Failford Road to Tritton Road

Review of environmental factors - Appendix B

Archaeological assessment

May 2008

Aboriginal and Historic Heritage Assessment – Proposed Upgrade of Pacific Highway, Failford Road to Tritton Road, NSW

3 October 2007

Prepared for:
NSW Roads and Traffic Authority
Level 5, Pod D, 99 Phillip Street
Parramatta NSW 2150

Report by:
HLA-Envirosciences Pty Limited
ABN: 34 060 204 702
Level 5, 828 Pacific Highway Gordon NSW 2072
PO Box 726 Pymble NSW 2073 Australia
Ph: +61 2 8484 8999
Fax: +61 2 8484 8989

HLA Ref: N6033102_Failford_RPTFinal_3Oct07

DISTRIBUTION

Aboriginal and Historic Heritage Assessment – Proposed Upgrade of Pacific Highway, Failford Road to Tritton Road, NSW

17 July 2006

Copies	Recipient	Copies	Recipient
1	**Mark Woods** **Roads and Traffic Authority** Level 5, Pod D, 99 Phillip Street Parramatta NSW 2150	1	**Robert Yettica** **Forster Tuncurry LALC** PO Box 384 Forster NSW 2428
1	**Regional Archaeologist** **Department of Environment & Conservation** Northeast EPRD Locked Bag 914 Coffs Harbour 2450	1	**Gordon Brown** 50 Peverill Street Tionee NSW 2430
1	**Diedre Alley** 603 Ocean Drive, North Haven NSW 2443	1	**HLA-Envirosciences Pty Ltd** Project File
1	**Edward Moran** **Ananawan Gundungurra Elders** 33 Albert Street Kempsey NSW 2440		

By

HLA-Envirosciences Pty Limited
ABN: 34 060 204 702
Level 5, 828 Pacific Highway Gordon NSW 2072
PO Box 726 Pymble NSW 2073 Australia

Cornelia de Rochefort
Archaeologist

Alan Williams
Archaeologist

Peer Review: **Date:**

Tom Farrell
Principal Environmental Scientist

CONTENTS

TABLES

FIGURES

PLATES

See Figure 10 for Plate locations and perspectives.

Plate 1: Transect 1 looking south. In the foreground is one of the open depressions that concentrates surface runoff before going under culverts in the road. Note the general cleared nature of the area, specifically the regrowth trees in the background

Plate 2: A section in transect 1 looking southwest. In this location, the soil profile consists of an organic brown A horizon overlying (and possibly truncating) an orange clay B horizon

Plate 3: A close up photograph of *Failford Tree Stump*, a potential historic site located on the very south-western edge of the study area. This photograph is looking southwest, while the road is approximately 40 metres to the east

Plate 4: A vertical section located in the southern section of the study area, looking east. The section reveals the extensive limestone geology a short distance beneath the current surface

Plate 5: A view of transect 2, from transect 1, looking northeast. The current disturbance to the right of the photograph and the concrete plant to the left are all within the study area

Plate 6: The northern end of transect 2 looking northeast towards Failford Road (just beyond the house). The soil profile in this section mimics the shallow duplex soils found in transect 1

Plate 7: The northern end of transect 2 looking west. This photograph reveals the previous impacts to this area including previous roads and earthworks

Plate 8: A soil profile identified on the slopes within transect 3 looking southeast. The section reveals an *ex situ* BC unit, composed of broken stone and brown sandy loam, eroding from upslope and truncating an *in situ* Rudosol (beginning about the top of the clipboard and ending at the base of the photograph), which was composed of a brown sandy loam topsoil overlying a BC unit of broken stones and brown sandy loam

Plate 9: Transect 3 looking northeast

Plate 10: Transect 3 looking northeast, revealing the poor exposure in some areas

Plate 11: The beginning of transect 5 looking south. This transect consisted of the vegetated band between the north and southbound carriageways. It is unlikely that these areas would have remained undisturbed during construction of the existing Pacific Highway

Plate 12: A photograph of one unnamed tributary in transect 4 looking east. As can be demonstrated here, most of the tributaries and creeks within the study area have either been artificially created or heavily disturbed by the existing Pacific Highway

Plate 13: Transect 4 looking northeast. An example of the grading and drainage modifications that have previously been undertaken during the development of the current Pacific Highway

Plate 14: The northern end of transect 4 looking northeast. While the coverage was poor in this area the young regrowth trees suggest previous disturbances.

Plate 15: The northern end of transect 4 looking northeast to Bullocky Way. Easements adjacent to both sides of the Pacific Highway have been seriously affected through modification as shown here

Plate 16: Corner of Bullocky Way looking north towards transect 6. The easement is heavily modified as a result of construction of the Pacific Highway

Plate 17: A photograph of an unnamed tributary in transect 6, looking west. The drainage modifications for the existing Pacific Highway have artificially concentrated runoff into channels. Hence, there is a lack of depositional landform units adjacent to such tributaries

Plate 18: Transect 7 looking south. Note the exposed orange clay B horizon deposits exposed to the left of the photograph, and the bedrock that has been graded by the Pacific Highway to the right of the photograph

Plate 19: Transect 8 looking southwest across ephemeral drainage (tussock grassed area in front of trees) and up slope

Plate 20: Transect 8 looking northwest upslope from south-western boundary towards sheds and cattle yards in this area

Plate 21: Transect 8 looking northeast along northern boundary fence line. Note dam in-between trees in background

APPENDICES

Appendix A: Consultation Log and Aboriginal Community Statements
Appendix B: AHIMS Site Search information

1 INTRODUCTION

The Roads and Traffic Authority (RTA) is upgrading the Pacific Highway between the F3 Freeway and Queensland Border. As part of this upgrade, the RTA has commissioned HLA-Envirosciences Pty Ltd (HLA) to undertake the necessary environmental assessment for the section of the route between Failford Road and Tritton Road, Possum Bush, near Nabiac (Great Lakes and Greater Taree LGAs), NSW.

A Review of Environmental Factors (REF) is required for the proposed upgrade to fulfil the requirements of Part 5 of the *Environmental Planning and Assessment Act* (1979), and to take into account all matters affecting or likely to affect the environment as a result of the proposed development. A key aspect of the REF is the Aboriginal and European heritage, which HLA presents here.

The report provides information about the nature of any Indigenous and European archaeological features within the proposed development area, identifies the development impacts (if any) on these archaeological sites and places and provides management recommendations. This was done through:

- validation of known sites and/or items within the study area[1] through the relevant register searches and archaeological survey;
- conducting an archaeological survey of the study area to locate any additional sites and/or items;
- assessing the study area to delineate any areas of high archaeological sensitivity or potential;
- consulting with the relevant local Aboriginal community groups;
- assessing the historical context of the study area and identifying whether any previous heritage surveys have been carried out;
- assessing the impacts of the proposed construction on any known archaeological materials and areas of archaeological potential within the study area;
- assessing the significance of any archaeological material identified; and
- presenting recommendations for the management and/or mitigation of construction impact to the archaeological resource identified.

This study has been undertaken to the standards outlined in the following documents:

- the NSW Department of Environment (formerly National Parks and Wildlife Service) *Aboriginal Cultural Heritage Standards and Guidelines Kit* (1997);
- the DEC *Aboriginal Cultural Heritage and the Integrated Development Assessment Guidelines* (2000);
- the DEC *Interim Community Consultation Requirements for Applicants* (2005); and
- the Heritage Office *Heritage Manual* (1996) Guidelines.

[1] The term "study area" indicates the area studied by HLA archaeologists, which in some places may have exceeded the development footprint of the road. The term "development area" relates to the specific area of the proposed road works. The "search area" indicates the broader region, an investigation of which was required to provide a regional context for the development area.

1.1 Study Area

The proposed development extends for approximately 3.3 km along the Pacific Highway between Failford Road, Failford and Tritton Road, Possum Brush (**Figure 1**). The proposed development is located approximately 17 km south of Taree and approximately 112 km north of Newcastle.

The main feature of the area is the existing separated northbound and southbound carriageways of the Pacific Highway. Rural properties are located along both sides of the Highway over the full length of the proposed works. The vegetation present within the area has been disturbed to varying extents from past road construction and rural development. Existing vegetation not completely cleared for agricultural purposes is dominated by remnant and regrowth *Eucalyptus* spp, which range from 5 m to over 35 m in height, and a sparse groundcover and shrub layer consisting predominantly of weed species, such as Lantana (*Lantana camara*).

There are no major creeks or rivers within the study area, although there are many unnamed natural and artificial drainage lines that flow west to east. The proposed works would be located within an area of natural moderate to gentle slopes, with the main slope rising from the east to the west, associated with the floodplain of the Wallamba River to the east and Mount Talawahl to the west. There are also steep slopes within the median between the carriageways of the Pacific Highway towards the southern end of the development area. These slopes are the result of earthworks undertaken during the construction of the southbound carriageway.

1.2 Description of Proposed Development

The proposed development consists of the construction of a new carriageway adjacent to the existing southbound Pacific Highway carriageway on the eastern side. The existing southbound carriageway would then become the northbound carriageway and much of the existing northbound carriageway would be retained as a two-way local service road linking Possum Brush Road, Bullocky Way, St Peters Close and local properties to the Failford Road interchange. The proposed development would raise the standard of this section to be consistent with adjoining sections of the highway.

The upgrade of the Pacific Highway for this section would be undertaken in two stages as detailed below. The proposed development would be designed for 110 km/h travel speed and would provide a high standard four-lane dual carriageway. The carriageways would be separated by a 12 m median (minimum) that would allow the future addition of an extra two lanes if required.

1.2.1 Stage 1

The new southbound carriageway, the two-way service road, and a grade-separated interchange at Failford Road would be constructed.

Interchanges

In Stage 1 a grade separated interchange is proposed at the intersection of the Pacific Highway and Failford Road. The interchange would provide a two-lane bridge over the highway which, together with the service road would allow for all turning movements from Failford Road, Bullocky Way, Tritton Road, Possum Brush Road and St Peters Close to and from the highway.

To avoid impacts to Failford Cemetery, the north-bound Pacific Highway onload ramp would be located near Possum Brush Road.

Access

The existing northbound carriageway would become a two-way service road, providing access to adjoining properties and Possum Brush Road. The existing Possum Brush Road highway intersection and cross median access would close. Access to the highway would be provided at the Failford Road grade separated interchange and the northbound onload ramp near Possum Brush Road. This would allow local traffic to cross over the highway. Left-in left-out access would be provided at Bullocky Way.

1.2.2 Stage 2

The Bullocky Way overbridge would be built to link Failford and Bullocky Way to the service road, providing a connection across the highway between Possum Brush and Failford.

1.3 Study Team

The survey was undertaken by HLA archaeologists Alan Williams and Cornelia de Rochefort between 28 and 29 November 2005. The HLA archaeologists were accompanied by Robert Yettica and Robbie Paulson of the Forster Tuncurry LALC) (refer to **Section 2** for more detail). Cornelia de Rochefort and Alan Williams undertook the research and report components, while Jakub Czastka provided technical review. Tom Farrell undertook Peer Review with administrative and drafting support from Kim Wilkinson and Tim Osborne.

1.4 Report Structure

The report structure outlines the sections of the report and their contribution to the study.

Section 2 of this report outlines the Aboriginal community consultation and involvement undertaken for the project, with details of the consultation log and community statements provided in **Appendix A**. **Section 3** summarises the regional archaeological and environmental context for the assessment of the study area that was obtained through background research. This review specifically targets known sites within the area, past reports and landscape evolution. **Section 4** outlines the methods used to undertake the field survey. **Section 5** provides the results of the archaeological survey and assessment of the study area. It then combines the results of the background research and site survey to provide a predictive model of archaeological potential for the site. **Section 6** provides the results of the archaeological potential and historic assessment undertaken using the results and the model. **Section 7** provides a summary of the statutory controls relevant to the project and provides recommendations and management options based on these controls. This management strategy also identifies any additional issues raised by Aboriginal community group representatives, and incorporates these issues where possible. **Section 8** lists the references used in preparing the report.

A summary of the statutory requirements regarding Aboriginal heritage is provided in **Section 7.1**. This is based on experience with the heritage system in NSW and does not purport to be legal advice. It should be noted that legislation, regulations and guidelines change over time and users of the report should satisfy themselves that the statutory requirements have not changed since the report was written.

1.5 Limitations

This assessment is based on the existing environmental and archaeological knowledge of the study area, within the larger context of the Taree region. If previously recorded surface archaeological materials are found within the immediate locality, they are identified and

discussed. This discussion has been based on the reports prepared by others (as cited in this report) and HLA has relied on these reports and has not sought to independently verify the results and interpretations in these reports.

Predictions have been made about the probability of subsurface archaeological materials occurring within the study area. It is possible that materials may occur in any landscape context, and the assessment of subsurface materials refers to the likelihood of occurrence based on surface indications and environmental context.

HLA has undertaken a search of the Aboriginal Heritage Information Management System (AHIMS) held within the Department of Environment and Conservation (DEC). The search results are provided in **Appendix B**.

As stated in the qualifying letter from the Acting AHIMS Administrator, register searches are constrained by the amount of data in the register and the quality of that data (for example grid references can be inaccurate). Large areas of NSW may not have been systematically searched and may contain Aboriginal objects and other heritage values not recorded on AHIMS.

In addition, the AHIMS reports database can only be searched by the title of the report, which may not indicate the geographical location of the area covered. This means that it is possible that some known sites and some reports may have been omitted from this study. Sites and reports are added and removed from AHIMS and therefore the accuracy of information provided from AHIMS is only valid on the day the register is searched and to the nature of the search.

2 ABORIGINAL COMMUNITY CONSULTATION

In response to two recent Land and Environment Court (LEC) rulings (Carriage v Stockland Development Pty Ltd (No 4) [2004] NSWLEC 3553 and Williams v The Director General of the Department of Environment and Conservation v Ors [2004] NSWLEC 613), the Department of Environment & Conservation (DEC) has developed the *Interim Community Consultation Requirements for Applicants* (DEC, 1 January 2005). These new requirements have expanded and developed on the current guidelines (*Aboriginal Cultural Heritage Standards and Guidelines*, DEC 1997), making the consultation process longer and more thorough.

To comply with these requirements, HLA undertook the following steps with regard to this project:

- Contacted the Northeast Environment Protection and Regulations Division of DEC (Northeast EPRD) for advice on the relevant Aboriginal stakeholders;
- Contacted the Forster Tuncurry Local Aboriginal Land Council (LALC) to identify its interest in the project and any relevant Aboriginal groups;
- Searched records of the Native Title Tribunal to identify possible Native Title holders;
- Searched records of the Office of the Registrar of Aboriginal Corporations; and
- Through the RTA, advertised in the *National Indigenous Times, Koori Mail, Great Lakes Advocate, Manning River Times* and *Manning-Great Lakes Extra* newspapers between the end of September and early November 2005, allowing 10 days for registrations of interest.

Initial consultation was undertaken with Robert Yettica of the Forster Tuncurry LALC. He was asked to identify its interest in the project and advise HLA of other relevant Aboriginal individuals or communities in the area. Forster Tuncurry LALC sought to be involved in the project and was provided a copy of HLA's survey methodology on which to comment.

HLA received a letter from Northeast EPRD on 30 August 2005 identifying an additional group in the Great Lakes Area as the Guiwain Elder Group.

The Native Title Search revealed no existing claims or land use agreements. However, the search did reveal one unregistered application being undertaken by Mrs Miranda Avery-Slater & Ors. This claim was being undertaken for Nine-mile Beach near Tuncurry which is some distance from the study area. No response was received from the Office of the Registrar of Aboriginal Corporations.

The newspaper advertisements led to a number of registrations of interest, specifically from Edward Moran (Ananawan Gundungarra Elders), Gordon Brown and Deirdre Alley. Each of these individuals, together with the Forster-Tuncurry LALC, was sent the proposed survey methodology for comment in early November 2005.

Following the expiration of the methodology comment period, HLA contacted each of the groups and advised them of the proposed fieldwork dates. Only Forster LALC provided a response to HLA's invitation to attend the fieldwork.

The fieldwork was undertaken on 28 and 29 November 2005 between Failford Road to Tritton Road with Robert Yettica and Robbie Paulson of the Forster LALC.

Details of all community consultation that was undertaken as part of this project can be found in **Appendix A**.

3 BACKGROUND RESEARCH

The background research section has been split into the following areas: environmental context, historical overview, previously recorded sites, geotechnical context and regional archaeological context.

3.1 Environmental Context

Soils form through a variety of processes, predominantly diagenesis (the breakdown of bedrock into soil) and pedogenesis (the development of diagenetic material into soils), but can be highly diverse due to varying conditions such as climate, topography, parent material, organisms and time. The natural chemical and physical constitution of the soil is also impacted by the underlying rock, with grain size, clay minerals, plant nutrients and the retention capacity of the soil affected. Soil characteristics such as depth and erodibility, as well as the natural processes that affect these features, impact upon the detection of archaeological evidence within the landscape.

Soil analysis has important ramifications for archaeological research through the potential impact of different soils on human activity (such as agricultural exploitation) and the impact of the soils on archaeological evidence (such as post-depositional movement). The soils known to occur throughout the study area are identified here in order to delineate their nature and potential impact on the survival and location of archaeological material.

The study area lies within the Manning River catchment, located in the coastal hinterland north-west of Forster-Tuncurry, Great Lakes district. The topography of the hinterland region consists of a series of parallel northwest trending coastal ranges separated by low lying river valleys with swampland closer to the lakes and coast. The study area passes through broad, convex, gently undulating hillsides. Slopes are very well drained and reach maximum elevations of about 20 m AHD near Failford Road (Coffey 2001). The survey route overlies two geological units; grey to brown lithic sandstone, interbedded with massive greywakes and minor limestones, known as the Bundook beds, and undifferentiated quaternary alluvium. The former is found along the major creek lines and includes back swamp and levee deposits (DMR 1991). The soils of this region are generally yellow, brown or red Kurosols and Sodosols. These soils are hard setting and prone to sheet and gully erosion (Lines-Kelly 2000). Site specific studies show the study area generally consists of a red clay residual (*in situ*) soil, with minimal presence of brown clayey sand topsoils (Coffey 2001).

The region north of Nabiac around Possum Brush generally consists of two vegetation communities, open forest and swamp forest. Open forest communities are dominated by Blackbutt (*Eucalyptus pilularis*) and Tallowwood (*E. microcorys*). Other tree species include Grey Gum (*E. propinqua*), Red Ironbark (*E. fibrosa*) and Spotted Gum (*E. maculata*), while Pink Bloodwood (*Corymbia intermedia*) and Cabbage Gum (*E. amplifolia*) occur as scattered individuals. Sub-canopy species include young eucalypt saplings and *Melaleuca sp.* Shrub species include Narrow-leaved Geebung (*Persoonia linearis*) and Gorse Bitter Pea (*Daviesia ulicifolia*). Swamp forest communities are located within low lying or impeded drainage areas. These areas are generally dominated by a variety of *Melaluca spp.* and Swamp Oak (*Casuarina glauca*). Other tree species include Cabbage Gum, Swamp Mahogany (*E. robusta*) and Flooded Gum (*E. grandis*) (Ecotone 2000).

3.2 Aboriginal History

The area traversed by the proposed development from Failford to Possum Brush was originally occupied by the Biripai. Their territory extended from the mouth of the Manning River west to Gloucester and along the Forbes, Upper Hastings and Wilson Rivers (Tindale 1974). Traditional

Aboriginal occupation of the Manning River region has been recorded in surveyor's notes and diaries of early explorers and settlers. Captain Cook was the first European to document an Aboriginal presence in the region, observing smoke from fires along the shores of Wallis Lake. John Oxley, on his overland exploratory journey southwards from Port Macquarie in 1818, described Aboriginal occupation of the country inland of Wallis Lake as:

> "…the *natives are extremely numerous along this part of the coast….large troops of them appear on the beaches whilst their canoes on the lakes are equally numerous. In the morning their fires are to be observed in every direction…*" (Oxley 1820:342-344).

Oxley's journey was in fact the first reported existence of the Manning Valley (HO & DUAP 1996). Other historic observations indicate that Aboriginal people used the Wallamba River valley for ceremonial gatherings as well as day to day subsistence (Moran 1987). Details of the social and ritual proceedings of initiation ceremonies have been described for the Manning by Fitzpatrick (1914), while a ceremonial site is said to have once been located north of Hallidays Point Waste Water Treatment Plant (site card no. #38-3-10) in the Tuncurry region (Collins 2001).

According to Pierce (1971 as cited in Collins 2001) the bulk of the Aboriginal population inhabited the riverine plains and coastline, and it is argued that population densities reduced with distance inland and along a north south gradient. This difference is attributed to the decreasing productivity of aquatic zones from north to south along the coast. This apparent difference in the settlement and subsistence patterns between northern and southern coastal populations is supported with archaeological research further north travelling up into the northern tropical coastal regions, whereby other researchers such as O'Conner (1992) and Barker (2004) argue that the north south decreasing site density gradient is a function of the nature of the resource base. The northern tropics contain fewer seasonal resources compared to the south, which is believed to have fostered the development of more permanent, less mobile populations. Cunningham (1827:185) reported on the settled nature of life along the coast and he wrote about the "better order of things" amongst Aboriginal people at Port Stephens and further north, describing their huts as comfortable and capable of holding several persons.

Material culture found throughout the region consisted of the usual array of fibre nets and bags, wooden and stone implements, weapons and tools. According to Fitzpatrick (1914:41) specialised multi-pronged fishing spears were always pointed with a piece of flint or quartz and tomahawks were made from water-worn stones. In the early stages of European settlement, Aboriginals were employed around the European selections. Honey collection was popular and the traditional method of scaling tree trunks by cutting footholds in the bark was employed. These footholds are reported in many parts of the Nabiac district (Gilbert 1954) and Navin & Klaver (1993) suggest that Aboriginal scarred trees may in fact date to the historic (or European) period.

In the Upper Manning valley, hostilities in the 1830s and 1840s between local tribes and European settlers resulted in killings and massacres. In the Nabiac district, conflict between Aboriginal people and European settlers, resulting in the deaths of Aboriginal people, has been recounted as occurring at a property called Waterloo (Gilbert 1954). The pattern of initial peaceful contact, followed by Aboriginal population decline through conflict and disease, is a common feature of European expansion across the continent (Davies 1993). By the 1850s most of the coastal plain had been appropriated and traditional Aboriginal social and economic land use practices were severely affected. Deprived of their economic base, Aborigines were forced to depend on government handouts, many becoming fringe dwellers on the edges of European settlements. In 1882 the Aborigines Protection Board of New South Wales was established and reserves were set up in the north coast region. A reserve was established in the Manning Valley

at Forster (1895 - 1959) which would have provided some economic rectitude in the form of government rations (DoP & NPWS 1989; Rich1990*a*).

3.3 European History

The exact date of European discovery of the Wallamba River has not been determined. However, maps published in the late 1820s often show the Wallamba River flowing within the present day Nabiac District (Gilbert 1954). In 1824 the Australian Agricultural Company was formed to raise funds to exploit the sheep grazing possibilities of NSW. A total of one million pounds capital was raised, which entitled the company to one million acres of land in NSW. Preliminary surveys of the coastal region seemed to have found good grazing on the northern side of Port Stephens, extending to the Manning River (HO & DUAP 1996). The present day Nabiac District falls within the original grant given to the Australian Agricultural Company. Exploration and agricultural experiments in the region determined that the coastal portion of the grant was not suitable for development on a large scale. As such, negotiations began with the aim of exchanging the coastal portion for an area in the Liverpool Plains region. Eventually the company obtained inland grants and by 1830 the coastal strip became Crown Land once more (Gilbert 1954).

This re-established Crown Land became available for settlement and heralded the arrival of early European settlers from both inland and coastal origins. These early pioneers were attracted to the Wallamba River region for its timber. In fact, the first settlement of the Nabiac District occurred in the mid-nineteenth century when cedar cutters working their way up the coast reached the area. Although the timber cutters were only allowed to construct a hut and were forbidden from cultivating the land, settlement of a more permanent nature soon followed. Initial settlement prior to the 1840s consisted of a small number of pastoral lease holders along the Wallamba River (Moran 1987:9; Birrell 1987, Map 10). The first land grants in the Nabiac District were purchased in 1855 by Henry Carmichael and in 1857 by William McClymont. With the introduction of land selection before survey by the *Crown Lands Act* of 1861, the acquisition of land for agricultural purposes was made easier. This resulted in an influx of settlers to the district in the 1860s. Early habitation was focused along the Wallamba River and major creek lines, and settlers built their houses and stockyards to satisfy minimum requirements using locally available materials (Birrell 1987).

Cedar was the first type of timber to be exploited within the region, with the first wood cut in the Port Stephens area in 1816. The *Maitland Mercury* in 1847 noted that good quality cedar was being felled in the vicinity of Bulahdelah and cedar is also thought to have been cut in the Wallamba valley and shipped via Nabiac around that time (GLCHS 2004:32). The local timber industry flourished between the 1860s and 1920s, with the surrounding vegetation quickly being cleared of native timber. Between 1882 and 1886 the clearing of the land and the establishment of the Failford saw mill and village brought development to the surrounding district. By 1919 the district is reported to have had five large saw mills employing 100 men. In addition there were scores of men working in the forests, felling, hauling and cutting sleepers and girders (Gilbert 1954:55).

In addition to timber production and agriculture, the discovery of gold in 1878 also attracted settlers to the area. The resultant increase in the population led to the formation of the village of Wallamba in 1890. In 1906 this village was renamed Nabiac. The village was located on the northern side of the Wallamba River on a cart track linking Coolongolook and Bulahdelah with Taree. The centralised locality of the township meant that the village developed into a service town for the district. It included a police station, banks, churches, a public school, hall and a recreation ground (Gay 1999).

Throughout the nineteenth and early to mid twentieth centuries dairying had become the predominant form of agricultural activity. Milk was transported by river boat to local creameries and the processed product was sold in villages or sent via ship to Sydney. To meet the requirements of rapidly rising milk production, the Upper Wallamba River Co-operative Dairy Society was established in 1904, with its factory located at Dyer's Crossing. The factory commenced operations in 1905 and one of the first pasteurising plants on the mid north coast was installed (Gilbert 1954:56). However, with the bulk centralisation of the industry in the 1930s, localised small-scale dairy farming became unviable (Gay 1999).

Transport was instrumental in the development of the region. The first roads would have consisted of tracks which followed lines of marked trees through the bush. By 1840 the Australian Agricultural Company settlements of Booral, Stroud and Gloucester were connected to each other and to Raymond Terrace by a well defined road. According to the 1866 NSW Gazette and Road Guide, the towns of Stroud, Bulahdelah, Firefly Creek and Larry's Flat were linked to Tinonee. Another road was shown from the Wang Wauk River to Tinonee, crossing the Wallamba, and passing through Kooringhat. In 1878 a direct road link was established between Bulahdelah and Taree, although it was not completed until 1902. This road was still described as little more than a bush track in 1950 (Boyce 1984:5-7). The main road conditions did not improve until 1952 when the Pacific Highway was re-routed to travel through Coolongolook and Nabiac (Gay 1999).

Owing to the slow development of the coastal road, for many years shipping provided Wallamba's main form of communication with the outside world (Gilbert 1954:22). In the 1870s the major form of transport was small poling punts that frequented the Wallamba River. Throughout the later nineteenth and early twentieth centuries the Wallamba River served an important role as the major form of communication linking farms to each other and the township, as well as providing transport for the timber and dairying industries. Numerous wharves were built along the Wallamba River, one of the largest being the Bullock Wharf (Gay 1999). A heavy blow was sustained by the shipping industry of the region with the opening of the railway to Taree in 1912. Until then, local storekeepers and farmers had received much of their provisions and equipment via the Wallamba River (Gilbert 1954:27).

3.4 Archaeological Context

The archaeological context section outlines the known Aboriginal and historic sites and other studies undertaken in the area. Site predictions for the study area in question will then be provided.

3.4.1 Aboriginal sites surrounding the study area

HLA undertook a search of the AHIMS for all sites within a 20 km radius of the development area on 18 August 2005.This revealed a total of 39[2] previously recorded archaeological sites within the region (see **Figure 1** and **Appendix B** for site details provided by DEC). Of these 39 sites, approximately 50% (20) were open camp sites comprising stone artefact scatters and/or isolated finds. The remaining archaeological site types are recorded as middens (23% - 9 sites), scar trees (7% - 3 sites), ceremonial sites (5% - 2 sites), stone arrangements (2.5% - 1 site), a Potential Archaeological Deposit (or PAD) (2.5% - 1 site) and un-denominated (10% - 4 sites).

No sites are located within the study area and all sites are located at least 1.5 km away.

[2] It should be noted that while 39 Aboriginal sites were identified, a number of these are multiple different site types. Hence, the discussion of site types may have a different number to the actual number of Aboriginal sites.

3.4.2 Regional Aboriginal context

To provide a more comprehensive review of the nature of the local archaeology in the region a summary of previous archaeological investigations undertaken within the vicinity of the study area is provided.

According to Gilbert (1954), numerous stone artefacts have been ploughed from beneath the soil by farmers throughout the Nabiac district. However, there are relatively few actual recorded sites within the region. This is mainly due to the limited number of archaeological surveys that have been conducted in the region and the low ground surface visibility which prevents the detection of stone artefacts (Bonhomme 1988; Gay 1999).

Byrne (1984) conducted a survey for the proposed quarry crushing plant at Nabiac and did not locate any sites while, further south of Nabiac, Navin (1992) also did not identify any archaeological sites in its survey of a 5 km stretch of the Pacific Highway road reserve from the Wang Wauk River to Bundacree Creek. Furthermore, Rich (1990b) only recorded nine sites along a 9 km stretch of the Pacific Highway south of Nabiac from Bulahdelah to Coolongolook. These sites consisted of open artefact scatters and isolated finds. Rich (1990b) reported that an investigation of potential sites north of the Pacific Highway revealed that Aboriginal use of the forests of the greater region was not uniform, with no sites having been located. Of the nine sites located, the majority correlated quite well with the occurrence of dry forest. However, the site with the most artefacts was located within an intermediate wet to dry forest.

Haglund (1992) conducted surveys and test excavations along the Pacific Highway from Bulahdelah to Coolongolook, locating open camp sites and 10 isolated finds. Haglund (1992) has developed an Aboriginal land use model for the general region, interpreting the predominance of small open campsites as the intermittent use of the area by small, mobile groups operating between larger base camps which are often located in the river valleys or near big lakes. Within the Coolongolook district, test excavations of four PADs were conducted by Mills and Kelton (1998) as part of the Pacific Highway upgrade between Coolongolook River and Wang Wauk River. Two of the PADs (Nos. 11 and 24) were located adjacent to minor creek lines and one was located adjacent to a major creek line (No. 14). These three PADs were located in the foothills west of the Coolongolook River. The fourth PAD (No. 26) was located within 50 metres of the Wang Wauk River. Two hundred and thirty four stone artefacts were recovered from PAD 14, 12 from PAD 22 and one from PAD 26 (Gay 1999).

Several archaeological investigations into the indigenous cultural heritage of the Pacific Highway upgrade route from Bundacree Creek to Possum Brush have been undertaken by Navin Officer (2001 in Mitchell McCotter 1994), Curran and Gay (1997) and Gay (1999). A total of 20 PADs were identified by Curran and Gay (1997). However, Gay's (1999) investigation of the same route option found no new archaeological sites and concluded that test excavation of the 20 PADs identified by Curran and Gay (1997) would not be necessary, as the PADs have either undergone heavy land use disturbance, or the proposed development activities would have little to no impact.

Along the northern end of the study area, Gay (1998 in Gay 1999) conducted an Aboriginal site survey and assessment of PADs along a 6 km alternative eastern route option which would bypass Nabiac and eventually travel in a north easterly direction over Pipeclay Creek, rejoining the highway at the Carefree Road Intersection 4 km north east of Nabiac. Seventeen PADs were recorded. Also north of the study area Rich (1990 in Gay 1999) conducted an archaeological survey for the Taree traffic relief route. Eleven Aboriginal sites were recorded. Of the three open camp sites recorded, two were located on low rises near a creek, while the third was located on a ridge above a creek. Davies (1991) surveyed an optical fibre route between

Squires Hill Road and Tritton regenerator stations. Only two isolated finds were recorded for this survey, both of which were located along watercourses.

Klaver and Heffernan (1991) carried out a heritage study for the city of Greater Taree, locating over fifty sites. General patterns of site location according to environmental units were described (Table 7:1991). The majority of sites within the region (70%) were located in flat terrain. Vegetation communities that were predominantly associated with archaeological sites were coastal heathland and estuarine stream bank corridors, dry sclerophyll eucalypt forest and sub-tropical rainforest. Nineteen percent of sites were located in undulating to hilly terrain, generally associated with dry eucalypt forest, estuarine stream bank corridors or in coastal heathland. Only 8% of sites were found in rugged terrain, while 3% were associated with hilly or steep terrain.

3.4.3 Historic Sites searches

Heritage registers at State and Commonwealth level were searched to ascertain whether known historic sites or landscapes were listed within the Failford Road to Tritton Road study area. The results are presented below.

3.4.3.1 Register of the National Estate

A search of the Register was conducted for the Great Lakes and Greater Taree LGAs. Only one heritage item is listed on the Register for the wider Nabiac region and this is the Wallamba District Showground on Nabiac Street, Nabiac. This item is listed on the Register of the National Estate as an indicative place of significance for its continuous use for the celebration of rural activities for both the local and wider community since 1912. No heritage items are listed on the Register within the proposed development area.

3.4.3.2 State Heritage Registers

The State Heritage Register and Inventory are administered by the NSW Heritage Office. Items on the register are protected by the *NSW Heritage Act* (1977), while items on the inventory generally come from the region's LEP and are protected under guidelines in this planning instrument (outlined in **Sections 3.4.3.4** and **3.4.3.5**). The general cemetery adjacent to the Pacific Highway and opposite Failford Road is listed on the inventory, and this is discussed in more detail in **Section 3.4.3.4.** This site technically falls outside the study area but, given its close location to the development, may need some consideration during and after construction.

3.4.3.3 National Trust Register

No items within the study area are classified or listed on the Trust Register.

3.4.3.4 Greater Taree Council LEP, 1995

The Greater Taree Local Environment Plan (LEP) (1995) identifies the general cemetery adjacent to the Pacific Highway and opposite the Failford Road junction. No further information is provided on the cemetery or reasons for its listing. This listing is included in the Great Lakes LEP and is discussed in more detail in **Section 3.4.3.5**. Under Section 58 of this planning instrument, any sites listed upon the LEP will require Council consent before any demolition, damage or impact occurs to the site.

3.4.3.5 Great Lakes Council LEP, 1996

According to the Great Lakes LEP (1996), a dwelling known as the Old Brock House located on the corner of Failford Road and Bullocky Way is of local and regional significance. A search of the State Heritage Inventory for heritage listings in the Great Lakes Local Government Area also listed the Failford Road general cemetery (previously listed under the Greater Taree LEP). Failford House on Failford Road and the former Failford School, including Buffalo Lodge, are two newly identified items in GLCHS (2004) recommended for entry onto the State Heritage Register. Neither of these sites is located within the proposed development area.

3.4.4 Regional historical context

In order to provide a more comprehensive review of the nature of the local historical archaeology in the region, a summary is presented below of previous archaeological and historical investigations undertaken within the vicinity of the study area.

The Great Lakes Council Heritage Study (GLCHS 2004) has identified a number of historic themes that have shaped the region. Aside from Aboriginal occupation, these themes are early exploration and settlement; agriculture and timber cutting; shipbuilding; fishing and mining; water, air and land transport; and urban growth. In assessing the heritage of the Nabiac region, the area was divided into four sectors; a possible Nabiac Urban Conservation Area, the Nabiac showground precinct, the Wallamba River precinct and outlying Nabiac.

Nabiac has not experienced high redevelopment pressures and contains a reasonable number of early twentieth century timber buildings. Items of heritage significance consist of general stores, residential dwellings, the police station, an Anglican church and an early twentieth century school, constituting a visual commercial and residential area known as the Nabiac Urban Conservation Area. The Nabiac showground precinct contains the Nabiac or Wallamba District Showground and other built heritage items such as dwellings and the Uniting and Catholic churches. The Wallamba River precinct generally does not contain items with a high level of significance because of their fabric and originality, but some are identified as having historic significance and possibly archaeological potential. However, the area is generally defined as an area of historic interest for its connection with timber milling and river trading. Items identified for nomination on the Heritage Register are a mill and wharf group consisting of Everingham's Mill; remains of the government wharf and the collection site for cream cans by Tom Miliken's cream boat for the Tuncurry factory; and the site of the original Bullock Wharf constructed for the timber industry.

Items identified within the outlying Nabiac precinct relate to a WWII aerodrome; the Willow Point cemetery and the former Clarkson's Crossing; Pacific Highway; and Wallamba River. Other contributory items are dairy bails and associated shed on the Wallamba River flats and dairy sheds located at Failford Road. Within the wider region, the Forster-Tuncurry districts are known for their rich maritime, shipbuilding, fishing and timber milling past. The Bulahdelah and Coolongolook districts are representative of early timber milling and agricultural pursuits, with the former representing the industry of alum mining and processing at Bulahdelah Mountain, and the latter the extractive industry of gold mining (GLCHS 2004:66, 71-72, 78-81).

3.5 Synthesis and Archaeological Predictions

3.5.1 Aboriginal

From the details of the archaeological investigations provided above, a synthesis on the nature of the archaeological context of the greater Nabiac region can be constructed. Archaeological

characteristics such as location and distribution of sites within landscape units, site type, site integrity and stone artefact density can be deduced. These features are necessary for determining the survey methodology to be undertaken, and for predicting the nature of site types and site distribution within the study area.

It seems clear that a number of factors are important in site location. Patterns of site location according to terrain and vegetation were described by Klaver and Heffernan's (1991) Greater Taree Heritage Study, which indicated that:

- 70% were located in flat terrain, predominantly in coastal heath, and also along estuarine stream bank corridors, woodland, dry sclerophyll eucalypt forest and in subtropical rainforest;
- 19% were located in undulating to hilly terrain either in dry sclerophyll eucalypt forest, along estuarine stream bank corridors, or in coastal heath;
- 8% of sites were found in rugged terrain, predominantly in dry sclerophyll eucalypt forest; and
- 3% were found in highly to steep terrain.

These factors agree with most of the research above and reveal that sites are likely to occur close to permanent water sources, located predominantly within flat terrain. Estuarine stream bank corridors and coastal heath vegetation communities form the predominant association with the occurrence of archaeological sites, indicating the predominance of archaeological sites within the Greater Taree area.

Archaeological studies to date indicate that the densest and most diverse archaeological remains are generally found along the coast owing to the diverse nature of the coastal resource base. However, the Nabiac region also appears to have consisted of relatively semi-settled populations, with major river corridors serving as a focus of activity. Furthermore, according to available ethnographic data, Aborigines appear to have been present throughout all parts of the river valleys throughout the year (see **Section 3.2**). Therefore it should be recognised that the archaeological site patterning within the study area will to a degree reflect sampling bias, whereby the likelihood of actually finding archaeological sites within the area is low, owing to poor ground surface visibility and site integrity.

The entire study area has been subject to extensive pastoralism and logging, which precludes the likelihood of finding any archaeological sites. Furthermore, previously recorded site distributions within the study area will also reflect the likely down slope movement of archaeological remains from higher slopes into lower lying catchment areas. Down slope movement is primarily caused by erosion processes (sheet wash, gullying and scouring), resulting in the removal of A horizon sediments and the *in situ* archaeological remains. The end result of this process is the location of archaeological sites, such as stone artefacts, in lower areas amongst disturbed A and B horizon sediments. Indeed, floodplains and low lying flat areas have been demonstrated as potential locations for archaeological sites within the area.

If sites are present within the study area, they most likely would be open artefact or flaked stone scatters. Carved or scarred trees, although rare, may be located within the study area. Rock shelters, engraving or art sites, or axe-grinding grooves are not expected because the survey area lacks surface exposures of sandstone or limestone. Earth mounds and/or stone arrangements may be present. However, the likelihood of these surviving logging operations is low. The narrowness of the study area may also preclude the possibility of finding sites.

3.5.2 Historic

Section 3.4.4 outlined the historic themes which have shaped the development of the Great Lakes district. Historic structures and material evidence which are reflective of these themes are likely to be focused around early centres and corridors of occupation. These include the settlements of the Nabiac and Failford districts and the road corridors which connected these settlements. The main historic items that are likely to occur will be related to early settlement and the timber, agricultural and extractive industries.

Historic sites relating to these aforementioned themes which may be present within the study area are:

- timber mills and associated structures and dwellings such as selector's and timber- getter huts, remains of machinery, tracks, tramways and spring board tree notches;
- road bridges;
- agricultural and industrial sites such as dairies, factories and quarries;
- remains of former structures and dwellings such as houses, huts and homesteads;
- remains of agricultural features such as old fence lines, drainage channels and ridge and furrow plough lands;
- old transport and access routes, such as old highway alignments and stock routes; and
- moveable heritage, which includes domestic artefacts such as pottery and bottles, and agricultural and industrial implements and equipment.

4 SURVEY METHODOLOGY

This section details the field methodology employed when surveying the study area.

4.1 Survey and Terrain Mapping

The aim of the field survey was to identify the archaeological potential of the study area. This assessment was determined by the criteria outlined below in **Section4.2.**

The presence or absence of archaeological materials and the terrain features and integrity of sites were documented using a specifically designed recording form (see **Table 1**). A range of environmental attributes affects the detection of archaeological material during site surveys. Some of these features are vegetation cover, soil type and presence of naturally occurring surface rock. Ground surface visibility is a major influence of artefact detection. The nature (i.e. size, colour, material type) of the archaeological material also affects the effectiveness of the field survey. To assess the reliability of the survey results the following features were recorded:

- Landform unit;
- Environmental setting within landform unit;
- Fall of slope along transect;
- Type of vegetation cover;
- Visibility levels measured as percentage of soil surface visible per transect;
- Type of ground exposure, i.e. erosion or disturbance from mining activities;
- Frequency of exposures, i.e. number in each transect;
- Size of exposures;
- Depth of soil erosion;
- Soil type and profile level exposed;
- Evidence of downslope movement of soil and rock particles;
- Presence of naturally occurring rock suitable for artefact production; and
- Presence of archaeological material.

The range of attributes relating to each of these environmental features across the site is reproduced in **Table 1**. Terminology for all landscape descriptions was obtained from McDonald *et al.* (1998). Photography was used to document the environmental and archaeological features of the survey area.

Table 1: Terrain Recording Form

Survey Area					
AMG Reference	Start……		End……..		
Landform Unit	Crest	Ridge	Hillock		
	Simple Slope	Upper Slope	Mid Slope		
	Lower Slope	Flat	Open Depression		
	Closed Depression	Stream 1st 2nd 3rd 4th			
Slope	Level	Very Gently Inclined	Gently Inclined		
	Moderately Inclined	Steep	Very Steep		
Exposure	Eroded	Aggraded	Human Action		
Geomorphological Agent	*Gravity:*	Collapse	Particle Fall		
	Precipitation:	Soil Creep	Mass Movement	Sheet Wash	
	Stream Flow:	Overbank	Channelled	Flood	Watertable
	Biological	Human	Animal		
Human Action:	Road	Residential	Earthworks	Industrial	Pastoral
	Other……				
Level of Disturbance	1 2	3	4	5 6	7 8
Exposure	No. of exposures……		Exposure area……		
Soil Type		I			
Soil Profile Exposed	Exposed: A	A2	B C	Vertical Profile: Yes No	
Geology					
Locally Available Material	Silcrete	Mudstone	Quartz	Tuff	Quartzite
	Chert	FGS	Pet Wood	Sandstone	
Vegetation	Tall = trees>10m	Mid= shrubs+trees<10m	Low= grasses		
Groundcover	Dense= 70%	Mid-dense=30-70%	Sparse=10-30%		
	Very sparse= 10%	None			
Stone Artefacts	Absent	Present	Number……..		
Raw Materials Used	Silcrete	Mudstone	Quartz	Tuff	Quartzite
	Chert	FGS	Pet Wood	Sandstone	

Most of the categories on this recording sheet are self-explanatory, with the exception of levels of disturbance and fall of slope, which require a key to the rating system. Levels of disturbance and fall of slope were classified according to the criteria listed below. This key, along with the following guide to the soils in the local landscapes, was printed on the reverse of each recording form to assist with consistency in the identification of these features.

Level of disturbance criteria

0) No effective disturbance

1) No effective disturbance except for hoofed animals

2) Limited clearing

3) Extensive clearing

4) Complete clearing: pasture but not cultivated

5) Complete clearing: pasture cultivated at some stage

6) Cultivation, rain fed

7) Cultivation, irrigated

8) Highly disturbed, eg. mining, urban development, road

Fall of slope criteria

A guide to the slope classes covered by the landform units present in the study area can be obtained from McDonald *et al.* (1998:37).

- Moderately inclined slopes = 10% to 32% range
- Gently inclined slopes = 3% to 10% range
- Very gently inclined slopes = 1% to 3% range
- Level <1%

Summary

The aim of the survey and recording methodology was to divide the surveyed site into landscape zones and areas of land use that reflect the potential for archaeological material to exist in these sections. This data would then be assessed against the background information on the site and used to produce mapping of the archaeological potential for the site (see **Section 6** and **Figure 4**).

4.2 Archaeological Potential

The archaeological potential of the study area, both Aboriginal and historic, was assessed on four criteria:

- the presence of known surface archaeological materials;
- the probability of undetected surface archaeological materials;
- the probability of subsurface archaeological materials; and
- the terrain integrity of each transect area.

The presence or absence of surface archaeological materials and the level of effective ground surface visibility were documented during the field survey. The probability of additional surface artefacts occurring was based on these attributes. The assessment of the subsurface

archaeological potential of the study area was based on the known patterning of archaeological materials in the respective regions and field observations of the environmental characteristics and terrain integrity. These characteristics included the availability of stone materials, proximity to water resources, soil depth and landform unit.

A summary of the data recorded for each transect is presented using the following categories:

- variability of landscape (low, medium or high);
- visibility levels (low, medium or high);
- conditions for artefact detection (low, medium or high);
- effectiveness of surface survey (low, medium or high);
- availability of raw materials (present/absent);
- degree of ground disturbance from human activities (low, medium or high);
- presence of flaked stone artefacts (present/absent); and
- potential for subsurface artefacts (low, medium or high).

Comparison of these categories enables an analysis of the features exhibited within each transect, facilitating an assessment of the overall archaeological integrity and potential of each area.

Based on the results of this analysis of environmental and archaeological features a rating of low, moderate or high archaeological potential was assigned to each portion of the site. The definition of these categories is as follows:

Low Archaeological Potential:	Areas where archaeological materials are not likely to occur, as a result of removal or disturbance from land use history. Some indication of the natural soil profile or natural terrain remains, but is limited and not likely to contain archaeological materials.
Moderate Archaeological Potential:	Areas where archaeological materials may occur. Some indication of the natural soil profile or natural terrain remains, but where high site or artefact density is unlikely to occur.
High Archaeological Potential:	Areas known or likely to contain surface or sub surface archaeological materials or site(s). The natural soil profile or natural terrain is evident, and site(s) and artefact(s) are known to occur in this context.

4.3 Historical Significance Assessment

An assessment of significance is undertaken to explain why a particular site is important and to enable the appropriate site management strategies to be determined. Cultural significance is defined in the Australian ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter) as 'aesthetic, historic, scientific or social value for past, present or future generations' (Article 1.1). Cultural significance may be derived from the fabric of a place, association with a place, or the research potential of a place. The significance of a place is not fixed for all time, and what is of significance to us now may change as similar items are located, more historical research is undertaken and community tastes change.

The process of linking this assessment with a site's historical context has been developed through the Department of Urban Affairs and Planning (now DOP) and the Heritage Council of NSW State Heritage Inventory Program (SHIP) and is outlined in the Heritage Assessment Guidelines of the NSW Heritage Manual (1996). The Heritage Assessment Guidelines establish seven evaluation criteria, reflecting significance categories and representativeness, by which a place can be evaluated in the context of State, Regional or Local historical themes. These Guidelines were updated in mid August 2001 by the guideline Assessing Heritage Significance, which reflects legislative changes to the Heritage Act. It is understood that the guidelines in the Heritage Manual will be successively upgraded to reflect the new assessment criteria.

The significance criteria are:

Criterion (a) – an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (b) – an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).

Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.

Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).

Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW's:

cultural or natural places; or

cultural or natural environments

(or a class of the local area's:

cultural or natural places; or

cultural or natural environments).

Different components of a place may make a different relative contribution to its heritage value. Loss of integrity condition may diminish significance. In some cases it may be useful to specify the relative contribution of an item or components. While it is useful to refer to **Table 2** when assessing this aspect of significance, it may need to be modified to suit its application to each specific item.

Table 2: Heritage Significance Grading Levels

Grading	Justification	Status
Exceptional	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.	Fulfils criteria for local or State listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local or State listing.
Moderate	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.	Fulfils criteria for local or State listing.
Little	Alterations detract from significance. Difficult to interpret.	Does not fulfil criteria for local or State listing.
Intrusive	Damaging to the item's heritage significance.	Does not fulfil criteria for local or State listing.

Following Kerr (2000), the cultural significance of a precinct or element within a precinct can be expressed in three broad ways (these encompass the significance criteria above) through:

- the ability to demonstrate an aspect of the precinct's significance. For example the fabric of the site could demonstrate how a site was used;
- the association of the precinct with an important event or a particular person. The association may not require physical evidence of the event; and
- the ability of archaeological remains in a precinct to answer relevant research questions.

These three ways of expressing significance apply as much to archaeological remains as they do to the built environment or the landscape. It is conceivable that archaeological remains may not have any research potential but have strong historical associations or a high ability to demonstrate an aspect of history.

The relationship between an item and its historical context underlies this assessment process. Historical themes provide a context within which the heritage assessment criteria are applied, especially if historical values are critical to an understanding of an item's heritage significance.

5 SURVEY RESULTS

The archaeological field survey of Failford Road to Tritton Road was conducted on 28 and 29 November 2005 by Alan Williams (HLA), Cornelia de Rochefort (HLA), Robert Yettica (Forster Tuncurry LALC) and Robbie Paulson (Forster Tuncurry LALC).

The survey covered the majority of the study area shown in **Figure 2** and all information was recorded on a survey recording sheet, as described in **Section 4.1,** and on base maps of the site provided by the RTA. The results are presented in **Table 3.**

Failford Road to Tritton Road was split into seven transects (**Figure 3**). Each transect was individually described for potential surface and subsurface archaeology. The start, end and any other relevant features were located with GPS, while multiple photographs were taken of each transect.

A second site survey was undertaken on 21 June 2006 by Jakub Czastka (HLA, Associate Archaeologist) of an additional area not part of the original survey using the same methodology as described above.

Table 3: Survey Result Summary for Failford Road to Tritton Road

Transect	1	2	3	4	5	6	7	8
Start AMG Co-ordinate	445491E, 6450138N	444935E, 6449910N	445491E, 6450138N	446294E, 6450347N	446917E, 6451302N	446959E, 6451312N	447158E, 6452365N	445162 E, 6450227 N
End AMG Co-ordinate	444795E, 6449957N	445756E, 6449872N	446073E, 6450300N	447112E, 6451074N	446371E, 6450475N	447193E, 6452290N	446902E, 6451332N	445139 E, 6450391 N
Approximate Transect Area	140,010 m^2	123,450 m^2	60,300 m^2	179,300 m^2	59,820 m^2	220,000 m^2	66,000 m^2	350,000 m^2
Geological Unit	Bundook beds	Bundook beds	Bundook beds	Bundook beds	Bundook beds	Bundook beds	Bundook beds	Bundook beds
Soil Landscape	Thin duplex soils	Thin duplex soils	Kurosol/ Sodosol	Thin duplex soils	Thin duplex soils	Anthroposol	Thin duplex soils	Thin duplex soils
Terrain Unit	Simple slope, open depressions, hilltops	Flat, simple slope, open depression	Simple slope	Simple slope, open depression	Simple slope, open depression, hillock	Flat, Simple slope	Simple slope	Simple slope, open depressions, hilltops
Slope	Gentle to moderate	Moderate	Gentle to moderate	Gentle to moderate	Gentle to moderate	Level, very gentle	Gentle to moderate	Gentle
Geo. Agent	Soil creep, mass movement, human	Soil Creep, mass movement, human	Soil Creep, mass movement, human	Soil Creep, mass movement, human	Soil creep, mass movement, human	Human	Soil creep, mass movement, human	Soil creep, cattle
Human Action	Agriculture, roads	Roads, earthworks	Road, earthworks	Residential, road	Road, earthworks	Agriculture, road	Road, earthworks	Clearing, animal yards, sheds, dam
Erosion Action	Colluvial, human	Colluvial, human	Colluvial, human	Colluvial, human	Colluvial, human	Colluvial, human	Colluvial, human	Colluvial, human
Level of Disturbance	5	8	6	5	8	4	8	5

Transect	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Exposure Area	35,002 m^2	9,876 m^2	3,015 m^2	125,510 m^2	4,786 m^2	11,000 m^2	26,400 m^2	35,002 m^2
% of Transect Exposed	25	5	5	70	8	5	40	<5
Visibility (%)	40	15	10	70	12	5	50	15
Soil Profile	A, B, C	A	A B,BC,C	A, C	A, B	A	A	A, B
Vertical Profile	Yes	No	Yes	No	No	No	No	No
Vegetation	Low, mid	Low	Low	Low, mid	Low, mid	Low	Low	Low, mid
Groundcover	Mid dense	Dense	Dense	Sparse	Mid dense	Mid dense	Mid dense	Dense
Artefacts/Sites	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Following guidelines for site surveys as required by DEC, **Table 4** shows the available exposure and detection of the survey.

Table 4: Survey Coverage of the Study Area

Transect No.	Landform Unit	Total Area of Landform Unit (m^2)	Exposure (%)	Area of Exposure (m^2)	Visibility (%)	Area Available for Site Detection (m^2)	% of Landform Available for Site Detection
1	Simple slope, open depression	140,010	25	35,002	40	14,001	10
2	Flat, Simple slope	123,450	5	9,876	15	1,481	1
3	Simple slope	60,300	5	3,015	10	302	0.5
4	Simple slope, open depression	179,300	70	125,510	70	87,857	49
5	Simple slope, open depression	59,820	8	4,786	12	574	1
6	Flat, Simple slope	220,000	5	11,000	5	550	0.3
7	Simple slope	66,000	40	26,400	50	13,200	20
8	Simple slope, open depression	350,000	40	140,000	50	70,000	20
AVERAGE		*149,860*	*25*	*44,449*	*25*	*23,496*	*13*
TOTAL		**1,198,880**		**355,589**		**187,965**	

While **Table 4** shows that the effective coverage of the site was generally low[3], many of these figures represent heavily disturbed and modified areas of the site such as transect 2 on Failford Road (**Plate 5**), both of which has been heavily modified by the current Pacific Highway and have virtually no potential for surface archaeological material. Generally, with between one and two Aboriginal community members and two HLA member standing roughly 15 metres apart, transects were some 45 to 60 metres or so wide, and typically these transects were walked over several times.

While the investigation did not completely cover the study area, the distribution and coverage of the seven transects allowed a comprehensive understanding of the study area and its archaeological potential. Overall the survey covered about 119 ha (actually 1,198,880 m^2), which represents over 100% of the proposed development area[4]. Of this, some 13% or 23.4 ha (actually to 23,496 m^2) had effective coverage.

[3] Although it should be noted that effective coverage survey values are generally between 0 and 20% and rarely exceed 20% due to high vegetation growth on the east coast of NSW.

[4] Broadly, the length of the road sections (3.3 km) multiplied by the average width of the proposed development area (between 100 to 250 metres) provides an area of about 990,000 m^2 (or 99 ha) for the overall proposed development area.

The following provides a brief description of each transect in relation to the landform, visibility and any sites found. The locations of all transects are presented in **Figure 3**. It should be noted that the proposed development area is situated along the current Pacific Highway and as such is generally heavily modified. Typically, these areas are manipulated for the benefit of the existing road, such as the development of batters or the cutting of slopes. In addition, services such as optic fibre cables are often located along the edges of the road for ease of access and maintenance. With regard to the creeks and streams that run throughout the study area, many of them appear to have been formed through the current road development (i.e. causing hydrological changes that focus runoff into one area, which leads to the formation of an ephemeral stream) and those that are naturally occurring are generally heavily modified.

Transect 1 began at the Failford Cemetery and ran in a north south orientation to the southern end of the proposed impact zone, a distance of some 700 metres. The transect encompassed two open depressions surrounded by shallow slopes (**Plate 1**). While no formal drainage channels were present in either depression, it was clear that water and drainage comes through these depressions from the hills to the west of the study area and empties in modified channels to the east, as discussed for transect 2. The slopes surrounding the depressions are typically very gentle to gentle becoming steeper to the south and west of the study area. A track leading to a property part way along this transect revealed an exposed soil profile, which consisted of a duplex soil, most likely a Kandosol (**Plate 2**). While the soil profile did not exhibit any obvious signs of truncation or recent movement, the angle of the slope and the heavy clearing of the region imply that this is not an *in situ* soil profile. Vegetation was variable but consisted largely of low dense grasses with sporadic copses of re-growth trees and weeds, such as lantana. No sites were located within this transect, although at the very southern end of the transect, a dead tree revealed a number of axe cuts of unknown age and has the potential to be a historical site (**Plate 3**) (see **Section 5.1.2** for discussion).

Interestingly, due to the ongoing Pacific Highway development at the southern end of the study area, a large vertical section cut through a nearby footslope revealed the angular Bundook beds of lithic sandstone, just below the present day surface (**Plate 4**).

Transect 2 was on the eastern side of the current Pacific Highway opposite transect 1. Transect 2 ran from the southern edge of the study area up to, and incorporating, Failford Road. The southern end of this transect had already been heavily impacted by the ongoing road construction in the area, specifically existing batters and spoil heaps (**Plate 5**). To the north of the impact was a minor tributary, the origins of which most likely come from the road focussing the drainage of the depressions to the west of the road within transect 1 into an artificial channel. To the north end of transect 2 was Failford Road, where there are existing impacts in relation to the existing Pacific Highway nearby and more recent optic fibre cables and other services (**Plate 7**). The transect consisted of a series of slopes leading up to Failford Road and vertical sections exposed within the area revealed a typical truncated duplex soil with a recent dark organic topsoil overlying a clay orange B horizon (**Plate 6**). While the interface between the A and B horizon was relatively sharp, indicating truncation, some intermixing and movement had obviously occurred between the two units indicating the high rate of pedogenesis in this region, most likely aided by high rainfall. Disturbances within this transect also include an existing property.

Transect 3 ran from Failford Cemetery in the south to an unnamed tributary about 600 metres to the north. The transect followed existing roads and easement of the Pacific Highway (**Plates 9** and **10**). The majority of the transect was heavily modified by the existing infrastructure with slopes and abutments being artificially created, particularly in the north of the transect. To the western side of the transect, natural soils where evident but heavily disturbed (**Plate 8**) - one of the most complete vertical soil profiles was located within this area and revealed a rudosol that has been affected by heavy erosion from upslope. The profile consisted of four depositional

units; sandstone bedrock overlain by a BC unit of dark organic sandy loam and abundant broken angular sandstone overlain by an A horizon of dark organic sandy loam truncated by an *ex situ*[5] BC horizon of dark organic sandy loam and broken angular sandstone. This latter BC unit clearly had eroded from upslope (in order for it to be overlying an A horizon) and truncated the soil profile downslope[6].

Transect 4 ran along the easement on the opposite side of the road from transect 3 in a north south orientation (**Plate 13**). Similarly to transect 3, it had been heavily impacted by the existing Pacific Highway, with the southern end of the transect being substantially ramped up to the road and the northern end being graded down to the road. The transect was composed of slopes, both natural and artificial, with a number of heavily modified (and possibly artificial) unnamed tributaries (**Plate 13**). Visibility in these areas was good, revealing bedrock in many locations with some truncated and eroding orange clay B horizon deposits sporadically located along the route. At the northern end of transect 4, the proposed development widens and encompasses a property on the corner of Bullocky Way. The property consisted of multiple gentle slopes, an artificial tributary that has been modified into a dam to the east and abundant numbers of regrowth trees (**Plates 14** and **15**). Exposure was reduced in this area but still revealed a minimal soil profile across the area.

Transect 5 ran along the median strip between the two sections of the existing Pacific Highway and revealed heavy disturbance and modification (**Plate 11**). The area was largely flat with an open depression in the centre for the development of a drainage system. The soil profiles and vegetation clearly demonstrated human modification, most likely during the original Pacific Highway construction.

Transect 6 ran from Bullocky Way to the end of the proposed impact zone in the north (**Plate 16**). The transect was undertaken along a series of cleared flat fields and contained two ephemeral streams, most likely formed due to the Pacific Highway's modification of the local hydrology, which focussed general surface runoff through two drains (**Plate 17**). No evidence of alluvial flats or any substantial soil profile was identified, although exposure was poor in this area.

Transect 7, opposite transect 6, ran from near the northern end of the study area to the end of transect 5 and encompassed Possum Bush Road (**Plate 18**). The proposed development in this area largely encompasses the road verge, which was heavily altered and truncated. Exposures revealed only truncated B horizons were present, the upper horizons having been removed.

Transect 8 was undertaken on a paddock located immediately north of the Pacific Highway and west of Lot 2 DP 851922. The study area was approximately 500 m by 700m and consists of a lower slope landform unit dissected asymmetrically by a second order creek running from the north east to the south west and disappearing into a concrete culvert running beneath the Pacific Highway (**Plate 19**). The creekline is ephemeral and located in the eastern half of the study area. Existing impacts to the paddock includes three sheds and cattle yards (**Plate 20**) in the south west against the fence line, the boundary fence and a dam (**Plate 21**). There is a stand of Eucalypts (regrowth) located in the southern half of the study area. The lower slope is broadly simple in morphology, although there is a break of slope in the south west corner where the slope form is concave. A further section of this transect was undertaken crisscrossing the paddock from north east to south west (fence line to fence line) spaced approximately 20 m apart and covering the entire paddock. Ground exposure was less than five percent with

[5] The terms "in situ" and "ex situ" are common terms in the archaeological arena, they mean in position or out of position, respectively. When discussing soils, the reference to something being "in situ" means it formed or developed in the place it is currently located, while "ex situ" suggests that that soil has moved or formed elsewhere.

[6] When a colluvial deposit, such as the BC unit here, moves downslope, it typically encapsulates and subsequently removes part of the soil profile it crosses. Here, we refer to the soil profile impacted as "truncated", which denotes a soil profile missing its upper units.

around 15 % visibility. Both A (skeletal brown silty loam) and B (brown orange light clay) horizon deposits were observed, in addition to organic dams, which in combination with land use would indicate that the soil profile has been truncated. No artefacts were observed.

Due to the condition of the study area (truncated soil profile) and its long-term and current land use (pastoral) the potential for archaeology to be found is assessed as low.

5.1 Sites Identified

5.1.1 Aboriginal sites

No Aboriginal sites were identified in the study area.

5.1.2 Historical sites

One historical site was identified as part of this study and its location is shown in **Figure 4** as a site of high sensitivity.

A dead tree that retains a number of springboard or axe notches was found in the southwestern corner of the study area opposite Carefree Road near Nabiac (**Plate 3**) (444795E, 6449957N). The tree, in poor condition, is in the very southwest corner of the study area. Current road construction in the area and future development will probably not affect the tree.

5.2 Interpretive Framework

One of the greatest drawbacks in consultancy-based archaeology is that the level of interpretation provided for individual development driven projects is constrained by unavoidable time and financial factors. There is an absence of rigorous regional or local government-funded archaeological studies which would serve to provide foundational research frameworks for subsequent studies. The result is a distinct lack of cohesion or connectedness across archaeological studies. Interpretations are often 'isolated' in being relevant to a particular study area only. The following section makes an attempt to address this issue. It does so by providing a model of regional archaeological structure based on a model developed by Foley (1981a; 1981b), at the same time providing further interpretive resolution by assessing site formation models. Although by no means the last word on the subject, it at least establishes a framework for interpreting archaeological versus natural patterning for the study area, as well as addressing the nature of the original archaeological patterning.

5.2.1 Site formation and integrity

Observations made during the survey were used to create a geomorphological model of the landscape in order to better understand the age and formation processes identified in the survey and their potential to retain archaeological deposits. This section aims to develop on **Section 3** which used previous studies to form site prediction.

Exposures identified on many of the slopes revealed a texture contrast or duplex soil, specifically a thin coarse silt/sand Oa or A1 onto a well developed clayey B horizon or bedrock. This discrepancy in sediment grain size indicates that the O/A horizon does not belong to the B horizon and, combined with the sharp contact between the two, indicates that the O/A1 is of colluvial origin and comes from upslope. The original topsoil has most likely been eroded into the drainage lines and river systems (**Figures 8** and **9**).

Examples of these colluvial processes can be seen on many of the slopes along the route, although good examples include transect 2 to the south of Failford Road (see **Plates 2** and **6**). The processes of sheetwash, soil creep and mass movement were also observed, such as in transect 3 opposite Failford Road (see **Plate 8**). This type of geomorphological activity essentially deposits archaeological material at the base of slopes and within alluvial flats (**Figure 5**). These types of sites can be considered to represent lag gravels, which include artefacts and natural gravels, rather than *in situ* knapping floors (single events) or knapping locations (multiple knapping events superimposed/overprinted over one another). The concentration of archaeological material in these locations therefore, represents natural accumulation (patterning) rather than archaeological accumulation. HLA suspects (based on multiple personal observations in this region) that much of the 'archaeological' site patterning recorded for the region actually represents natural site formation processes – a fact previously noted by Margrit Koettig's model for studies in other parts of NSW (Koettig & Hughes, 1985 - see **Figure 5**).

Due to these processes, which are accelerated through deforestation and development, areas such as ridgelines and crests will be almost devoid of sediments, these having slipped downslope (**Figure 9**). Indeed, large areas of exposed subsoil and bedrock can be seen along the survey on slopes and crests, exposed through the movement of sediments (**Plates 4** and **18**). Erosion, such as sheetwash (massive amounts of sediments being fluvially transported downslope with surface flow and deposition of sediments), is promoted by the absence of vegetation on exposed land surfaces noted during the survey.

Plates 2, 4 and **6** show that many of the transects are simply resting on exposed subsoil (truncated B horizon deposits) or an indurated C horizon or bedrock. The reason for this is the erosional nature of the landscape (see **Figures 8** and **9** in particular). For this reason, attempts at subsurface investigation are likely to be quite unsuccessful in these locations, particularly in regard to archaeological integrity.

It should also be noted that sections across this landscape revealed that most of the soil profiles were very thin before reaching bedrock (**Plate 4**). This means that even if *in situ* profiles were located, they would most likely be disturbed throughout their sequence by bioturbation (for example, the tendency for larger artefacts to move up a profile and smaller artefacts to move down a profile). Typically, these types of processes - which can exceed a metre below the surface - will move artefacts and stones, completely destroying their archaeological integrity.

Throughout the study area, evidence suggests that large areas have been previously altered through the long-term use of the site for accommodation, pastoralism and logging. For this reason much of the vegetation is recent regrowth, with many areas indicating very little topsoil is present (**Plate 10**). Human disturbance in some areas is still obvious, i.e. the existence of underground services and associated road infrastructure.

In summary, exposed areas, particularly on ridgelines and slopes, reveal a typical pattern of active downslope erosion through mass movement, soil creep and more extreme sheetwash. These deposits are aggrading at the base of slopes and in creek catchments. A common pattern can therefore be identified across the study area, with exposed bedrock and subsoil horizons on crests and slopes, following the erosion of their upper soil unit (subsequent to deforestation and clearing) downslope. These latter deposits accumulate at the base of slopes and in creek catchments and become integrated into the pedogenesis of these areas, often leading to the translocation and subsequent void filling of clay through the profile, promoting localised flooding.

5.2.2 Archaeological models

Models represent simplified representations of a more complex reality (Shaw and Jameson, 1999: 403). They can be used to tackle 'tactical' issues such as the break-up of stone artefacts, to larger 'strategic' problems such as the spread of microlith industries across Australia. Further, the model known as the 'statistical cycle' (after Orton, 1980) is an expression of the way that archaeologists interact with their material in a research (or consultancy) setting. This sees the relationship between theory and data as mediated through models, which vary in their complexity and expression. The distinct advantage of this approach is that it does not confine the archaeologist to any particular paradigm of research.

As indicated in **Section 5.2**, the basic model that will be utilised here to look at 'archaeological structure' (simply the way that artefacts are distributed across the landscape) is based on the work of Foley (1981a; 1981b). At a simplistic level, **Figure 6** (left image) graphically expresses what is considered to be a fair representation of the distribution of activities within a home range (the area in which resources are exploited), whilst **Figure 6** (right image) graphically expresses the subsequent pattern of artefacts. This model is based on the concept that archaeological data relates primarily to long-term, gross behavioural characteristics (Foley, 1981a: 1). The 'home range' is not tied in to any precepts concerning the short, medium, or long-term 'settlement' of a particular area. The home range concept can also be likened to 'site catchment analysis', a phrase first explicitly coined by Higgs in the 1970s (Vita-Finzi and Higgs, 1970), which refers to the evaluation of the natural resources within an easily exploitable distance of a given settlement or site. The limits of the model are (after Foley, 1981a: 1) "(a) that it applies primarily to small scale, mobile societies, principally hunter-gatherers; (b) that it is predominantly useful for populations using a lithic technology, and treats lithic artefacts only; and (c) that it is most appropriate in stable or degrading, moderately uniform landscapes with good surface visibility."

The basic hypothesis outlined by Foley (1981a: 2) was that the archaeological record is spatially continuous and the nature of the distribution should be viewed in terms of a variable artefact density across the landscape (what he called the "regional archaeological structure"). From HLA's general experience within NSW, it is rare that any given location within the landscape does not contain some evidence of Aboriginal archaeology – and only then because it has been disturbed or deposits removed or destroyed.

Foley (1981a: 2) considered that spatial continuity resulted from the operation of three processes: behaviour and discard (i.e. human activities such as making tools or gathering food-stuffs); accumulation (i.e. the archaeological record usually reflects repeated events 'superimposed' over one another such as a knapping location) (**Figure 7**); and post-deposition (i.e. processes that occur after a site has been abandoned such as burial, slope wash or ploughing). This is the theoretical basis of Foley's now famous (to archaeologists) "off-site" archaeological model. For the purposes of this study, post-depositional processes form the focus of assessment, since for many of the landforms present (particularly slopes and to a lesser degree alluvial terraces/flats), natural and post-Contact man-made processes have either created or exaggerated 'archaeological' patterning.

With the arrival of Europeans in Australia and the introduction of farming and the development of urban centres and associated infrastructure, the Australian landscape was (and continues to be) subject to a variety of processes detrimental to the stability of land surfaces, particularly soils. In effect, a landscape that was relatively stable (except at times of climatically introduced stress - e.g. the absence of vegetation due to smaller water budgets during the Last Glacial Maximum between c.27,000 – 17,000 years Before Present (BP) or localised cycles of erosion/deposition and soil formation within particular catchments) for long periods of time has, in the space of just over 200 years, been subject to problems of slope instability and the

subsequent erosion of soil mantles. These processes serve to alter the archaeological patterning of objects and sites, which includes processes that alter horizontal and vertical site integrity, in addition to removing and/or destroying Aboriginal sites. From the perspective of archaeological significance (cultural significance is different because Aboriginal people consider all Aboriginal objects and sites, regardless of condition, as significant), the study area has been markedly affected by deforestation, various slope processes, the action of water (rilling, gullying etc.) and direct human impacts like the construction of roads and dams. Furthermore, long-term pastoral practices have served to erode, destroy or rework archaeological artefacts and sites.

Figures 5, 6, 8 and **9** illustrate these processes in 'schematic' form. However, the general post-depositional processes indicated by these models are reasonably accurate (qualitative) representations of what happens to soil mantles (and the artefacts on and within them) when surface vegetation is removed or stressed and when soil mantles are eroded and/or reworked. There are techniques (largely borrowed and adapted by archaeologists from sedimentology and geomorphology) to ascertain the main post-depositional processes that have affected sites and artefacts. These range from specific archaeological techniques like the refitting of artefacts, to plotting 'rose' diagrams using orientation and dip data taken on artefacts.

5.2.3 Discussion

With the current understanding of general Aboriginal settlement patterns within the Forster and Port Macquarie regions, Aboriginal people are known to have been living in the area since the mid to late Holocene (5,000 years BP to present), although it seems likely people were moving through the area much earlier, possibly around or before the Last Glacial Maximum (c.27,000 – 17,000 years BP). The most common site type encountered is small open artefact scatters, although isolated finds, scarred trees, and stone arrangements are also present.

Based on archaeological surveys (and more limited test excavations) in the general areas surrounding the study area (see **Figure 1**), some basic conclusions can be reached concerning the nature and distribution of Aboriginal archaeological sites. Firstly, it can be concluded that all landforms surveyed have provided evidence of Aboriginal sites, including flats, slopes, benched areas, spurs and ridgelines. This picture is somewhat biased towards archaeological sites adjacent to water courses, creeklines and the time of year and density of vegetation cover encountered at the time of the archaeological surveys (affecting visibility and hence detectibility of archaeological sites). Furthermore, because of these issues of detectibility, Aboriginal sites are usually most visible in areas experiencing erosion. It is true to say that the ability to detect Aboriginal sites is largely influenced by this fact, in the absence of subsurface testing programs. The density of Aboriginal sites, however, varies according to landform. Taking into account Foley's model outlined above (see also **Figures 6** and **7**), this is to be expected.

With regard to this specific study area, there are few (if any) places within its curtilage that retain deep soil profiles with the potential for accumulating archaeological material. Abundant evidence indicates a downward movement of soils and sediments into drainage channels, leaving minimal soils and exposed bedrock on the ridges and crests reducing the likelihood of buried material.

One of the most obvious aspects of the general landscape context of the study area is the overall condition of the land. In most areas surveyed, topsoils were observed to be minimal (e.g. **Plates 2, 6, 11,** and **18**) and/or reworked from elsewhere. Furthermore, previous pastoralism, logging, road construction and other human activities have caused immense impact to the large areas of the current study area reducing the survivability and integrity of any potential archaeology (**Plates 4, 5, 7, 9, 11, 12, 15** and **18)**. Other detrimental processes, such as salt scalding that cause and intensify the erosion of soil mantles, are also present within the survey area.

In terms of general archaeological patterning (regional structure), the continuous exploitation of an area over time by hunter-gatherers leads to an increase in the absolute density of artefacts and the effects of blurring are seen ('accumulation' process described above). Hunter-gatherer people set up camps (be they short, medium or long-term) based on the habitat context (Foley, 1981b: 159) rather than the exact location of any particular settlement (for example, pastoralists re-using huts in upland pastures grazed only during the summer months). This is true of water courses and creeklines in general, where repeated visitation over very long periods of time can create a very dense archaeological pattern of stone artefacts (although the erosion and deposition of artefact concentrations by fluvial processes have to be considered and 'filtered' out). Conversely, sites on slopes, breaks of slope and footslopes are often the result of slope processes (water, gravity) and concentrate artefactual material to resemble sites (discussed in **Section 5.2.1** above). Finally, the more recent human actions (such as drainage excavations, dam construction etc) can expose sites.

6 ARCHAEOLOGICAL AND HISTORIC ASSESSMENT

This section outlines the archaeological potential and the historic significance of the site identified in **Section 5.1**.

6.1 Archaeological Potential

The assessment of the archaeological potential of each survey unit is based on the following three criteria (following the discussion in **Section 4.2**). Terrain integrity is also considered a criterion, but is integrated within the general discussion of significance in **Section 6.2**:

Criterion 1: The presence of known surface archaeological materials.

The known locations of previously recorded archaeological sites within the study area have been plotted on the topographic map of the region (**Figure 1**). A review of archaeological work in the region and the AHIMS site cards, as well as the archaeological survey and assessment, have identified that a number of previously recorded sites are near the study area.

Thirty nine known sites are located within a 20 km radius of the study area based on the AHIMS search. Of these, the majority (50%) represent open camp sites (artefact scatters) with scarred trees and middens (largely along the coast) making up the remainder. Therefore, although the numbers of archaeological sites recorded in the general area is low (particularly if one compares this area to other areas of NSW), this is almost certainly an underestimation based on the paucity of archaeological studies in the area, compounded by the active colluvial and erosional landscapes that serve to truncate, bury or remove archaeological sites.

Criterion 2: The probability of undetected surface archaeological materials.

The probability of undetected surface materials occurring within the study area is assessed on a number of characteristics. These include:

- The analysis of effective ground surface visibility within the study area.
- The terrain context and integrity of areas.

Ground surface visibility is the most common obstacle in the detection of archaeological material. Low, dense vegetation limits effective survey coverage to a low, or moderately low level. The likelihood of detecting surface archaeological materials in these densely vegetated areas is low. Therefore, this assessment relies on the terrain context and the level of landscape integrity within each transect.

The terrain integrity within the study area has been documented to identify whether archaeological material could still be found in those areas, or whether they would have been removed as a result of past disturbance. The probability (classified as low, moderate or high) of surface archaeological materials occurring within specific landscape contexts may then be considered.

Ground exposure was highly variable across the study area, dependent upon where grass cover was very dense. Surface exposure varied between 5% and 70% (average 23%), where visibility within these exposures was between 5% to 70% (average visibility 29%). This means that the average land area available for the detection of Aboriginal archaeological sites was highly variable, ranging from 0% to 80%. The average area available for detection in any particular landform for the study area was 12%. While the lack of visibility does provide potential for undetected sites, the lack of topsoils in many places, combined with their colluvial nature

when present, indicates that the potential for archaeological material within the study area is low.

Criterion 3: The probability of subsurface archaeological materials.

The assessment of the subsurface archaeological potential of the survey area is based on a number of criteria, including:

- The known patterning of surface and subsurface archaeological materials throughout the local region.
- The terrain characteristics of known archaeological (surface and subsurface) sites.

The field survey examined terrain contexts where subsurface archaeological materials may have occurred in currently uncleared land, such as in upturned tree bowls or exposed sections, but failed to find any evidence. This information allows the probability (classified as low, moderate or high) of subsurface archaeological materials occurring within specific landscape contexts to be established.

Existing levels of terrain integrity and the demonstrated patterns of the surface and subsurface distribution of archaeological materials in the study area were used as the main evidence in the following evaluation. As there is only very limited evidence of buried archaeological material (i.e. known stratified sites) in the region, this evaluation is based upon the potential for intact natural soils to exist. Following geomorphological models (see **Section 5.2.1**) and vertical sections sporadically located across the study area, evidence suggests that the area has undergone massive erosion and truncation with the remnants of a B horizon under relatively modern colluvial topsoils (which are not always present). This form of soil profile, both by its very nature and through previous archaeological excavations across NSW by HLA, implies a very low potential for any buried *in situ* archaeological materials.

6.1.1 Zones of Archaeological Potential

Zones of archaeological potential can be delineated on the basis of this assessment of the probability of additional archaeological material occurring in the study area. This assessment relates to the probability of material occurring and does not address scientific significance or the cultural significance of the material to Aboriginal community members.

Low or Nil Archaeological Potential

The areas indicated on **Figure 4** that are affected by the human structures, underground services, and/or roads or represent areas where skeletal soils and/or etch surfaces dominate, are assessed to be of low or nil archaeological potential, where archaeological material is unlikely to occur as the terrain has been significantly altered.

Moderate Archaeological Potential

No areas of moderate archaeological potential were located within the study area.

High Archaeological Potential

No areas known to contain surface or sub-surface archaeological materials or sites were identified within the study area.

However, notwithstanding this assessment, because the Failford Road Scarred Tree is most likely to be over 50 years old, it fulfils the definition of a 'relic" under the *Heritage Act (1977)*, as outlined in **Section 7.1**. Therefore, this site is considered to be of high archaeological potential.

6.1.2 Cultural significance

Following the survey, the Aboriginal communities involved in this consultation process were asked formally to provide a statement of cultural significance and a response to the management recommendations outlined in the draft copy of the report sent with the letter.

An initial response (prior to the distribution of this report) was received from Rob Yettica on 13 January 2006. His comments outlined his endorsement of the survey and identified no Aboriginal sites or objects within the study area. Hence, he had no comments to make regarding the cultural significance.

6.2 Historical Assessment

This section addresses each of the assessment criteria outlined in **Section 4.3** and how they apply to the site identified in **Section 5.1**, namely the Failford Road Scarred Tree.

> ***Criterion (a)*** *– an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).*
>
> The Failford Road Scarred Tree is not relevant to this significance criterion.
>
> ***Criterion (b)*** *– an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local to area).*
>
> The Failford Road Scarred Tree is not relevant to this significance criterion.
>
> ***Criterion (c)*** *– an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).*
>
> The Failford Tree Scarred Tree reveals locally significant technological features and aspects of logging in the late 19th Century, namely switchboard grooves.
>
> ***Criterion (d)*** *– an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.*
>
> The Failford Road Scarred Tree is not relevant to this significance criterion.
>
> ***Criterion (e)*** *– an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area).*
>
> The Failford Road Scarred Tree is not relevant to this significance criterion.
>
> ***Criterion (f)*** *– an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).*
>
> The Failford Road Scarred Tree is not relevant to this significance criterion.

Criterion (g) *– an item is important in demonstrating the principal characteristics of a class of NSW's:*

cultural or natural places; or

cultural or natural environments

(or a class of the local area's:

cultural or natural places; or

cultural or natural environments).

The Failford Road Scarred Tree is not relevant to this significance criterion.

Based on the research discussed here, the assessed significance of the identified site is presented in **Table 5**.

Table 5: Historical Significance Assessment

Heritage Item	Significance Criteria							Significance Grading*
	A	B	C	D	E	F	G	
Failford Road Scarred Tree			X					Little

***** refer to **Table 2** in **Section 4.3** for definitions.

The historic site identified as part of the archaeological assessment, while of technical significance, reveals little about the activities and culture of the area. Switchboard grooves identified in the tree stump reveal a particular logging technique common to the late 19th Century. These features are common across NSW and simply indicate that logging occurred in the study area, information which was previously known. This item is not considered to be able to provide additional information on the cultural heritage of the area, and as such is not considered of any great Local or State significance.

6.3 Summary

The archaeological survey and assessment considered the survey area in terms of low, moderate or high archaeological potential. The assessment was based on three criteria: the presence of known surface archaeological materials, the probability of undetected surface archaeological materials, and the probability of subsurface archaeological materials. In short, the assessment was based on the results of the field survey within the broader framework of the archaeological understanding of site distribution within this region.

In summary, there is a low to nil potential for *in situ* archaeological material to occur in the areas affected by previous development, i.e. roads, services, or buildings or areas where skeletal soils and/or etch surfaces dominate. These areas are considered to be the whole of the study area.

No areas were considered to retain moderate archaeological potential. The Failford Road Scarred Tree has been identified as being of local significance, since it is considered a historical relic, and as such is protected under the *Heritage Act 1977.* For this reason, the Failford Scarred Tree has been delineated as a zone of high archaeological potential.

Table 6 and **Figure 4** present the archaeological potential of all sites and areas.

Table 6: Summary of Archaeological Potential of Areas Examined

Low or Nil Archaeological Potential	Moderate Archaeological Potential	High Archaeological Potential or Site(s) Identified
Areas impacted by human structures, underground services and/or roads, in addition to areas indicating skeletal soils and etch surfaces on upper to mid slopes and ridgelines were considered as low to nil archaeological potential. This is the majority of the study area.	No areas were identified as of moderate potential.	One site has been identified as of local historical significance, namely Failford Road Scarred Tree.

7 STATUTORY CONTROLS AND MITIGATION MEASURES

This section discusses the statutory controls relating to Aboriginal and historical heritage and proposes a management strategy, including appropriate mitigation measures, for the site.

7.1 Statutory Controls

Sites of cultural heritage significance are protected or controlled by a number of varying levels of statutory control that vary according to Authority and site type. The nature and levels of controls on the project area are set out below.

COMMONWEALTH

Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation (EPBC Act) Act, 1999* requires the approval of the Commonwealth Minister for the Environment and Heritage for actions that may have a significant impact on matters of National Environmental Significance (NES).

As of 1 January 2004 the EPBC Act also provides for the identification, conservation and protection of places of national heritage significance as a matter of NES. In addition the EPBC Act provides for the management of Commonwealth heritage places and establishes the Australian Heritage Council.

Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Heritage Protection Act) is the principal Commonwealth legislation protecting Aboriginal heritage. The Act complements State and Territory legislation and is intended to support State and Territory laws and processes.

Under the Heritage Protection Act the responsible Minister can make temporary or long-term declarations to protect areas and objects of significance under threat of injury or desecration. The Heritage Protection Act also encourages heritage protection through mediated negotiation and agreement between land users, developers and Indigenous people.

Since the passage of this legislation:

- around 200 applications have been lodged under the Act;
- eight declarations have been made protecting objects of significance to Indigenous people;
- emergency (i.e. temporary) declarations have protected five significant places; and
- two long-term declarations remain in place, one protecting women's sites under threat from a dam near Alice Springs and the other (with effect from July 2000) protecting Boobera Lagoon in northern New South Wales.

On 17 December 1998 responsibility for administration of the Heritage Protection Act was transferred by Administrative Arrangement Orders from ATSIC to the Environment and Heritage

portfolio and the Heritage Protection Act is now administered by the Department of Environment and Heritage (DEH).

NEW SOUTH WALES

***National Parks and Wildlife Act* (1974)**

The *National Parks and Wildlife Act* (1974) (NPW Act) was amended in 2001 and some of the terms relating to Aboriginal archaeology were changed and the provisions tightened.

Under the provisions of the NPW Act 1974 (as amended), Aboriginal archaeological sites are defined as Aboriginal objects (formerly called relics). Aboriginal object "*means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains*".

It should be noted that this definition technically would seem to exclude PADs as they are clearly not deposits, objects or material evidence but are only areas with the potential for deposits.

The most relevant section of the legislation is section 90, which deals with the destruction of Aboriginal objects and is reproduced below.

90 Destruction etc of Aboriginal objects or Aboriginal places

(1) A person must not destroy, deface, damage or desecrate, or cause or permit the destruction, defacement, damage or desecration of, an Aboriginal object or Aboriginal place.

Maximum penalty: 50 penalty units or imprisonment for 6 months, or both (or 200 penalty units in the case of a corporation).

(1A) Subsection (1) does not apply with respect to an Aboriginal object that is dealt with in accordance with Aboriginal tradition pursuant to section 85A.

(1B) Subsection (1) does not apply with respect to an Aboriginal object or Aboriginal place that is dealt with in accordance with a heritage impact permit issued by the Director-General.

(1C) It is a defence to a prosecution for an offence against subsection (1) if the defendant shows that:

(a) he or she took reasonable precautions and exercised due diligence to determine whether the action constituting the alleged offence would, or would be likely to, impact on the Aboriginal object or Aboriginal place concerned, and

(b) the person reasonably believed that the action would not destroy, deface, damage or desecrate the Aboriginal object or Aboriginal place.

(2) The Director-General may issue a heritage impact permit subject to such conditions and restrictions as are specified therein.

(2A) The Director-General may take action under subsection (2) in relation to an Aboriginal object or Aboriginal place listed on the State Heritage Register (within the meaning of the Heritage Act 1977) only after consulting the Director of the Heritage Office.

(3) A person whose application for a heritage impact permit is refused, or who is dissatisfied with any condition or restriction subject to which a heritage impact permit is given, may appeal to the Minister.

(4) The Minister:

(a) may refuse to grant the appeal, or

(b) may grant the appeal wholly or in part, and may give such directions in the matter as seem proper.

(5) The decision of the Minister on the appeal is final and is binding on the Director-General and the appellant, and shall be carried into effect accordingly.

(6) Where the regulations prescribe:

(a) the manner in which an appeal is to be made under this section—the appeal shall be made in that manner, or

(b) the period within which an appeal is to be made under this section—the appeal shall be made within that period.

(7) Where the Director-General fails to grant an application (other than an application for approval in respect of integrated development within the meaning of section 91 of the Environmental Planning and Assessment Act 1979) for a heritage impact permit, the application shall, for the purposes of this section, be deemed to be refused upon the expiration of:

(a) subject to paragraph (b)—7 days after the application was received by the Director-General, or

(b) where the regulations prescribe some other period—that other period.

(8) If a court finds a person guilty of an offence under subsection (1), the court may, in addition to or in substitution for any pecuniary penalty for the offence, direct the person to take any action to mitigate the damage to, or to restore, the Aboriginal object or Aboriginal place concerned or to take such other action in relation to the Aboriginal object or Aboriginal place as the court considers appropriate in the circumstances.

(9) The court may specify the actions to be taken to mitigate the damage or to restore the Aboriginal object or Aboriginal place under subsection (8) and may order the person to provide security for the performance of any obligation imposed under that subsection.

It should be noted that section 90 applies to all Aboriginal objects irrespective of whether they are considered to be disturbed or not. The issue is whether reasonable precautions and due diligence was exercised to determine whether an Aboriginal object or place was going to be destroyed, defaced, damaged or desecrated or not. Thus if an area was identified as having archaeological potential and was disturbed or destroyed, the defence of reasonable precautions and due diligence would not be available.

Section 87 of the Act covers permits to allow certain actions under section 86. This includes disturbing or excavating any land, or causing any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object.

Environmental Planning and Assessment Act (1979)

The *Environmental Planning and Assessment Act* (EP&A Act) requires that consideration be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts are interpreted as including cultural heritage impact. Three parts of the EP&A Act are most relevant to Heritage. Part 3 relates to planning instruments including those at local and regional levels, Part 4 controls development assessment processes and Part 5 refers to approvals by determining authorities.

Under the EP&A Act, Environmental Planning Instruments (EPIs) typically have provisions that protect items of environmental heritage. The proposed development is a 'designated development' as listed under Schedule 3 of the *Environmental Planning and Assessment Regulation 2000*.

Heritage Act (1977)

The *Heritage Act* (1977, amended 1999) is legislation designed to facilitate the effective management of the heritage of New South Wales. In respect of archaeology, the Act affords protection to 'relics'. A relic is defined under the Act as:

> *Any deposit, object or material evidence relating to the settlement of the area that comprises NSW, not being an Aboriginal settlement, and which is fifty or more years old.*

Protection provisions are set out in section 139 of the Act, which states:

> 1) *A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*
>
> 2) *A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*

For relics listed on the State Heritage Register, a permit under section 60 of the Act is required to carry out activities that will result in removal or any form of disturbance. Unlisted relics are also afforded protection under the Act and a permit under section 140 is required for removal or disturbance. Permit applications are submitted to the NSW Heritage Office and processing applications can take from three to eight weeks or more.

If the proposed works are only minor in nature, and will have minimal impact on the heritage significance of the place, they may be excepted from the provisions of section 139. On 7 March 2003 the Minister for Planning revoked all existing standard exceptions and granted new exceptions. The new standard exceptions relate to a broader range of minor development and will result in a more streamlined heritage approval process. Wording relating to these exceptions is set out below.

> *'Excavation or disturbance of land of the kind specified below does not require an excavation permit under section 139 of the Heritage Act provided that the Director of the New South Wales Heritage Office (the Director) is satisfied that the criteria in (a), (b) or*

(c) have been met and the person proposing to undertake the excavation or disturbance of land has received a notice advising that the Director is satisfied:

(a) where an archaeological assessment has been prepared in accordance with Guidelines published by the Heritage Council of New South Wales which indicates that there is little likelihood of there being any relics in the land or that any relics in the land are unlikely to have State or local heritage significance;

(b) where the excavation or disturbance of land will have a minor impact on the archaeological resource;

(c) where the excavation or disturbance of land involves only the removal of fill which has been deposited on the land.

A person proposing to excavate or disturb land in the manner described in paragraph 1 must write to the Director and describe the proposed excavation or disturbance of land and set out why it satisfies the criteria set out in paragraph 1. If the Director is satisfied that the proposed development meets the criteria set out in paragraph (a), (b) or (c) the Director shall notify the applicant.'

7.2 Management Strategy

This project involved the Aboriginal and historic heritage investigation of a section of the existing Pacific Highway between Failford Road and Tritton Road near Nabiac. The survey investigated over 80% of the study area, with effective coverage being acceptable but low due to substantial vegetation cover.

The majority of the proposed development areas are within 50 m of the existing Pacific Highway, which has had substantial effects on the surrounding area, most notably the modification of the surface drainage into single channels. Other impacts include the levelling and grading of the road, forming substantial easements and slopes leading to and from the road. In the Failford Road area, substantial clearing and farming has promoted soil erosion and vegetation removal.

While the effective coverage across much of the study area was limited due to the dense vegetation, exposures and sections combined with the relief of the study areas revealed that the potential for archaeological site retention in the two areas was poor. Soil profiles reveal only a thin layer of topsoil in places, overlying truncated B horizon deposits or bedrock. Furthermore, the topsoil has clear evidence of being recent and/or colluvial in nature and indicates downslope movement of sediments and materials (Figures 7, 8 and 9). The relief of the study area is highly variable but is generally gentle to moderately steep slopes with some elements of flattened spurs and crests. These types of environment were not particularly conducive to Aboriginal settlement, as discussed below.

Given the existing regional information of Aboriginal studies in the area, it seems likely that the Nabiac region appeared to have consisted of relatively semi- settled populations, with major river corridors serving as a focus of activity. Furthermore, according to available ethnographic data, Aboriginals appear to have been present throughout all parts of the river valleys throughout the year. In the case of the study area, there is no evidence of large permanent water courses, the nearest being Wallamba River some distance to the south.

In relation to historic heritage, the information on the areas is reasonably well known. Early land use consisted of logging, agriculture and pastoralism with the focus of activities largely occurring near Forster and Nabiac. Potential archaeological sites include foundations and

structures relating to these industries, although due to the heavy modification (or general underdevelopment in the case of State Forests' lands) of the study area, only limited historical heritage was located.

Only one historical site was identified in the study area, namely the Failford Road Scarred Tree. This site is to the south of Failford Road and opposite Carefree Road. The Failford Road Scarred Tree consists of the remains of a Eucalypt with switchboard/axe grooves to one side. These features clearly relate to logging activities in the region, but it is impossible to determine the date of the grooves and hence the site is considered to have little significance but high archaeological potential.

If there is any likelihood of the roadworks affecting this site, then consultation with the NSW Heritage Office and archival recording of the site should be undertaken prior to this and a S.139 Exception be obtained. Given the site's association with logging and the past and present logging throughout the area, relocation of the tree is a possible management strategy that would retain its cultural landscape.

7.3 General Recommendations

- Aboriginal objects are protected under the NPW Act (as amended), regardless of location. Should any objects be identified during the course of site works, all works must cease and the DEC (Northeastern Branch, EPRD, Regional Archaeologist) contacted in regard to appropriate permit requirements before any further impact is undertaken.
- Historical relics are protected under the *Heritage Act 1977*, regardless of location. Should any relics be identified during the course of site works, all works must cease and the NSW Heritage Office contacted in regard to appropriate permit requirements before any further impact is undertaken.
- Should **suspected** skeletal material be uncovered during the course of site works, all works must cease and the DEC, the NSW Police and the NSW Coroner's office contacted immediately, **regardless** of any existing DEC permits for the proposed development.

7.4 Specific Recommendations

- Based on visual observations and GPS co-ordinates, it seems unlikely that the Failford Scarred Tree will be impacted by the proposed development footprint. Hence, no further action is required by the RTA in relation to this site. If, however, the Failford Scarred Tree is to be affected or destroyed through the proposed development, there should be notification to the NSW Heritage Office regarding a determination as to whether the intended impact falls under an existing exemption or requires a Section 139 permit. Regardless of the NSW Heritage Office's decision, the preservation and archival recording of the Failford Road Scarred Tree should be considered;
- All contractors who work within the confines of the study area should be made aware of the NPW Act 1974 (as amended) and the fact that it is an offence to move, disturb or destroy Aboriginal objects without the written permission of the Director General of the DEC. Should Aboriginal objects be located outside of the area covered by any S90 permit, or suspected skeletal material found, all works should cease and the DEC Regional archaeologist for Northeastern Branch, EPRD contacted immediately.

8 REFERENCES

Barker, B (2004). The Sea People: Late Holocene Marine Specialisation in the Whitsunday Islands, Central Queensland. Pandas Books: The Australian National University.

Birrell, W. (1987). The Manning Valley. Landscape and Settlement. Jacaranda Press: Sydney

Bonhomme, T. (1988). An Archaeological Survey and Preliminary Assessment of Sites in the Proposed North Tuncurry Development Area, NSW. A Report to the Great Lakes Shire Council, Forster, NSW.

Boyce, J. (1984). A History of Coolongolook and District. Coolongolook, NSW.

Brayshaw, H. (1977). Report of an archaeological survey of the route of a proposed transmission line between Taree and Kempsey.

Byrne, D. (1984). Archaeological Survey for a Proposed Quarry Crushing Plant at Nabiac, NSW. Report to Lance B. Forster.

Breton, W.H. (1833). Excursions in N.S.W., W.A. and Van Dieman's Land. 1880-1833. London
Camden Haven Historical Society (CHSS) (1987) Early History of Camden haven. LJ Lane Print Laurieton Bay: Laurieton.

Butzer, K. (1976). Hydraulic Civi1ization in Egypt. Chicago.

Butzer, K. W. (1982). Archaeology as Human Ecology. Method and Theory for a Contextual Approach. Cambridge.

Coffey (2001). Bundacree Creek to Possum Brush. Upgrade of the Pacific Highway 137.5 km to 147.2 km North of Newcastle. Volume 4. Environmental Impact Statement. Appendix N Geotechnical Assessment. Report Prepared for Sinclair Knight Merz by Coffey Geosciences.

Collins, J. (2001). Tuncurry Sewage Transfer to Hallidays Point and Upgrade of Hallidays Point WWTP. Aboriginal Archaeological assessment. Prepared for Mid Coast Water, Taree.

Cunningham, P. (1827). Two Years in New South Wales. London.

Curran, N. and L. Gay (1997). Duplication of the Pacific Highway between Bundacree Creek and Possum Brush. Part A: Indigenous Heritage, Preliminary Assessment. Report prepared for Sinclair Knight Merz.

Davies, S. (1991). An Archaeological Assessment of the Proposed Telecom Optic Fibre Cable Route between Squires Hill Road and Tritton Regenerator stations, Central Coast, NSW. Report to Telecom Australia.

Davies, S. (1993). An Archaeological Assessment of Ten Telecom Optic Fibre Cable Routes Located Between Gosford and Wauchope, Central Coast, NSW. A Report to Telecom Australia. Department of Anthropology and Sociology, The University of Queensland: St Lucia.

DMR (1991). Bulahdelah Geological series 1:100000. NSW Department of Mineral Resources.

DoP & NPWS (1989). Aboriginal heritage of the North Coast. A Discussion Paper prepared by the Department of Planning and the National Parks and Wildlife Service. Department of Planning; Grafton.

Ecotone (2000). Bundacree Creek to Possum Brush. Upgrade of the Pacific Highway 137.5 km to 147.2km North of Newcastle. Volume 3. Environmental Impact Statement. Appendix L Flora and Fauna Working Paper. For Sinclair Knight Merz and the Roads and Traffic Authority by Ecotone Ecological Consultants.

Fitzpatrick, F.A. (1914). Peeps into the Past. Cumberland Argus Ltd, Parramatta.

Foley, R (1981a). A model of regional archaeological structure. Proceedings of the Prehistoric Society 47:1-17.

Foley, R. (1981b). Off-site archaeology and human adaptation in eastern Africa: an analysis of regional artefact density in the Amboseli, southern Kenya. Oxford: British Archaeological Reports International series 97. Cambridge monographs in African archaeology 3.

Gay, L. (1999). Appendix K Non-Indigenous Heritage Assessment Bundacree Creek and Possum Brush. In: Environmental Impact Statement. Bundacree Creek to Possum Brush.Upgrade of the Pacific Highway 137.5 km to 147.2km North of Newcastle, Volume 3. Report to Sinclair Knight Merz.

Gilbert, L.A. (1954). The History of Nabiac and District. Taree.

GLCHS (2004). Great Lakes Heritage Study, Draft May 2004. Great Lakes Council and Heritage Office.

Haglund, L. (1992). Report on an Aboriginal Relics Survey of a Telecom Cable Route near Port Macquarie, NSW.

HO & DUAP (1996). Regional Histories of New South Wales. Heritage Office and Department of Urban Affairs and Planning: NSW.

Kerr,J (2000). The Conservation Plan. National Trust NSW: Sydney.

Klaver, J. and K. Heffernan (1991). Greater Taree Aboriginal Heritage Study. Technical Report and Conservation Study. Report to Greater Taree City Council.

Koettig, M., and P. J. Hughes (1985). Archaeological Investigations at Plashett Dam, Mount Arthur North, and Mount Arthur South in the Hunter Valley. Vols 1 - 3. Report to the Electricity Commission of NSW and Mount Arthur South Coal Pty Ltd.

Lines-Kelly, R (2000). Soil Sense: Soil management for NSW North Coast Farmers. North Coast Soil Management Working Party, NSW Agriculture and Acid Soil Action: NSW.

McDonald, R. C., R. F. Isbell, J. C. Speight, J. Walker, and M. S. Hopkins (1998). Australian Soil Survey and Land Survey Field Handbook: Canberra, CSIRO.

Mills, R. and J. Kelton (1998). Report on the Sub-surface Archaeological Testing Program for the Upgrade of the Pacific Highway from Coolongolook to Wang Wauk River. Report to Sinclair Knight Merz.

Mitchell McCotter (1994). Proposed Toll Road Coolongolook to Possum Brush Environmental Impact Statement Volume 1 & 2. Report to the RTA prepared by Mitchell McCotter & Associates Pty Ltd.

Moran, D. (1987). The History of Failford and the Wallamba River District. Tuncurry.

Navin, K. (1992). Archaeological Survey for Aboriginal Sites: Middle Brother Mountain, North of Taree, NSW. Report to Sinclair Knight & Partners Pty Ltd.

Navin, K and J. Klaver (1993). Pacific Highway Realignment Bulahdelah to Failford Deviation. From Ferny Creek to Failford Road. EIS: Aboriginal Archaeological Component. Navin Officer Archaeological Resource Management. Report to Mitchell McCotter and Associates.

Navin Officer (2001). Moorland to Herons Creek Pacific Highway Upgrade Route Selection Study. Cultural Heritage Assessment. Report prepared by Navin Officer Heritage Consultants to Ove Arup and Partners.

O'Conner, S. (1992). The timing and nature of prehistoric island use in northern Australia. Archaeology in Oceania 27:49-60.

Orton, C. (1980). Mathematics in Archaeology. Cambridge, Cambridge University Press.

Oxley, J (1820). Journal of two expeditions into the Interior of New South Wales. Facsimile Edition 1964, Libraries Board of South Australia Adelaide.

Pierce, R.G. (1971). The effects of aquatic foods on the diet and economy of the Aborigines on the north coast of New South Wales at the time of first European settlement. BA (Hons) Thesis, University of New England.

Rich, E. (1990a). Aboriginal Historic Sites in North East NSW: Management Study. Report to NSW NPWS and the Australian Heritage Commission.

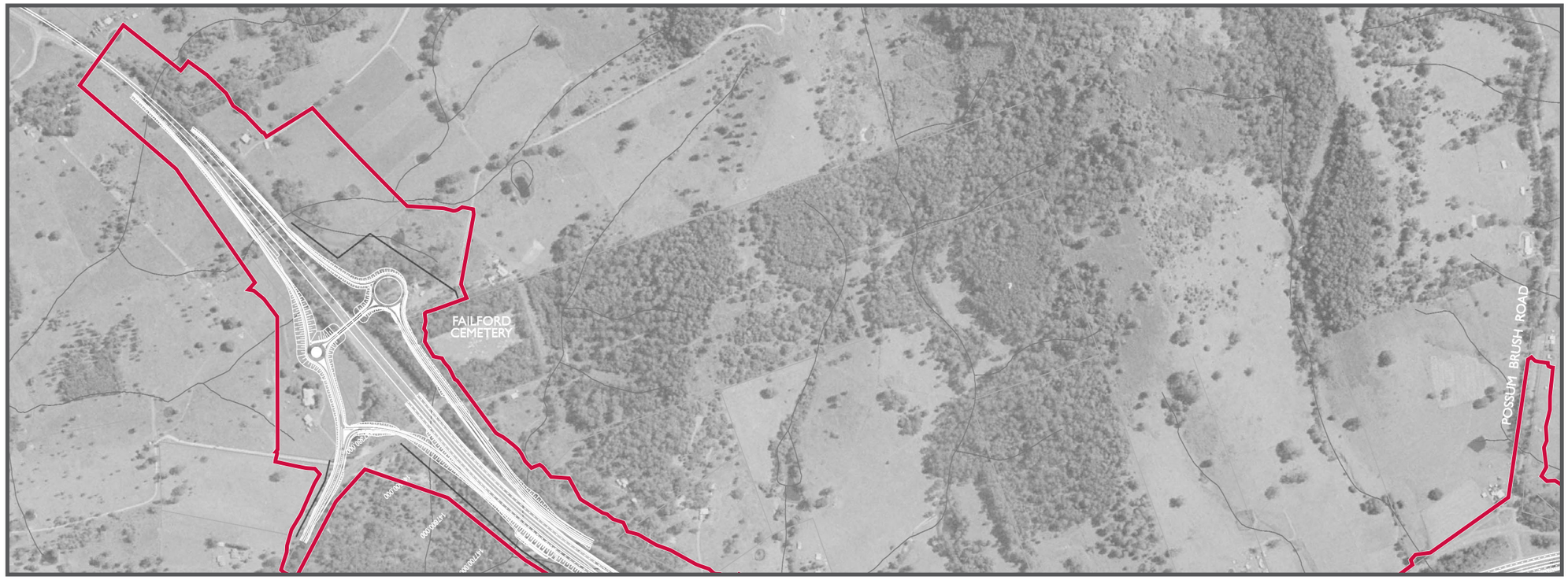
Rich, E. (1990b). Proposed New Road Bulahdelah to Coolongolook Archaeological Survey for Aboriginal Sites. Report Prepared for Envirosciences Pty Ltd. July 1990.

Shaw, I. and R. Jameson (1999). A Dictionary of Archaeology. Malden Mass, Blackwell Publishers.

Tindale, N. (1974). Aboriginal Tribes of Australia. University of California Press.

Vita-Finzi, C. and E. Higgs (1970). Prehistoric Economy in the Mount Carmel area of Palestine: Site Catchment Analysis. Proceedings of the Prehistoric Society 36: 1-37.

Figures



Southern Section

Northern Section

PROJECT-FILE NAME	**N6033102**
DATE	**11 July 2006**
DRAWN	**TO**
APPROVED	

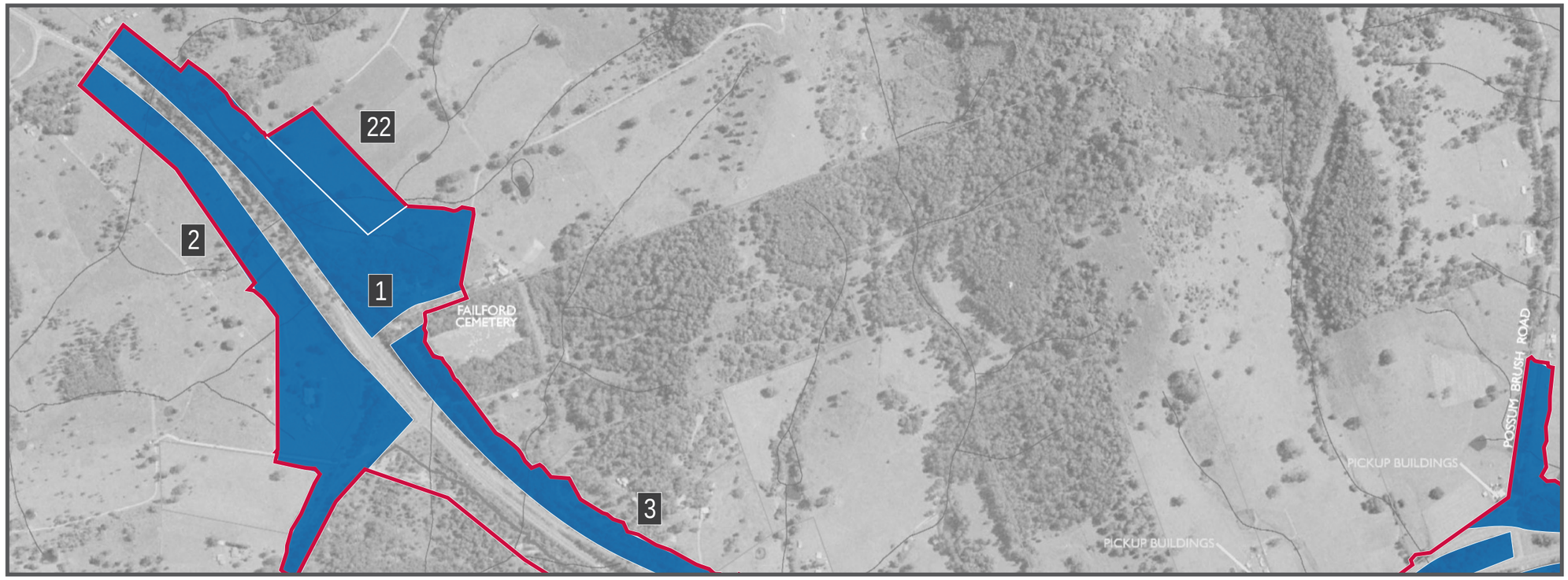
Study area

Proposed Development Area
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment -
Failford Road to Tritton Road NSW

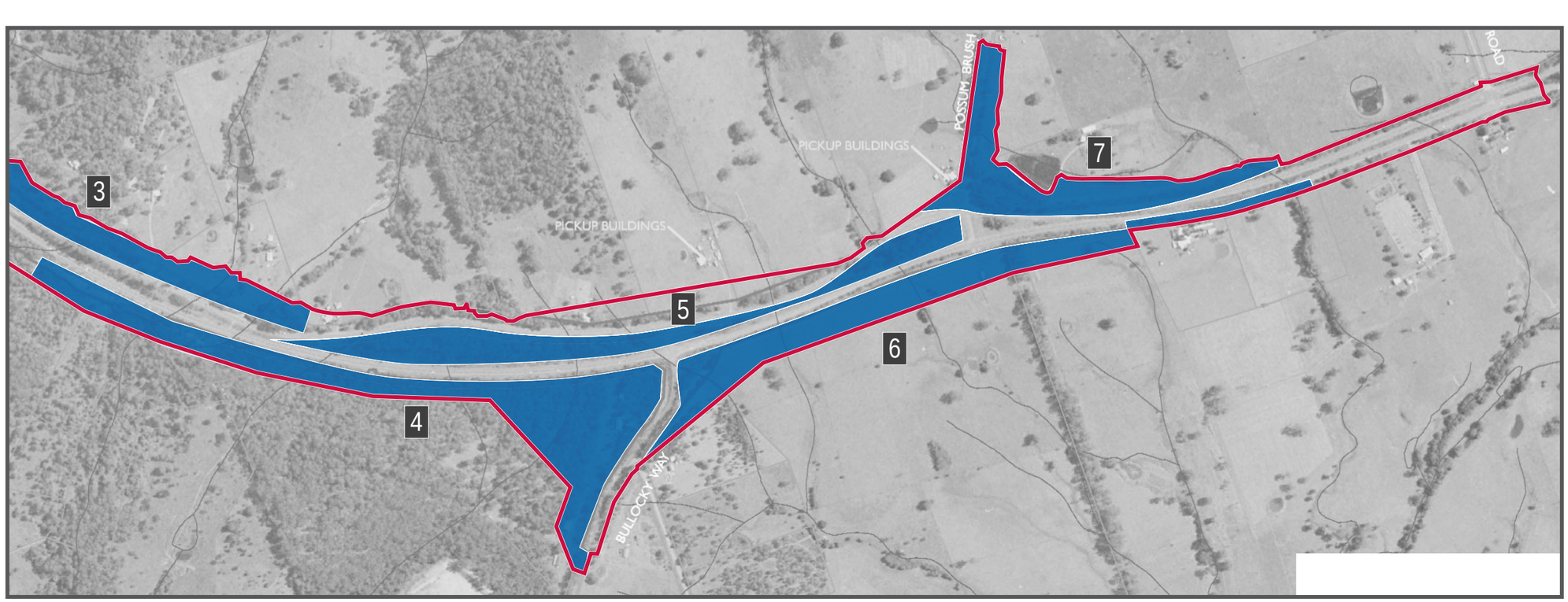
HLA

0 250m

FIGURE **2**



Southern Section



Northern Section

PROJECT-FILE NAME	N6033102
DATE	11 July 2006
DRAWN	TO
APPROVED	

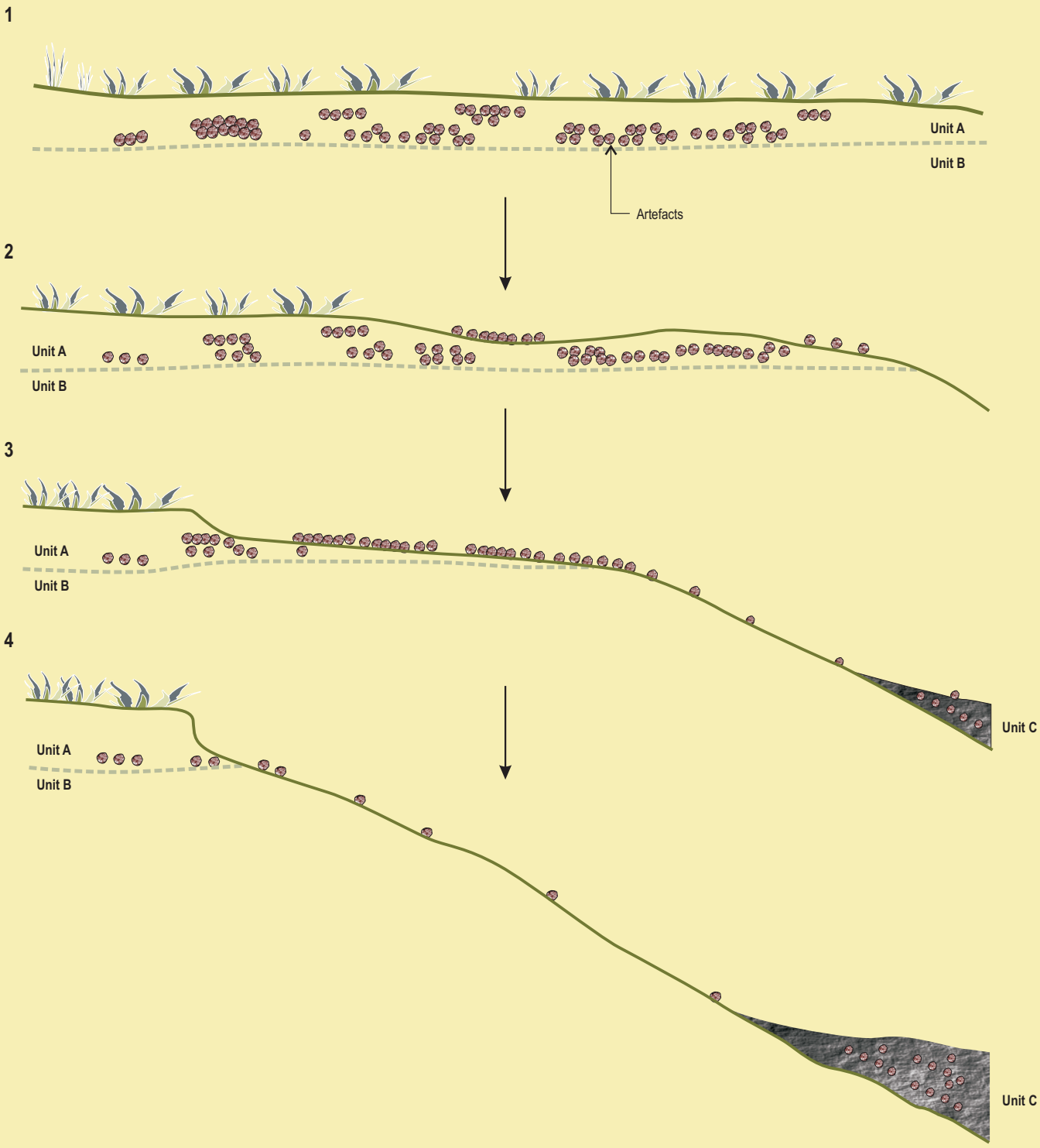
Study area
Survey transect

Map of Survey Transects
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment -
Failford Road to Tritton Road NSW

HLA

0 250m

FIGURE 3



1= Before erosion commences, Unit A over Unit B
2= Sheet erosion reveals some archaeological material across the unit
3= Sheet wash and gullying expose the base of Unit A and Also Unit B / the artefacts are redeposited in the reworked soil at the base of the slope (Unit C)
4= Mostly Unit B exposed / artefacts have been moved and incorporated into the reworked deposit at the base of the eroding face

HLA

Koetigg's Model of Site Formation and Post - Depositional Processes (Koetigg et al 1985)
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment - Failford Road to Tritton Road

FIGURE
5

PROJECT-FILE NAME **N6033102** DATE **6 February 2006** DRAWN **TO** APPROVED

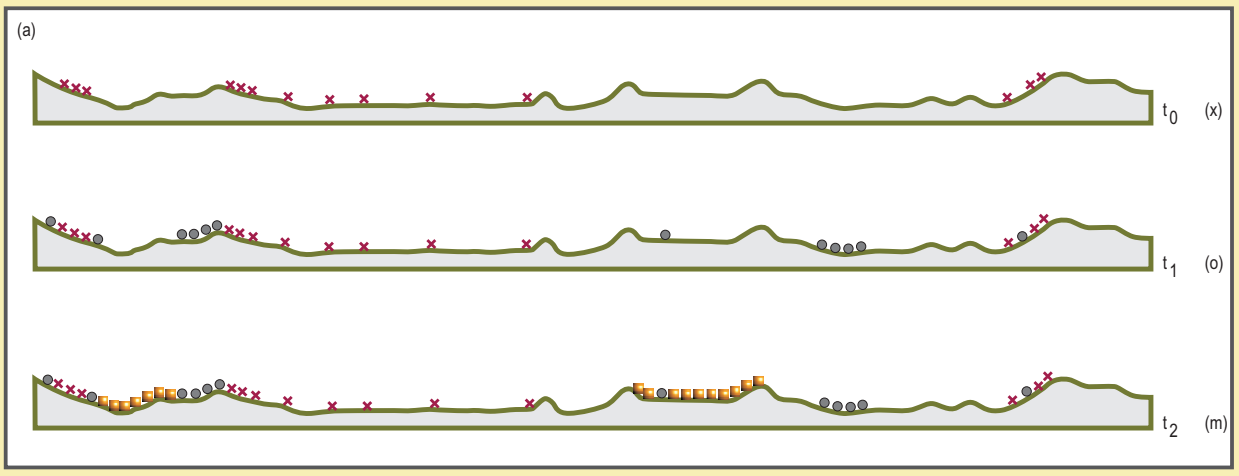
HLA

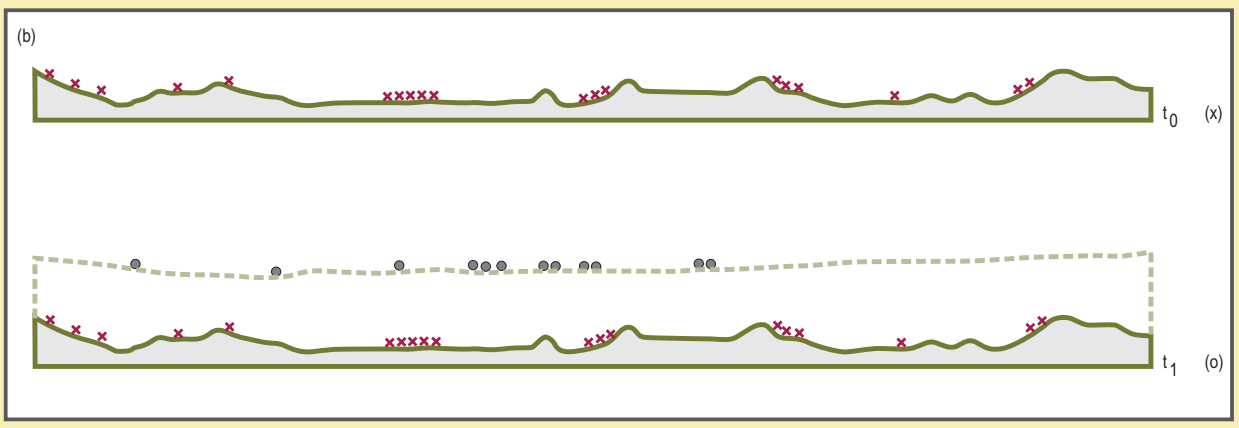
Modelled Distribution of Activities within Home Range (Left) and Consequent Patterning of Artefacts (right) (after Foley, 1981a)
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment - Failford Road to Tritton Road

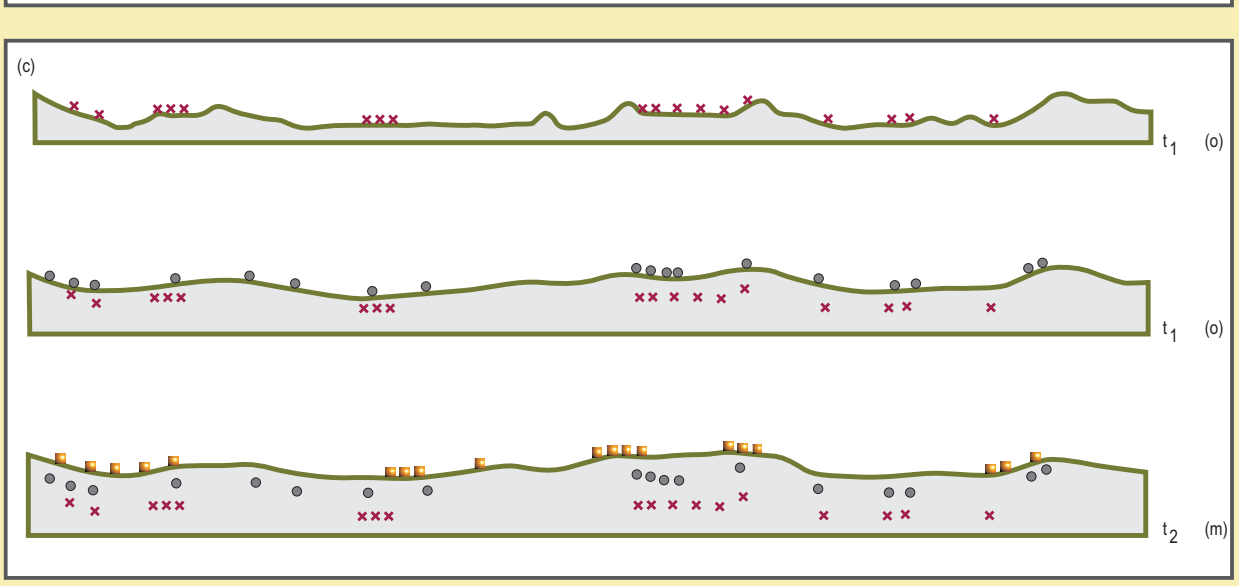
Temporary camps
Lithic source
Animal migration
Swamp

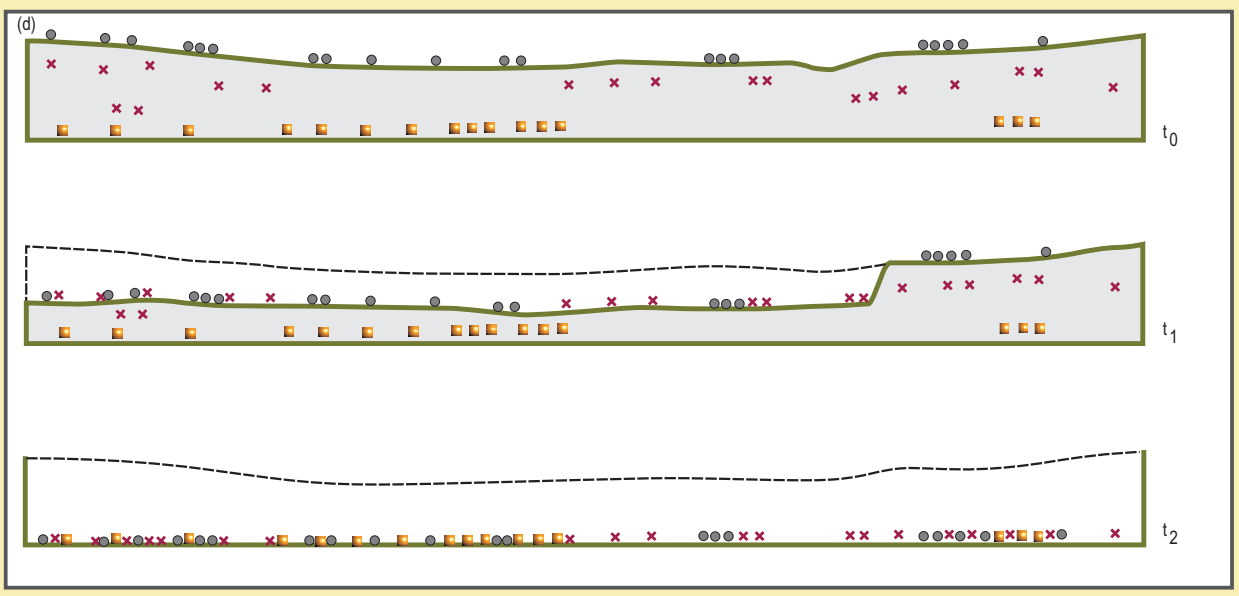
FIGURE
6

PROJECT-FILE NAME **N6033102** DATE **6 February 2006** DRAWN **TO** APPROVED









Cumulative Effects of Artefact Discard and Site Formation (After Foley, 1981b)
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment - Failford Road to Tritton Road

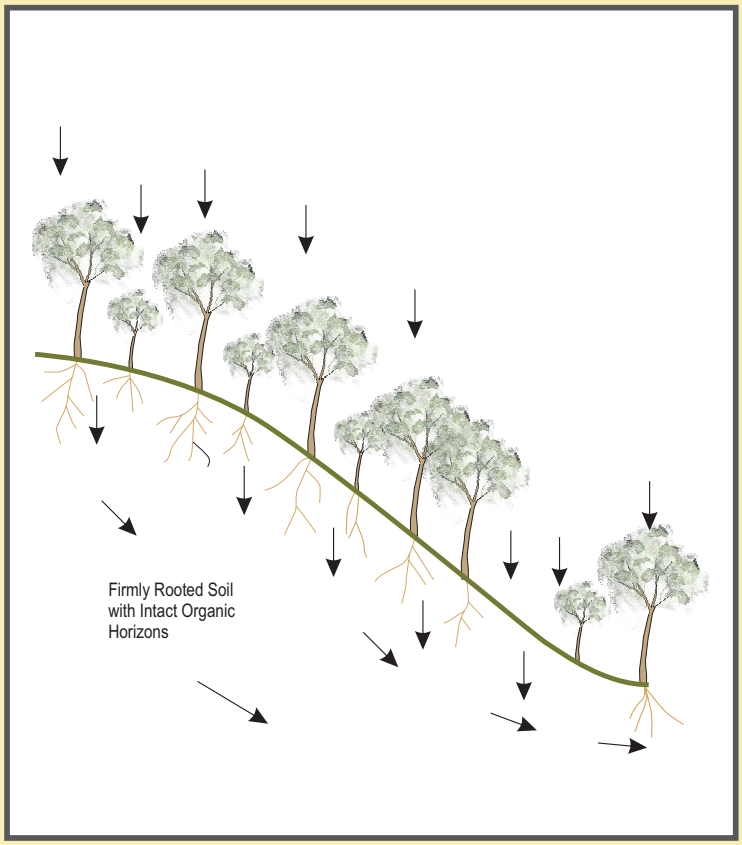
a Cumulative effect of simple artefact discard
b Cumulative effect of artefact discard on landscape suddenly buried
c Cumulative artefact discard on a gradually degrading landscape
d Effect of gradual exposure on artefact distribution
e Effect of bioturbation on artefact distribution

FIGURE **7**

PROJECT-FILE NAME **N6033102** DATE **6 February 2006** DRAWN **TO** APPROVED

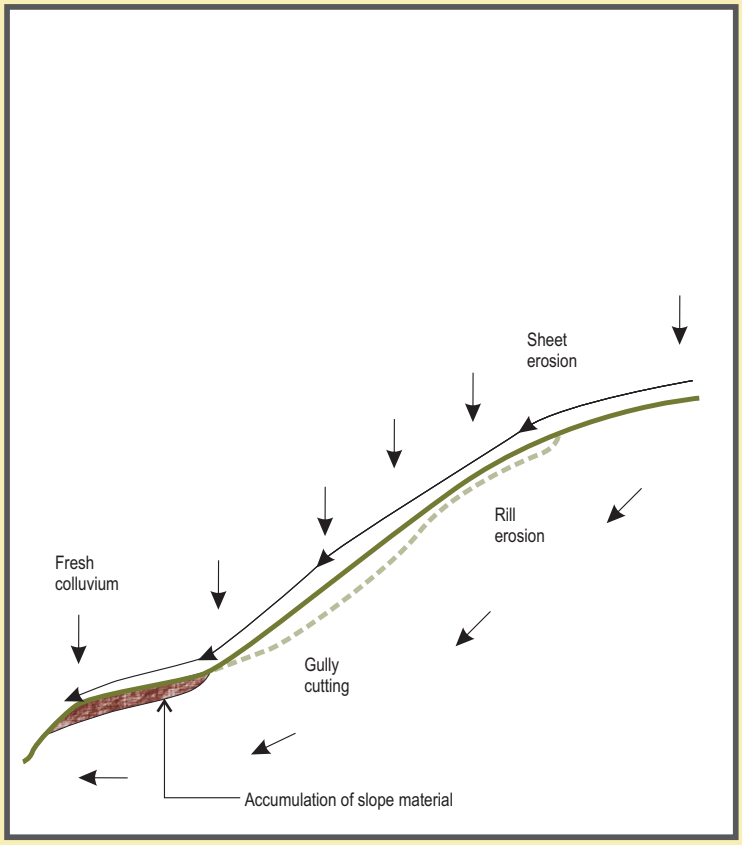
WOODED SLOPE

- Considerable interception
- Maximum infiltration
- Throughflow
- Retarted runoff and protracted seepage



OPEN FIELD/CLEARED SLOPE

- No interception
- Rapid, unimpeded runoff
- Limited infiltration



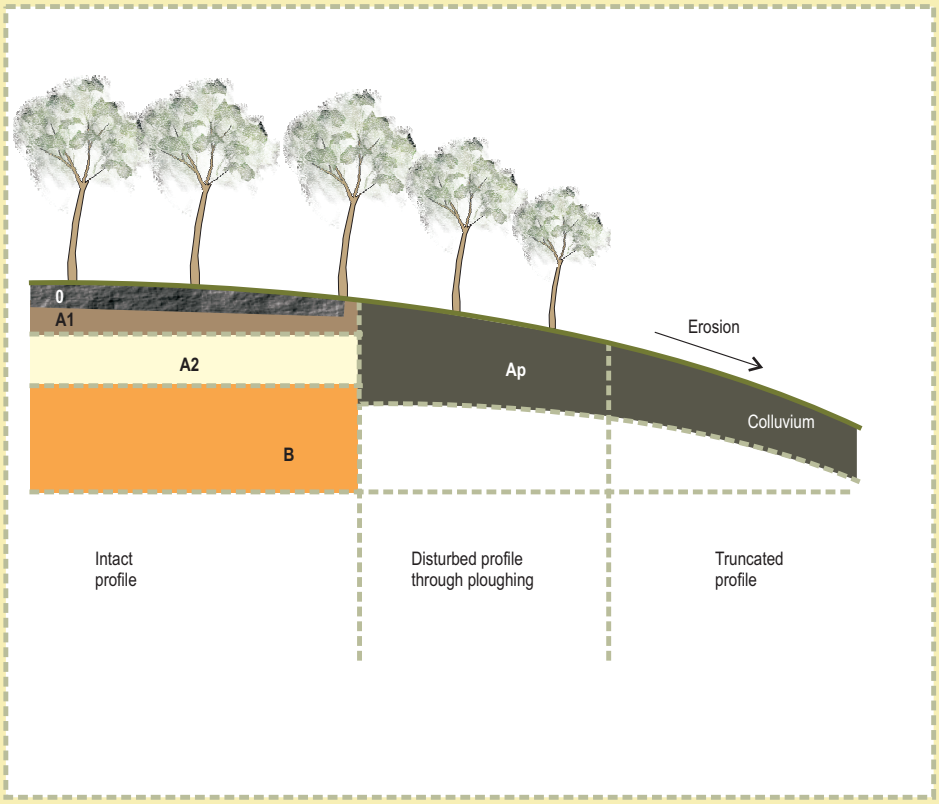
HLA

Contrasting Run-Off and Infiltration
on Wooded Slopes and Cultivated Slopes (after Butzer, 1976)
Roads & Traffic Authority NSW
Aboriginal Heritage Assessment - Failford Road to Tritton Road

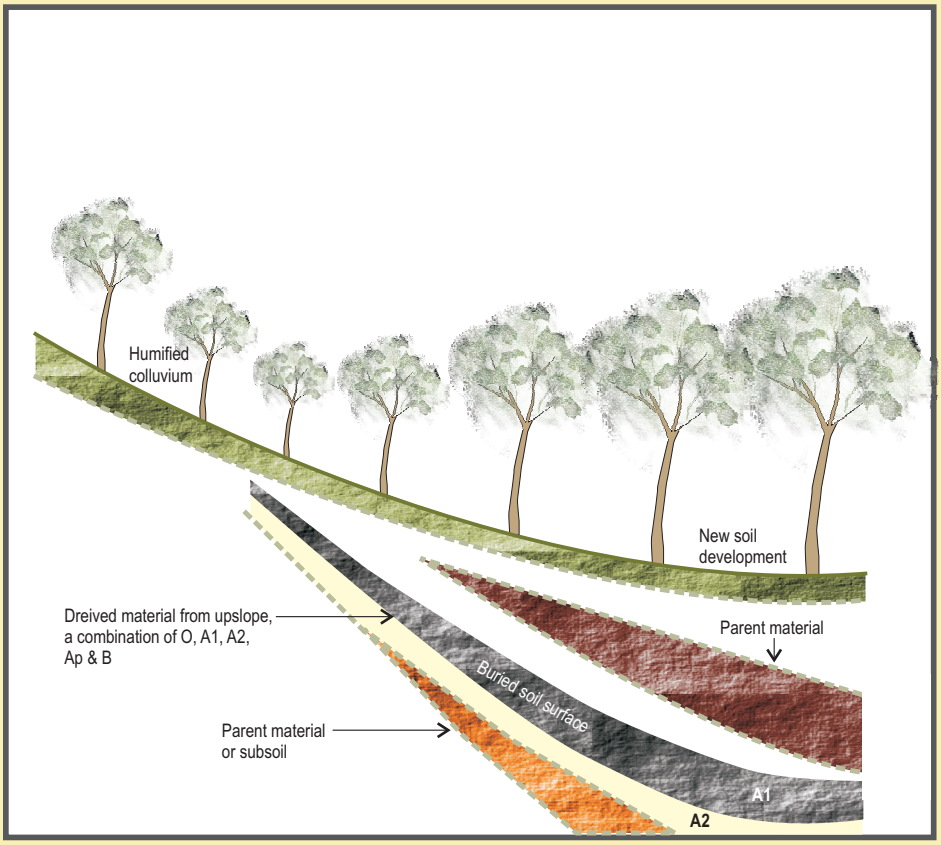
FIGURE
8

PROJECT-FILE NAME **N6033102** DATE **6 February 2006** DRAWN **TO** APPROVED

UPSLOPE



DOWNSLOPE

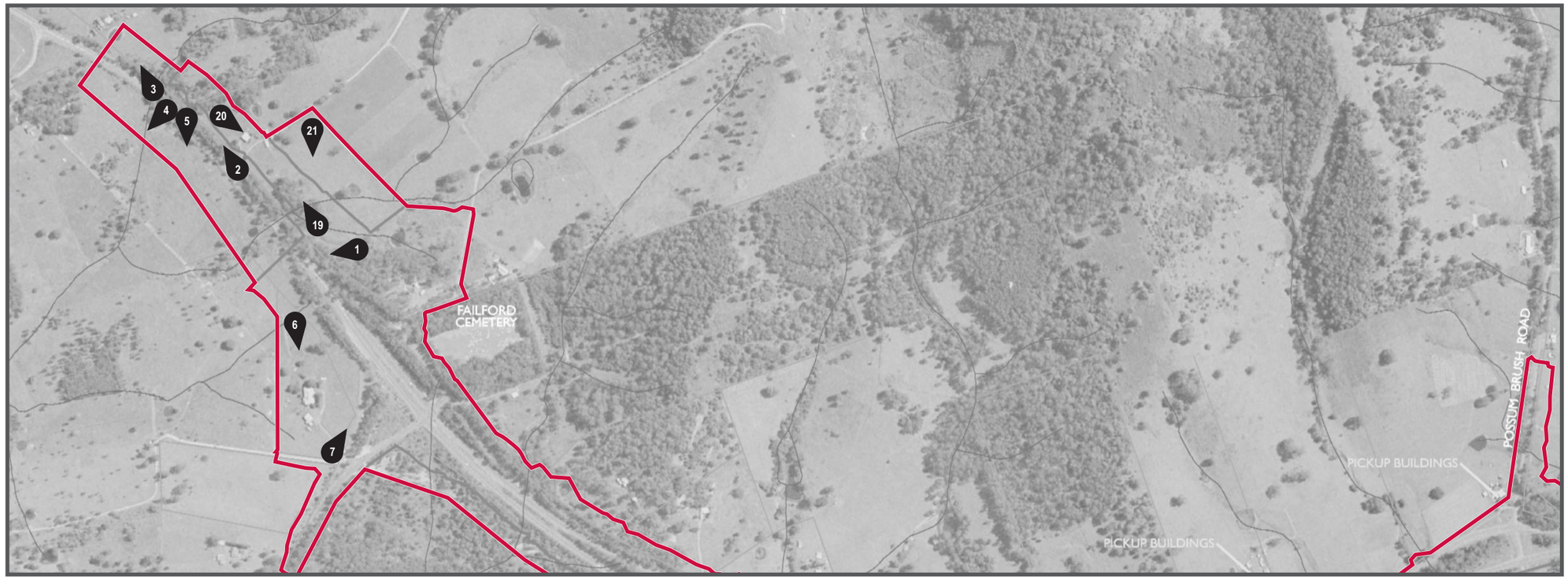


HLA

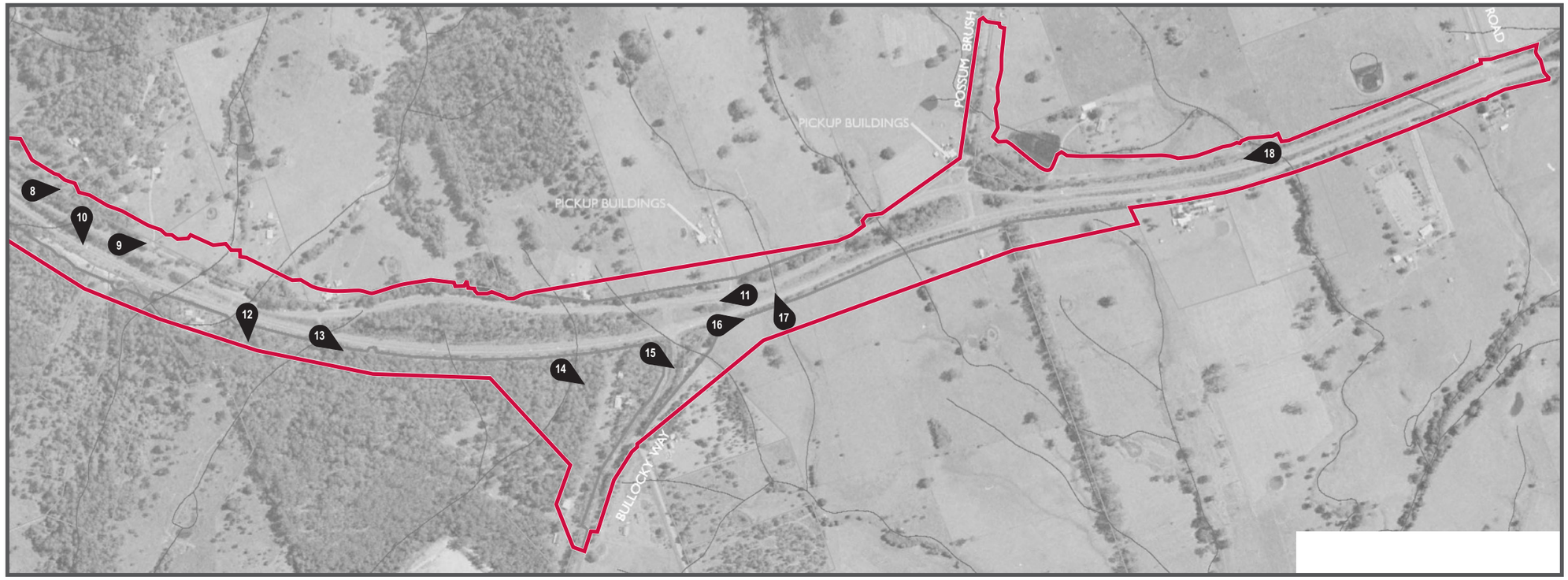
Upslope Soil Disturbance or Truncation, and Downslope Colluvial Deposition of Soil (after Butzer, 1982)
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment - Failford Road to Tritton Road

FIGURE
9

PROJECT-FILE NAME **N6033102** DATE **6 February 2006** DRAWN **TO** APPROVED



Southern Section



Northern Section

PROJECT-FILE NAME	**N6033102**
DATE	**11 July 2006**
DRAWN	**TO**
APPROVED	

Study area

18 Photograph location and direction of view

Photograph Locations and Directions of View
Roads and Traffic Authority NSW
Aboriginal Heritage Assessment -
Failford Road to Tritton Road NSW

HLA

0 250m

FIGURE **10**

Plates

PLATE 1

Transect 1 looking south. In the foreground is one of the open depressions that concentrates surface runoff before going under culverts in the road. Note the general cleared nature of the area, specifically the regrowth trees in the background

PLATE 2

A section in transect 1 looking southwest. In this location, the soil profile consists of an organic brown A horizon overlying (and possibly truncating) an orange clay B horizon

PLATE 3

A close up photograph of Failford Tree Stump, a potential historic site located on the very south-western edge of the study area. This photograph is looking southwest, while the road is approximately 40 metres to the east

PLATE 4

A vertical section located in the southern section of the study area, looking east. The section reveals the extensive limestone geology a short distance beneath the current surface

PLATE 5

A view of transect 2 from transect 1, looking northeast. The current disturbance to the right of the photograph and the concrete plant to the left are all within the study area

PLATE 6

The northern end of transect 2 looking northeast towards Failford Road (just beyond the house). The soil profile in this section mimics the shallow duplex soils found in transect 1

PLATE 7

The northern end of transect 2 looking west. This photograph reveals the previous impacts to this area including previous roads and earthworks

PLATE 8

A soil profile identified on the slopes within transect 3 looking southeast. The section reveals an out of situ BC unit, composed of broken stone and brown sandy loam, eroding from upslope and truncating an in situ Rudosol (beginning about the top of the clipboard and ending at the base of the photograph), which was composed of a brown sandy loam topsoil overlying a BC unit of broken stones and brown sandy loam

PLATE 9
Transect 3, looking northeast

PLATE 10
Transect 3, looking northeast, revealing the poor exposure in some areas

PLATE 11

The beginning of transect 5, looking south. This transect consisted of the vegetated band between the north and southbound carriageways. It is unlikely that these areas would have remained undisturbed during construction of the existing Pacific Highway

PLATE 12

A photograph of one of an unnamed tributary in transect 4, looking east. As can be demonstrated here, most of the tributaries and creeks within the study area have either been artificially created or heavily disturbed by the existing Pacific Highway

PLATE 13

Transect 4, looking northeast. An example of the grading and drainage modifications that have previously been undertaken during the development of the current Pacific Highway

PLATE 14

The northern end of transect 4 looking northeast. While the coverage was poor in this area the young regrowth trees suggest previous disturbances

PLATE 15

The northern end of transect 4 looking northeast to Bullocky Way. Easements adjacent both sides of the Pacific Highway have been seriously impacted through modification as shown here

PLATE 16

Corner of Bullocky Way looking north towards transect 6. The easement is heavily modified as a result of construction of the Pacific Highway

PLATE 17

A photograph of an unnamed tributary in transect 6, looking west. The drainage modifications for the existing Pacific Highway have artificially concentrated runoff into channels. Hence, there is a lack of depositional landform units adjacent to such tributaries

PLATE 18

Transect 7, looking south. Note the exposed orange clay B horizon deposits exposed to the left of the photograph, and the bedrock that has been graded by the Pacific Highway to the right of the photograph

PLATE 19

Transect 8 looking southwest across ephemeral drainage (tussock grassed area in front of trees) and up slope

PLATE 20

Transect 8 looking northwest upslope from south-western boundary towards sheds and cattle yards in this area

PLATE 21

Transect 8 looking northeast along northern boundary fence line. Note dam in-between trees in background

Appendices

Appendix A: Consultation Log and Aboriginal Community Statements

Client: RTA Project No.: N6033201 Site.: Failford Road to Tritton Road, Herons Creek to Stills Road

GROUP	REPRESENTATIVE CONTACTED	DATE	COMMENTS	HLA REPRESENTATIVE
Forster Tuncurry LALC	Heritage Unit	10Aug05	Sent two e-mails to Forster Tuncurry regarding their project and seeking their interest.	Alan Williams
Bunyah LALC	Mike Dibbs	10Aug05	Phoned Mike to advise him of the project and that I would send through additional information	Alan Williams
Bunyah LALC	Mike Dibbs	10Aug05	Sent fax to Mike outlining the project and seeking his interest in the project	Alan Williams
DEC	Brendan Diacono	10Aug05	Letter to Brendan requesting information on relevant Stakeholders of the area.	Alan Williams
Native Title Tribunal		11Aug05	Requested a search of Native TitleClaims in the general area of the two proposed study areas	Alan Williams
Office of Registrar		11Aug05	Requested a search of registered land claims in the general area of the two proposed study areas	Alan Williams
Forster LALC		18Aug05	Spoke with the Forster LALC who advised that they would be interested in participating in the project.	Alan Williams
Forster LALC	Robert Yettica	18Aug05	Faxed the survey methodology to Forster LALC, providing 21-days for community comment. Followed this fax with a phone call to advise that the methodology had been sent.	Emma Harrison
Bunyah LALC	Mike Dibbs	18Aug05	Called and spoke with Mike, who confirmed his groups' interest in the survey. I advised Mike that the methodology would be sent later today and that the fieldwork would be occurring around early to mid-September and that we would be in touch regarding this.	Emma Harrison
Bunyah LALC	Mike Dibbs	18Aug05	Faxed the survey methodology to Bunyah LALC, advising of the 21-day comment period and that fieldwork would commence directly after community comments had been received.	Emma Harrison
Bunyah LALC	Mike Dibbs	15Sep05	Meeting with LALC and RTA reps (David Kilby, Greg Baird, Ben Phillipson and Mary-Lou Buck). Discussed study area, methodology, DEC interim guidelines. All okay – i.e. pursue newspaper ad, survey methodology and timing	Chaz

GROUP	REPRESENTATIVE CONTACTED	DATE	COMMENTS	HLA REPRESENTATIVE
Forster LALC	Robert Yettica	16Sep05	Meeting with LALC and RTA reps (David Kilby, Greg Baird, Ben Phillipson). Discussed study area, methodology, DEC interim guidelines. All okay – i.e. pursue newspaper ad, survey methodology and timing	Chaz
Forster LALC	Robert Yettica	21Sep05	Robert had chased up the Guiwain Elder Group in Taree in regards to study area – they do not involve themselves in cultural heritage matters within the area of our study.	Chaz
	Gordon Brown	18.Oct.05	Sent letter and methodology to Mr Gordon Brown who responded to the newspaper advertisement	Cornelia de Rohefort
	Diedre Ally	31.Oct.05	Sent letter and methodology to Ms Diedre Ally who responded to the newspaper advertisement	Cornelia de Rochefort
Ganangarra Ananawan Elders Tribal Council	Kim Moran	31.Oct.05	Sent letter and methodology to Ms Kim Moran who responded to the newspaper advertisement	Cornelia de Rochefort
Bunyah LALC	Mike Dibbs	10.11.05	Mike has heard of the Morans, but does not consider them to belong to the area, claims they are further north near Kempsey. He is consulting the elders for me	Alan Williams
Ganangarra Ananawan Elders Tribal Council	Edward Moran	11.11.05	Received fax from the Ganangarra Ananawan Elders Tribal Council, registering their interest in participating in the project	Cornelia de Rochefort
Forster LALC	Robert Yettica	10.11.05	Sent letter advising interested parties of the dates of field work and HLA's standard terms of agreement.	Cornelia de Rochefort
Forster LALC	Robert Yettica	15.11.05	Received signed documentation from Robert regarding insurance details and standard terms of engagement	Cornelia de Rochefort
Ganangarra Ananawan Elders Tribal Council	Edward Moran	21.11.05	Sent letter advising interested parties of the dates of field work and HLA's standard terms of agreement.	Cornelia de Rochefort
	Diedre Ally	21.11.05	Sent letter advising interested parties of the dates of field work and HLA's standard terms of agreement.	Cornelia de Rochefort
	Gordon Brown	21.11.05	Sent letter advising interested parties of the dates of field work and HLA's standard terms of agreement.	Cornelia de Rochefort
Bunyah LALC	Mike Dibbs	24.11.05	Sent letter advising interested parties of the dates of field work and HLA's standard terms of agreement.	Cornelia de Rochefort
Bunyah LALC	Mike Dibbs	24.11.05	Received signed documentation from Mike regarding insurance details and standard terms of engagement	Cornelia de Rochefort

GROUP	REPRESENTATIVE CONTACTED	DATE	COMMENTS	HLA REPRESENTATIVE
Forster LALC	Robert Yettica and Robbie Paulson	28-29.11.05	Participated in the physical inspection of the Failford Road study area	Alan Williams, Cornelia de Rochefort
Bunyah LALC	Trevor Roberts	30-31.11.05	Participated in the physical inspection of the Herons Creek study area	Alan Williams, Cornelia de Rochefort
Forster LALC	Robert Yettica	16.5.06	Draft report sent for comment	HLA Newcastle

Forster
Tuncurry

FORSTER LOCAL ABORIGINAL LAND COUNCIL

Cabarita Community Hall
Cabarita Avenue, Forster, N.S.W. 2428
P.O. Box 384, Forster, N.S.W. 2428
Phone: (02) 6555 5411 Fax: (02) 6555 5532
email: info@forsterlalc.org.au
website: www.forsterlalc.org.au

13/01/06.

Robert Yettica

Culture & Heritage Unit Senior Sites Officer

Attention: Alan Williams.
HLA Enviroscience Pty Ltd.

Re: Proposed Upgrade of the Pacific Highway – Failford to Tritton Road.

Dear Sir,

This letter is to certify that the Forster Local Aboriginal Land Council has undertaken a survey on 28th-29th November 2005 to establish Aboriginal Heritage within the immediate area of Pacific Hwy Failford to Tritton Road. Robert Yettica, Senior Site Officer for Forster Local Aboriginal Land Council and Fieldworker Robbie Paulson has undertaken the survey on the above area, with Alan Williams HLA EnvirosciencePty Ltd and Cornelia De-Rochefort.This area was investigated thoroughly starting at the intersection of the Pacific Hwy and Failford Road. The survey was directed in southerly direction to Carefree Road than returning on the opposite side taking in part of Failford Road. Then on to Tritton Road. Aboriginal sites are known to exist at nearby locations.
The local Aboriginal community at Forster has been consulted on prior knowledge of any Aboriginal sites existing in the area. No Aboriginal sites were recorded during the field survey. The Forster Local Aboriginal Land Council is satisfied with the survey undertaken by Sites Officer Robert Yettica and the report that no Objects or Relics have been found within the immediate surveyed area. Forster Local Aboriginal Land Council finds no reason to hold up further development within this area that is mentioned above.

Regards

R Yettica

Robert Yettica
Culture& Heritage Unit

Recommendations

In regards to Section 90, of the NPWS. Act.

The impacts of development in relation to Aboriginal culture heritage is controlled primarily through section 90 of the NPW Act, which creates an offence to "knowingly" destroy, deface or damage an Aboriginal place or relic without a consent from the Director-General of National Parks and Wildlife. The necessity to establish knowledge (i.e. that a person knowingly destroyed an Aboriginal relic) has caused major problems in bringing successful prosecution under this section of the NPW Act. Under provisions of the Bill, a person must not destroy damage, desecrate, or cause or permit the destruction, defacement, damage or desecration of an Aboriginal place or object, except in accordance with a heritage impact permit (old section 90 "consent to destroy"). These provisions remove the necessity to establish knowledge, and extend the range offences to cover a broader range of actions that may destroy, or otherwise damage Aboriginal places or objects.

The Legislation.

Aboriginal sites and artefacts in NSW are protected by the National Parks and Wildlife Act, 1974, which gives the National Parks and Wildlife Services the responsibility protecting all relics and Aboriginal places in the State.
The Act defines a relic as "any deposit, object or material evidence (not being a handicraft made for sale) relating to indigenous and non-European habitation of the area that compress NSW being habitation both to and concurrent with the occupation of the area by persons of European extraction". As sites are material evidence under the act, they are covered by the classification of "relic".
In addition to protecting relics, the Acts allows for the gazettal of land as an Aboriginal Place, if in the opinion of the minister it has significance or recognised ceremonial grounds, which are not technically relics, but which are important to Aboriginal People today.
Relics may be Crown property wherever they occur. All movable relics belong to the Crown are placed in the care of the Australian Museum. Non-movable relics which are found on private land, including occupation, art and ceremonial sites and carved or scarred trees, remain private property, but are still protected under the Act.
It is illegal to disturb, deface or destroy a relic without the prior written consent of the Director of National Parks and Wildlife. If this consent is refused the applicant may appeal to the Minister administering the National Parks and Wildlife Act.
Moving a relic on any land may only do so legally in accordance with the terms and condition of an unrevoked permit issued to that person by the Director-General (s.86 NPW Act).


SALLINA
FOLDING

Appendix B: AHIMS Site Search information