66
Rock Engraving Site	1	33.33
Total	**3**	



TITLE: FIGURE 5-1 AHIMS SEARCH RESULTS

LOCATION: GLEN INNES

DATUM: N/A
PROJECTION: MGA ZONE 56 (GDA 94)

DATE: 6/12/2010
PURPOSE: ARCHAEOLOGY

LAYOUT REF: J:\JOBS\104k\104226 Glen Innes\10- Dr .... \MapInfo Workspaces\White Rock\Arch\104229 Fig 1-1 Study Area 4 White Rock B A4
VERSION (PLAN BY): B A4 (NW-TBM)

CLIENT: EPURON
JOB REF: 104226

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5.2.2 Local Archaeological Studies

Appleton 1992 – Report of the Archaeological Investigation of Proposed Cable Route. Northern Tablelands N.S.W (Gilgai, Tingha and Wandsworth)

This assessment was undertaken for a proposed fibre optic cable route to replace existing overhead lines from Gilgai Telephone Exchange to Tingha Telephone Exchange to Wandsworth Telephone Exchange (Appleton 1992b). The total length of the survey was 66 kilometres following the proposed cable route. The area around Tingha was highly disturbed due to Tin mining operations. For almost the entire route, the cable to be lain followed nature strips or stock routes and was rarely more than 150 metres from the road. Ground surface exposure and visibility ranged from 25 to 100%. However, in two locations vegetation coverage reduced visibility to zero. Five artefact scatters were identified, one of which was recommended for immediate protection and future comprehensive survey and analysis (Querra Creek). Another was deemed to be in an extremely disturbed context, likely to be remnants of a larger site almost totally destroyed in the mining of tin. The Querra Creek site was identified as having been an extensive campsite and knapping floor. A total of 118 artefacts were observed, 87 of these being at Querra Creek. Raw material for artefacts included: basalt, quartz, quartzite, crystal quartz, chert, silicified sedimentary rock, silcrete, chalcedony, metamorphosed sedimentary and very fine grained volcanic. Three of the sites were deemed to be of significance and two of these would have been disturbed or destroyed by the proposed cable route. Alternate routes around these sites were proposed and accepted. The Querra Creek site was assessed as having both high cultural and scientific significance. However, it was suggested that the site's public profile be kept to a minimum as it was situated in an extremely vulnerable location easily accessible to passing motorists (Appleton 1992b).

Appleton 1992 – Report of the Archaeological Investigation of Proposed Cable Route. Northern Tablelands N.S.W (Martins Lookout to Red Range Telephone Exchange)

This report was prepared on behalf of Telecom Australia in order to identify any Indigenous and/or non-Indigenous heritage sites and to develop a relevant cultural resource management plan (Appleton 1992a). The survey route ran North-South between Red Range Telephone Exchange and Pinkett Telephone Exchange, covering a distance of approximately 14.5 kilometres. Ground surface visibility and exposure were generally low (~10%), although in some areas it was up to 50%. No sites or artefacts were observed during the survey. However, one week after the survey was conducted, four items were identified alongside Pinkett Road near to the Yarrow River. They included: 1 flake of quartzite, 2 cores of blocky white quartz and 1 core of manganese-stained clear crystal quartz (Appleton 1992a).

Central West Archaeological and Heritage Services 2008– An Aboriginal Archaeological Study of Proposed 132kV Overhead Transmission Line. Glen Innes N.S.W

The assessment was undertaken for a new vehicle access track and to assess the powerline route for Aboriginal sites and areas of archaeological sensitivity (Wheeler 2008). The total area of the survey was 12.5 kilometres, 9 kilometres of which was for vehicle access. The powerline route was located on the western outskirts of Glen Innes and the new vehicle easement utilised the existing Gwydir Highway. The condition of the survey area was assessed as being highly disturbed due to intensive agricultural use and

from existing property tracks. Only 1km of the survey area could be described as undisturbed. Dense cropping patterns afforded low levels of visibility. Furthermore it was estimated that 90% of the survey route was covered with dense seasonal grass and crop cover. Six Aboriginal sites were identified, consisting of three open campsite stone artefact scatters, one isolated stone artefact, one scarred tree and a chert quarry site. The largest artefact scatter (WC-OS-1) comprised 30 flaked stone artefacts. Raw materials for the artefacts comprised quartz, silcrete, black chert and an unidentified clear siliceous material. The stone quarry demonstrated numerous block fracture sites, primary flakes and flaked stone artefacts. In addition, a scarred tree was observed twenty metres from the existing powerline corridor. The only site deemed to be of potentially high significance was the stone material quarry. The quarry occurs along a flat ridge crest (Wheeler 2008).

McCardle Cultural Heritage Pty Ltd 2007 – Indigenous Archaeological Assessment. Glen Innes Wind Farm N.S.W *(immediately adjacent to the proposed White Rock Wind Farm)*

This assessment, commissioned by Connell Wagner, was intended to identify areas of Indigenous cultural heritage value and to develop management recommendations for a proposed windfarm (McCardle Cultural Heritage Pty Ltd 2007). The study area was located approximately 12km to the west of Glen Innes, covering approximately 8.5 km of the Waterloo Range. The area was identified as having undergone both human (predominately agricultural) and natural disturbances. Ground surface visibility was limited by rocks, grass and trees and did not exceed 55 percent. Of 27 wind turbine sites surveyed, only one archaeologically significant site was identified. A basalt axe head was found between sites 20B and 22B. Whilst basalt is local to the area, the artefact was not found in-situ and was likely to have been washed downhill. No Potential Archaeological Deposits were identified during this survey. As such, the area was not considered to be of high significance (McCardle Cultural Heritage Pty Ltd 2007).

Harper Somers O'Sullivan 2008 – Archaeological Assessment for Ben Lomond Wind Farm, New England Tablelands N.S.W

This assessment was undertaken for a proposed windfarm, commissioned by Ben Lomond Wind Farm Pty Ltd (RPS Harper Somers O'Sullivan 2008). The assessment included a pedestrian and vehicle survey for the study area which was located 1 kilometre north Ben Lomond village and covered a total area of 9,683 ha. The area had previously been used extensively for sheep grazing. Visibility was limited due to dense pasture grasses. Exposures were limited to patches of track, gate openings, dam walls, cattle pads and cuttings. No Aboriginal sites were observed. A number of historic heritage item/sites were observed, including a number of old farm buildings, structures and movable items; they were assessed as having low significance (RPS Harper Somers O'Sullivan 2008).

Harper Somers O'Sullivan 2006 – Supplementary Aboriginal Heritage Assessment for Proposed Wind Farm. Black Springs N.S.W

This report was supplementary to an earlier assessment conducted by ERM, and addressed changes to the proposal and provided final recommendations (Harper Somers O'Sullivan 2006). The supplementary assessment identified no further sites of Aboriginal cultural Heritage *or* Historic sites. It notes that one site previously identified by ERM, whilst in proximity of the revised proposal, would not be affected by development. Visibility in the study area was limited due to dense grass cover (Harper Somers O'Sullivan 2006).

5.3 Predictive Model for Archaeology in the Study Area

A predictive model is created to provide an indication of Aboriginal sites likely to occur within the study area. It draws on the review of the existing information from the regional and local archaeological context, as well as, the environmental context. The predictive model is necessary to formulate appropriate field methodologies, as well as, providing information for the assessment of archaeological significance.

There are a number of factors which influence Aboriginal occupation of an area. These include essential subsistence resources such as food (flora and fauna), as well, as freshwater. However, other resources such as stone raw materials, wood and bark, animal skins, reeds for uses such as basket weaving, string, clothing and similar were also used. Landscape features such as ridges, flat elevated areas, rockshelters and similar, may have also influenced Aboriginal occupation of an area. In addition, cultural activities may have also taken place at certain locations in the landscape for example corroborees, mythological places, initiation sites and similar.

5.4 Site Predictions

The following site predictions for the study area have been made on the basis of the environmental context, available historic observations of Aboriginal people in the region, archaeological studies, as well as, analysis of the AHIMS data.

5.4.1 Site Type

Previous archaeological reports have commonly identified artefact scatters in the region, as well as PADs, although on rare occasions other site types such as scarred trees and stone quarries have been identified. PADs have been recorded within 1km of the study area. On the basis of available information it is predicted that artefact scatters are the most likely site type to be present in the study area.

5.4.2 Site Locations

Artefact scatters and PADS identified in the region have generally been located near 3rd order watercourses such as Wellingrove creek. It is therefore predicted that these site types will occur in close proximity to larger tributaries.

5.4.3 Site Contents

A review of previous archaeological investigations indicate that artefact scatters and isolated finds generally comprise flaked stone artefacts made from a wide range of stone raw materials including: basalt, quartz, quartzite, crystal quartz, chert, silcrete and chalcedony. It is therefore likely that artefact scatters will contain these materials.

6 Archaeological Field Survey

6.1 Survey Methodology

This heritage assessment has been undertaken in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010).

The survey methodology aimed to provide adequate coverage of the study area, sample coverage of all landforms, areas of exposure, as well as, vegetated areas. The locations of previously recorded sites were also inspected.

Survey units were described for each survey area, in particular, exposure and ground surface visibility were reported to ensure comparability of survey results between different areas of the local landscape, as well as, to contextualise survey results. Areas with high visibility and exposure generally have a lot of land surface disturbance, which can expose high quantities of archaeological material (particularly stone artefacts). Conversely, areas with low visibility and exposure particularly due to native vegetation coverage, are generally more intact (undisturbed) landscapes, while the identification of sites (particularly artefact scatters) in such areas are generally low, there is potential for intact archaeological deposits, which have been protected by vegetation coverage.

Survey observations were recorded using digital photography, GPS recording (differential), as well as, field notes.

In accordance with DECCW guidelines photographic recording was undertaken of landforms, survey units, Aboriginal cultural material, areas of archaeological or cultural sensitivity, levels of disturbance, as well as, other areas/items of interest. Photographs were scaled, as appropriate.

Field notes incorporated details including the size, location, contents and condition of Aboriginal heritage in the area, as well as, survey units. Size was recorded, either by GPS or tape measure. Location was recorded using differential GPS. The condition of Aboriginal sites/areas of sensitivity were recorded including providing a description of the levels and cause of disturbances such as, erosion, land clearing and similar factors.

The Aboriginal stakeholder/s participating in the survey were asked about the cultural significance of the survey area and where applicable and/or appropriate, about the significance of Aboriginal sites and/or areas of archaeological sensitivity. An opportunity to comment on cultural significance was also provided in the survey preparation documentation and post survey reporting.

6.2 Survey Results

A pedestrian survey of the study area was undertaken by RPS archaeologist, Tessa Boer-Mah and Aboriginal community representative Hilda Connors over five days from the 18th October to the 22nd of October, 2010. The study area was surveyed in 8 survey units (Figure 6-1); exposure and visibility for each survey unit was assessed according to the criteria listed in Table 6-1 and the survey coverage for the study area was recorded in Table 6-2.

Survey Unit 1

This unit comprised the northern portion of the study area and was accessed from the Gwydir Highway. This survey unit comprised the crest, upper, mid and lower slopes associated with the north south ridge which incorporates White Rock Mountain. The area has been extensively cleared, introduced grass species are the dominant vegetation type which thickly covers much of the ground surface, thus resulting in low ground surface exposure and visibility (Plate 1). There were limited occurrences of ground surface exposure associated with dams, tracks, cattle trampling and sheet wash (Plate 2, Plate 3 and Plate 4). Basalt boulders were observed outcropping in this survey unit at the top of hills and were generally less than 40cm in diameter and were course grained, none appeared to have been flaked for Aboriginal implement production (Plate 5). In some areas basalt outcropped as sheets (Plate 6), or in larger formations (Plate 7). The large formations were inspected for rockshelters, but were observed to have very shallow overhangs, were wet due to downhill water run off and therefore unsuitable as Aboriginal campsites. No Aboriginal sites or non-Indigenous heritage items were identified in this survey unit.

Survey Unit 2

Survey Unit 2 comprised a north-south orientated ridgeline to the east of survey unit 1 which encompassed Arthurs seat and Talarook ridge. This survey unit comprised the crest, upper, mid and lower slope landforms. Land in this area had been extensively cleared and introduced grass species were dominant (Plate 8), much of the land had been previously cropped with potatoes or carrots. Small basalt cobbles were observed generally less than 30cm in diameter, cobbles were examined for flaking associated with Aboriginal stone tool production, but no such evidence was found. Generally there was low ground surface exposure and visibility in this survey unit, although limited exposures were present due to cattle trampling (Plate 8) and dam construction (Plate 9). Weathered basalt bedrock was exposed by dam wall which indicated topsoil was shallow in this area between 20-30cm in depth (Plate 10). No Aboriginal sites or items of non-Indigenous heritage were identified.

Survey Unit 3

This survey unit comprised lower slope landforms and creek terraces associated with White rock and Falls Creek (Plate 11). Much of the survey unit was covered in grass leading to low visibility and ground surface exposure. Limited exposures were inspected associated with cattle trampling, vehicle tracks, dams and erosion along creek banks. Two Aboriginal sites were identified in this survey unit comprising artefact scatters with associated PADs.

Survey Unit 4

This survey unit comprised the crest, upper, mid and lower slope landforms associated with a north south orientated ridge to the south of White Rock Mountain and west of Falls Creek. Ground surface exposure and visibility was low in this survey unit due to thick grass cover. Basalt outcropped sporadically as boulders generally less than 60cm in diameter; none appeared to have been worked (used by Aboriginal people) (Plate 12). Much of the area had been previously cleared of trees, however, in some of higher elevations on narrow ridgetops some older trees remained (Plate 13). Two Aboriginal scarred trees were recorded in this survey unit along a narrow saddle. No non-Indigenous heritage items were identified.

Survey Unit 5

Survey Unit 5 comprised crest, upper, mid and lower slope landforms associated with two main ridgelines bounded by Falls Creek to the west and Oaky Creek to the east. The area had previously been cleared, although re-growth white gums were observed (Plate 14). Ground surface exposure and visibility were low due to thick grass cover. No older trees were noted and no Aboriginal scarred trees were observed. No Aboriginal sites or non-Indigenous heritage items were identified.

Survey Unit 6

The maximum elevation in this survey unit was 1355m AHD and had extensive views over the surrounding landscape (Plate 15). Much of this area had been extensively cleared, ground surface exposure and visibility were low due to grass cover. However, cattle trampling, slip erosions and tracks provided limited areas of exposure and visibility (Plate 16).

Survey Unit 7

This survey unit was bounded by the upper reaches of Oaky Creek to the west and Wellingrove Creek to the east. Crest, upper and midslope landforms were examined during the survey. Basalt boulders were observed on hill tops generally less than 60cm in diameter. Ground surface exposure and visibility was low due to extensive grass cover, however, limited exposures were identified associated with cattle trampling and access tracks (Plate 18). All ridgetop areas in this survey unit had been previously cropped for potatoes and carrots (circa 1970) and had been ploughed (Ian Burey 2010 pers. comm.).

Survey Unit 8

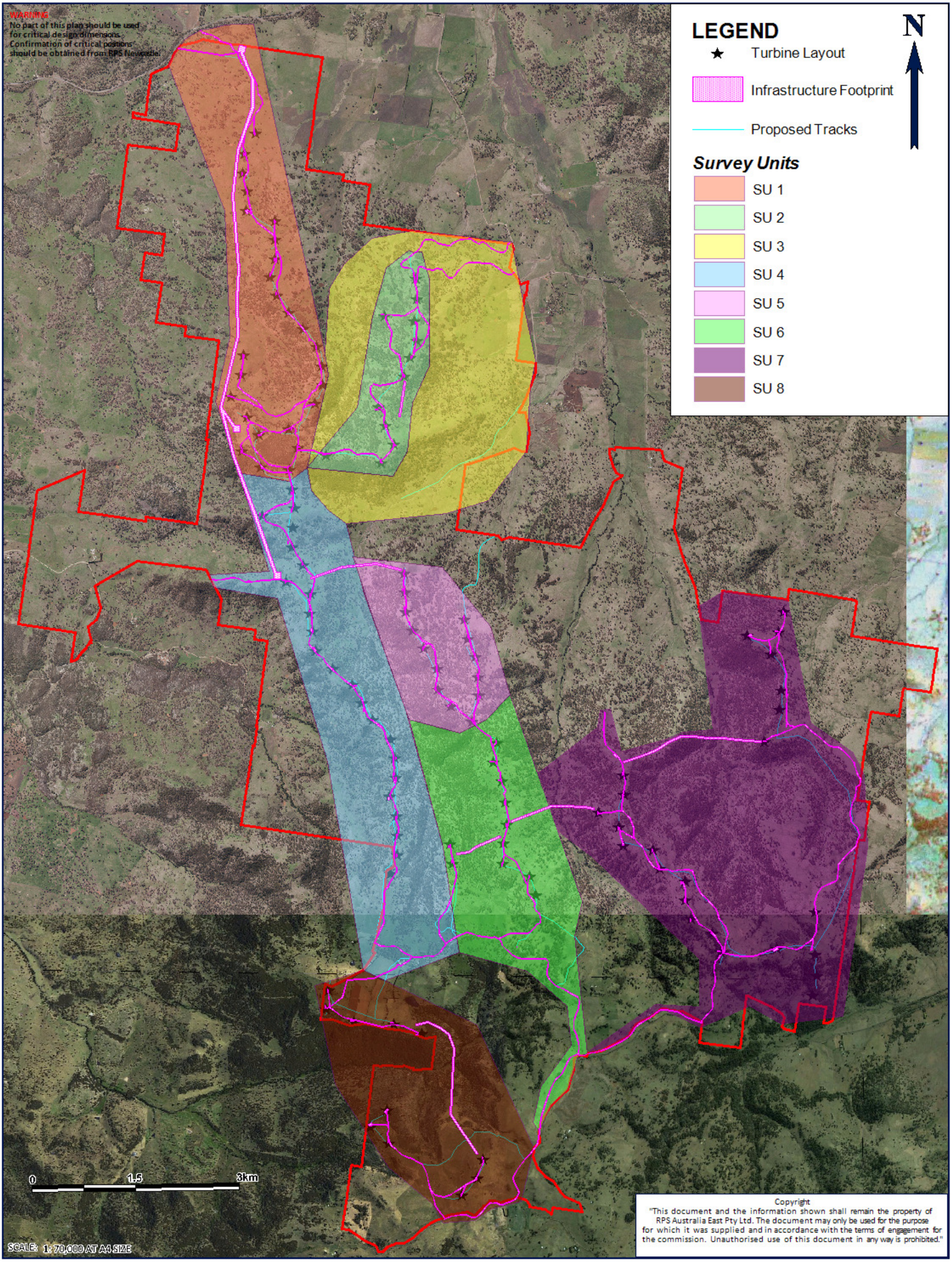
Survey Unit 8 comprised ridges associated with the upper reaches of Paradise Creek (draining to the west). Crest, upper, mid and low slope landforms were surveyed. Ground surface exposure and visibility were generally low due to thick grass cover. However, limited areas of exposure were observed around dams and areas of sheet wash erosion (Plate 19).

Table 6-1: Ground Surface Visibility Rating

GSV Rating	Overall Rating	Description
0 – 9%	Low	Heavy vegetation with scrub foliage, debris cover and/or dense tree cover. Ground surface not clearly visible.
10 – 29%	Low	Moderate level of vegetation, scrub or tree cover. Small patches of soil surface visible resulting from animal tracks, erosion or blowouts. Patches of ground surface visible.
30 – 49%	Moderate	Moderate levels of vegetation, scrub and/or tree cover. Moderate sized patches of soil surface visible possibly associated with animal tracks, walking tracks and erosion surfaces. Moderate to small patches across a larger section of the study area.
50 – 59%	Moderate	Moderate to low level of vegetation, tree and/or scrub. Greater amounts of areas of ground surface visible in the form of erosion scalds, recent ploughing, grading or clearing.
60 – 79%	High	Low levels of vegetation and scrub cover. High incidence of ground surface visible due to recent or past land–use practices such as ploughing, grading and mining. Moderate level of ground surface visibility due to sheet wash erosion, erosion scalds and erosion scours.
80 – 100%	High	Very low to nonexistent levels of vegetation and scrub cover. High incidence of ground surface visible due to past or recent land use practices, such as ploughing, grading and mining. Extensive erosion such as rill erosion, gilgai, sheet wash, erosion scours and scalds.

Table 6-2: Survey Coverage Data.

Survey Unit	Survey Unit Area (Square metres)	Area Surveyed (Square metres)	Exposure (%)	Visibility (%)	Sample Fraction (percent)
1	8064838	512000	30	40	0.7618
2	2793218	240000	20	20	0.3437
3	8255164	400000	30	40	0.5815
4	9646733	584000	30	30	0.5448
5	3574713	240000	30	40	0.8057
6	5547497	320000	20	30	0.3461
7	15275854	400000	20	20	0.1047
8	6351571	320000	20	20	0.2015



TITLE: FIGURE 6-1 SURVEY UNITS | LOCATION: GLEN INNES | DATUM: N/A | PROJECTION: MGA ZONE 56 (GDA 94) | DATE: 6/12/2010 | PURPOSE: ARCHAEOLOGY | LAYOUT REF: J:\JOBS\104K\104226 Glen Innes\10- Draft\MapInfo Workspaces\White Rock\Arch\104229 Fig.7-1 Survey Units B A4 | VERSION (PLAN BY)B A4 (NW-TBM)

CLIENT: EPURON
JOB REF: 104226

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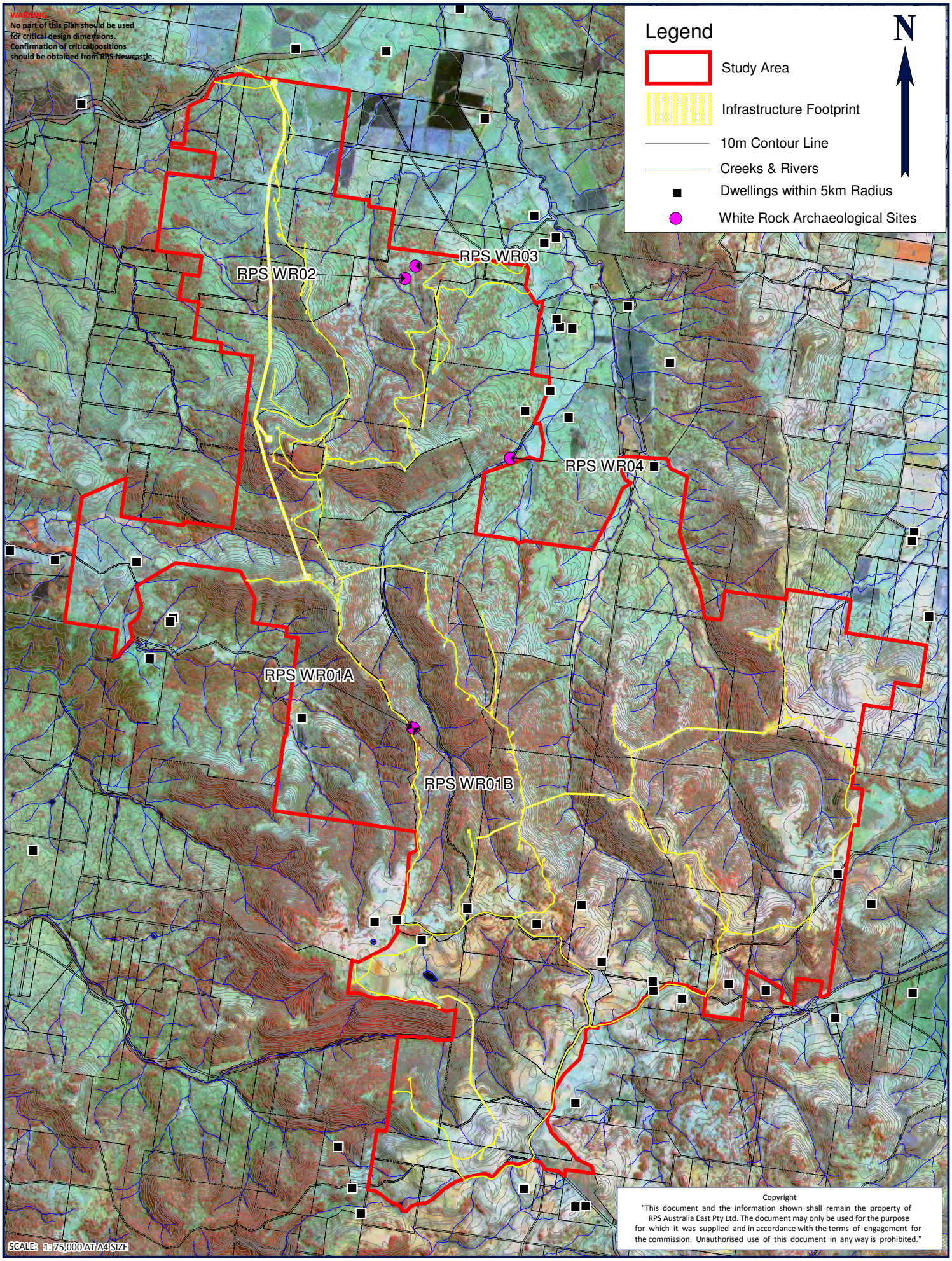

TITLE: FIGURE 6-2 ABORIGINAL SITES IDENTIFIED DURING SURVEY
LOCATION: GLEN INNES
DATUM: N/A
PROJECTION: MGA ZONE 56 (GDA 94)
DATE: 6/12/2010
PURPOSE: ARCHAEOLOGY
LAYOUT REF: J:\JOBS\104k\104226 Glen Innes\10- Dr .... \ MapInfo Workspaces\White Rock\Arch\ 104226 Fig 7-2 Aboriginal Sites Ident During Survey B A4
VERSION (PLAN BY): B A4 (NW-TBM)

CLIENT: EPURON
JOB REF: 104226

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6.2.2 Heritage Sites Identified

Five Aboriginal sites were identified during the survey, including three scarred trees and two artefact scatters with associated PADs (Table 6-3, Figure 6-2). No items of non-Indigenous heritage were identified. These sites have been registered with AHIMS ()

Table 6-3: Summary of Aboriginal sites identified during the survey, locations recorded in GDA94/MGA, Zone 56

No.	Site Code	Site Name	Site Type	Eastings	Northings
1	RPS WR01A	RPS White Rock 01A	Scarred Tree	361321	6696937
2	RPS WR01B	RPS White Rock 01B	Scarred Tree	361340	6696925
3	RPS WR02	RPS White Rock 02	Artefact Scatter and PAD	361207	6703892
4	RPS WR03	RPS White Rock 03	Artefact Scatter and PAD	361374	6704084
5	RPS WR04	RPS White Rock 04	Scarred Tree	362843	6701107

Table 6-4: AHIMS numbers for sites identified during this assessment

No.	Site Code	AHIMS Number
1	RPS WR01A	12-4-0028
2	RPS WR01B	12-4-0029
3	RPS WR02	12-4-0030
4	RPS WR03	12-4-0031
5	RPS WR04	12-4-0032

RPS WR01A Scarred Tree

This scarred tree was located on the upper slope of a knoll beside a vehicle track. It is located 310m to the west of Falls creek. The tree is dead and the bark is aged, only a small portion of the heartwood remains having either rotted or burnt during a bushfire or lightning strike. The tree was likely a white gum. The scar is 1.81m in height, 0.25m width and is 0.36m from the base of the tree and is symmetrical. The tree has a current girth of 2.97m, it would, however, have been larger before the heartwood rotted. The depth of the scar is 0.32m (left) and 0.25m (right). Re-growth is 0.32m (left) and 0.4m (right), due to the lack of heartwood it is possible to see the re-growth on the inside of the tree 0.32m (right) and 0.25m (left). Scar faces east south east.

RPS WR01B Scarred Tree

This scarred tree was located on the upper slope of a knoll and is approximately 25m south east of RPS WR01B and thus is also located approximately 310m to the west of Falls creek. The tree (white gum) is still alive and has a girth of 2.77m. The scar is 1m in height, 0.17m in width and 0.13m depth on left and right sides and is 0.37m from base of tree. Re-growth of bark is 0.37m (left) and 0.41m (right). The scar was slightly asymmetrical and faces east.

RPS WR02 Artefact Scatter

This artefact scatter was identified on a creek terrace 160m north west of a tributary of White Rock creek. The artefact scatter extended 8 metres and was exposed due to cattle (trampling) and was located adjacent to a farm track. The scatter comprised three flaked stone artefacts manufactured from quartz and silcrete (Table 6-5). The topography suggests that a potential archaeological deposit likely occurs 20 metres to the east and west of the site.

RPS WR03 Artefact Scatter

This artefact scatter was identified on a creek terrace 410m north west of a tributary of White Rock creek. It is located on a gentle upper slope below a rolling crest. Artefacts were exposed due to cattle trampling and extended over a 14m area. Three flaked stone artefacts were identified manufactured from fine grained basalt and quartz (Table 6-5). The topography suggests that a potential archaeological deposit likely occurs 15m west and east of identified artefacts.

RPS WR04 Scarred Tree

This scarred was identified on a creek terrace adjacent to an existing vehicle track. The height of the scar was 1.35m, width 0.26m, and was 0.25, from the ground surface. Scar depth was 0.23m (left) and 0.2m (right); re-growth was 0.3m (left) and 0.2m (right). Re-growth around the scar was thick and extensive, thus the girth of the tree was 1.97 around the scar area; however the girth unaffected by scarring (above the scar) was 1.5m. It appears that this tree is less than 200 years old and likely less than 100 years old, thus may represent Aboriginal bark removal during the post-contact period and the continuation of traditional practices in the area; *however, this is speculative and cannot be confirmed on the basis of available evidence.*

Table 6-5 Table of artefacts identified during the survey

Site	Artefact Type	Raw Material	Colour	Length (mm)	Width (mm)	Thickness (mm)	Weight (grams)
RPS WR02	Distal Broken Flake	Quartz	White	13.2	14.59	4.55	1.2
	Flake	Quartz	White	14.49	12.72	4.26	0.8
	Flake	Silcrete	Red/Grey	20.10	12.25	3.5	0.8
RPS WR03	Distal Broken Flake	Fine grained basalt	Grey	12.25	11.57	2.8	0.3
	Flake	Fine grained basalt	Grey	19.93	16.06	5	2.1
	Flake	Quartz	White	8.84	7.74	3.89	0.2

6.3 Discussion of Survey Results

The survey results demonstrate that Aboriginal campsite occupation evidenced by artefact scatters occurred on flat creek terrace areas adjacent to second order creeks and located at some distance from the steep sided ridges in the study area. In the predictive model, sites were expected to more commonly occur in close proximity to 3rd order streams; however, the current study are is not located adjacent to any such watercourses. The steep ridges which characterise much of the study area are flanked by first order streams. In many areas there is little flat ground between the lower slopes of such ridges and the first and second order streams, resulting in a typically v-shaped landform profile. The lack of flat well drained land in these areas appears not to have been favourable locations for Aboriginal campsite activities. The ridge crests are typically located approximately 300 metres above the surrounding water courses. In addition, on the basis of survey results the ridgetop locations appear not to have been favourable areas for Aboriginal campsite activities. No stone arrangements indicating burial grounds or similar were observed on the ridge crests in the survey area. Indeed the upland ridge area appears to have been utilised as resource zones in the local area, whereby large trees were targeted for bark removal for shields, coolamons and bark dishes (resulting in scarred tree sites). Other floral resources which may have been exploited include the native raspberry which was observed growing in the ridge areas.

Artefact scatters and PADs were predicted to occur close to second and higher order creeks. The survey results support this prediction, but also suggest that creek terraces beyond the foot slopes of the ridges were preferred, as the foot slope areas tend to hold substantial moisture after rain and remain inundated for some period afterwards due to the high clay content in the basalt soils.

Scarred trees are a very rare site type in NSW. Before the arrival of Europeans scarred trees are likely to have been quite numerous; however, extensive clearing, especially during the 1800s has likely to have removed many of these sites. The archaeological modelling did not identify scarred trees as being a likely site type on the basis of previous archaeological information and AHIMS results; their presence in the study area therefore is notable. Indeed much of the study area comprised regrowth and few older trees were noted, suggesting these sites among the last remaining in the area.

Overall, the survey results suggest that Aboriginal campsite activities were undertaken at lower elevations, on creek terraces located at a distance from the ridge footslopes. On the basis of survey results and other information the ridgetop areas appear to have been used as resource zones where flora and likely fauna were utilised by Aboriginal people.

7 Significance Assessment

In order to develop appropriate heritage management outcomes, it is necessary for the significance of Aboriginal sites or areas of archaeological sensitivity to be assessed. Aboriginal heritage can be significant for cultural and/or scientific reasons. Aboriginal people are the best placed to assess cultural significance and are therefore consulted in the Aboriginal heritage management process. Scientific significance is assessed according to scientific criteria outlined in DECCW heritage guidelines.

7.1 Cultural Significance Criteria and Assessment

An assessment of cultural significance incorporates a range of values which may vary for different individual groups and may relate to both the natural and cultural characteristics of places or sites. Cultural significance and Aboriginal cultural views can only be determined by the Aboriginal community using their own knowledge of the sites and their own value system.

As the cultural significance is a criterion that only Aboriginal people can assess, a detailed appraisal of cultural significance for the study area has not been included as part of this study. However, the aboriginal stakeholders have been provided the draft report and have had the opportunity to provide comments. Additionally the findings of the assessment were discussed with Aboriginal representatives during the survey and are included in Appendix 2. Further details are included in the Aboriginal consultation log.

7.2 Archaeological Significance Criteria

Archaeological significance, also referred to as scientific significance, is determined by assessing an Aboriginal heritage site or area according to archaeological criteria. The assessment of archaeological significance is used to develop appropriate heritage management and impact mitigation strategies. Criteria for archaeological significance has been developed in accordance with the principals of the ICOMOS Burra Charter and the DECC Aboriginal Cultural Heritage Standards and Guidelines Kit (1997). The following archaeological significance criteria have been used: rarity, representativeness, integrity, connectedness, complexity and research potential and are defined in Table 7-1.

Table 7-1: Archaeological Significance Criteria.

Criteria	Description
Rarity	This criterion examines the frequency of the identified site types with others previously recorded in the local or regional landscape
Representativeness	All sites are representative of a site type, however, some sites may be in better condition, or demonstrate more clearly a particular site type. Representativeness is based on the understanding of extant sites in the local or regional landscape and the purpose of this criteria is to ensure a representative sample of sites area conserved for future generations
Integrity	This refers to site intactness. A site with contextual integrity can provide information relating to chronology, social systems, tool technology, site formation processes, habitation, frequency of use as well as other occupation indicators. Moderate to high levels of disturbance will generally result in low integrity.
Connectedness	Relates to inter-site relationships, that is, whether a site can be linked to an archaeological complex, or where sequence of activities can be discerned. For example, a quarry (stone extractions site), may be linked to an adjacent heat treatment pit and knapping floor, these site thus could be linked as part of a stone tool production sequence.
Complexity	Refers to the contents of the site, such as, the variety and nature of features and/or of artefacts present. For example, rockart sites with many motifs may be ranked highly in terms of complexity, or artefact scatters with a wide variety of raw materials and/or or tool types may be more complex than surrounding sites.
Research Potential	This criteria is used to identify whether a site has the potential to contribute new information which to the interpretation of Aboriginal occupation in the area.

The archaeological significance criteria are usually assessed on two scales: local and regional; in exceptional circumstances; however, state significance may also be identified. Archaeological significance criteria is assessed in three levels to which scores are assigned; low (score=1), moderate (score=2) and high (score=3).

A combination of these scores then provides enables an overall significance ranking of the site to be determined.

- Low significance 6-10
- Moderate significance 11-14
- High significance 15-18

7.3 Assessment of Archaeological Significance

The archaeological significance of the identified Aboriginal sites has been assessed and is summarised in Table 7-2.

Table 7-2: Assessed Levels of Significance for Aboriginal Sites.

Site	Significance scale	Rarity	Representativeness	Integrity	Connectedness	Complexity	Research Potential	Overall Score	Overall Significance
RPS WR01A	Local	3	3	2	3	3	3	17	High
	Regional	3	3	2	3	3	3	17	High
RPS WR01B	Local	3	3	3	3	3	2	17	High
	Regional	3	3	3	3	3	2	17	High
RPS WR02	Local	2	3	3	3	2	3	16	High
	Regional	2	2	2	2	2	2	12	Moderate
RPS WR03	Local	2	3	3	3	2	3	16	High
	Regional	2	2	2	2	2	2	12	Moderate
WR04	Local	3	3	2	2	2	3	15	High
	Regional	3	2	2	2	2	2	13	Moderate

RPS WR01A & B Scarred Trees

Due to previous land clearance and the pastoral nature of the Glen Innes district, scarred trees are a rare site type, thus RPS WR01A and RPS WR01B have been assessed has having high local and regional significance. Both scars have likely been created for bark shields and are very representative of this site type. These sites have been assessed as having high local and regional significance for representativeness. RPS WR01A occurs on a dead tree and has been subject to damage, it has therefore been assessed as having moderate integrity on a local and regional scale. RPSWR01B occurs on a living tree and therefore has been assessed as having high significance in terms of integrity on a local and regional scale. RPS WR01A and RPS WR01B are 25 metres apart and therefore demonstrate connectivity between sites, both have been assessed as having high significance for connectedness on both a local and regional scale. Both scars are well executed and bark removal of this type is a complex and slow process, relying on the strategic placement of wedges to lift bark away from the heartwood and in some areas bark removal can only take place in certain seasons. Both sites have been assessed as having high significance for connectivity. The majority of the heartwood of RPS WR01A

has been removed, exposing the underside of the scar and allowing observation of the nature of re-growth which is not often observable; thus this site has been assessed as having high research potential on a local and regional scale. RPS WR01B occurs on a living tree and thus does not allow the opportunity for the observation of the nature of internal re-growth; it has been assessed as having moderate research potential on a local and regional scale. Overall, both scarred tree sites RPS WR01A and RPS WR01B have been assessed as having high local and regional significance, but do not meet the criteria for state significance.

RPS WR02 and WR03 Artefact Scatters

Artefact scatters have previously been identified in the local and regional landscape; thus both RPS WR02 and RPS WR03 have been assessed has having moderate significance on a local and regional scale. The raw materials and types of artefacts identified at these sites are representative of materials in the local landscape, but do not display the range of materials identified at other sites in the region, both these sites have been assessed as having high significance for representativeness on a local scale, but moderate representativeness on a regional scale. It is likely that both sites have integrity and potential archaeological deposit present; they have been assessed as having high significance on a local scale, but moderate significance on regional scale, as there are likely other sites in the region with greater archaeological integrity. Both sites are located with 100m of each other and therefore are likely to be connected, they have thus been assessed as having high local significance for connectedness and moderate significance on a regional scale. The raw materials and artefact types are moderately complex and therefore have been assessed as having moderate significance on a local and regional scale. Both sites are likely to have sub-surface material present and therefore have been assessed as having high local significance for research potential, but are of moderate significance on a regional scale. Overall, RPS WR02 and RPS WR03 have been assessed as having high local significance and moderate regional significance.

RPS WR04 Scarred Tree

Scarred trees are rare in the Glen Innes district, thus this site has been assessed as having high local and regional significance for rarity. RPS WR04 is representative within the local region and therefore has been assessed as having high local significance, in a regional context, however, the young age of the tree is not as representative on a regional scale and therefore has been assessed as having moderate regional representativeness. This scar is in good condition and therefore has been assessed as having high significance for integrity on a local and regional scale. RPS WR04 occurs as an isolated site, not having nearby associated sites and therefore has been assessed as having low significance for connectedness on a local and regional scale. This scar is symmetrical and well executed; it has therefore been assessed as having high significance for complexity on a local scale, but moderate complexity on a regional scale. This site has been assessed as having high research potential on a local scale and moderate potential on a regional scale. Overall, RPS WR04 has been assessed as having high local significance and moderate regional significance.

8 Impact Assessment and Mitigation

This section provides an assessment of the proposed development footprint in relation to the Aboriginal heritage. Conservation of Aboriginal sites and areas of archaeological sensitivity is the preferred heritage outcome. However, other mitigation options have been developed in case this is unfeasible as part of the proposed development. The identified risks to heritage, as well as, proposed conservation and mitigation strategies have been summarised in Table 8-1. Five Aboriginal sites were identified during the survey. No non - indigneous heritage items were identified during heritage register searches, nor during the field survey; thus there is no identified non-Indigenous heritage constraints relating to the proposed works.

All Aboriginal sites identified during the survey occur outside the current development footprint (50 metres) and thus are not likely to be impacted. However, in order to ensure these sites are conserved 30m buffer zones should be placed around scarred tree sites (RPS WR01A, RPS WR01B and RPS WR04) in order to protect them from accidental impact. This buffer zone should be demarcated by high visibility temporary fencing during construction works and plant movement. RPS WR02 and RPW WR03 are located 800 metres beyond the impact zone and therefore no potential impacts have been identified. However, the location of these sites and the scarred tree sites should be stored in the Proponents' environmental management system to ensure that appropriate mitigation measures are taken in the event that the development footprint is revised.

Table 8-1: Summary of potential impacts, risks to heritage and mitigation options.

Potential Impact	Risk to Heritage	Mitigation
Construction of Access Tracks and Plant/vehicle impact	Disturbance/damage to Scarred trees (RPS WR01A, RPS WR01B and RPS WR04)	A 30m buffer should be placed around these sites and during construction works this buffer zone should be demarcated by temporary fencing

8.1 Principles of Ecologically Sustainable Development

The principles of ecologically sustainable development need to be considered under 2A of the NPW Act. Inter-generational equity is part of these principles, which allows future generations to access the cultural and environmental diversity of the present generation.

Inter-generational equity has been considered as part of the assessment of significance. State significant Aboriginal sites should be considered for blanket protection for future generations, as these sites have been assessed as having highest significance within NSW. No Aboriginal sites of state significance were identified in this assessment and therefore there are no identified risks to inter-generational equity.

9 Conclusions and Recommendations

This report has considered the environmental and archaeological context of the study area, developed a predictive model and reported on the results of an archaeological survey of the study area. Five Aboriginal sites were identified during the survey. No non-Indigenous heritage items were identified during heritage register searches, nor during the field survey. The following management recommendations have been formulated with consideration of the significance of Aboriginal heritage, as well as, potential impacts and have been prepared in accordance with the relevant legislation. Recommendations 1-5 should be followed in the management of heritage within the study area.

9.1 Recommendations for the Management of Identified Heritage Sites within the study area

Scarred tree sites RPS WR01A, RPS WR01B and RPS WR04 have been identified in close proximity to the development footprint. In order to conserve these sites and protect from accidental impact a buffer zone of 30 metres should be placed around these sites, using the GDA co-ordinates for these sites as tabled in Section 6. To ensure that the correct location of the site has been identified visual confirmation should be sought matching the photos provided with the site descriptions.

Recommendation 1

A 30m buffer zone should be maintained around scarred tree sites RPS WR01A, RPS WR01B and RPS WR04 and demarcated by temporary fencing during construction and associated plant movement.

Recommendation 2

The locations of sites identified RPS WR01A, RPS WR01B, RPS WR02, RPS WR03 and RPS WR04 should be stored within the Proponents' environmental management system to ensure their conservation

9.2 Recommendations for general management of heritage

The following recommendations should be followed for the general management of heritage within the study area.

Recommendation 3

All relevant staff and contractors should be made aware of their statutory obligations for heritage under NSW NPW Act (1974) and the NSW Heritage Act (1977), which may be implemented as a heritage induction.

Recommendation 4

If additional Aboriginal site/s or non-Indigenous heritage items are identified in the study area pre-construction or during, then works in the area should cease, the area cordoned

off and contact made with DECCW Enviroline 131 555, a suitably qualified archaeologist and the relevant Aboriginal stakeholders, so that it can be adequately assessed and managed.

Recommendation 5

In the unlikely event that skeletal remains are identified, work must cease immediately in the vicinity of the remains and the area cordoned off. The proponent will need to contact the NSW Police Coroner to determine if the material is of Aboriginal origin. If determined to be Aboriginal, the proponent, must contact the DECCW Enviroline 131 555, a suitably qualified archaeologist and representatives of the local Aboriginal Community Stakeholders to determine an action plan for the management of the skeletal remains, formulate management recommendations and to ascertain when work can recommence.