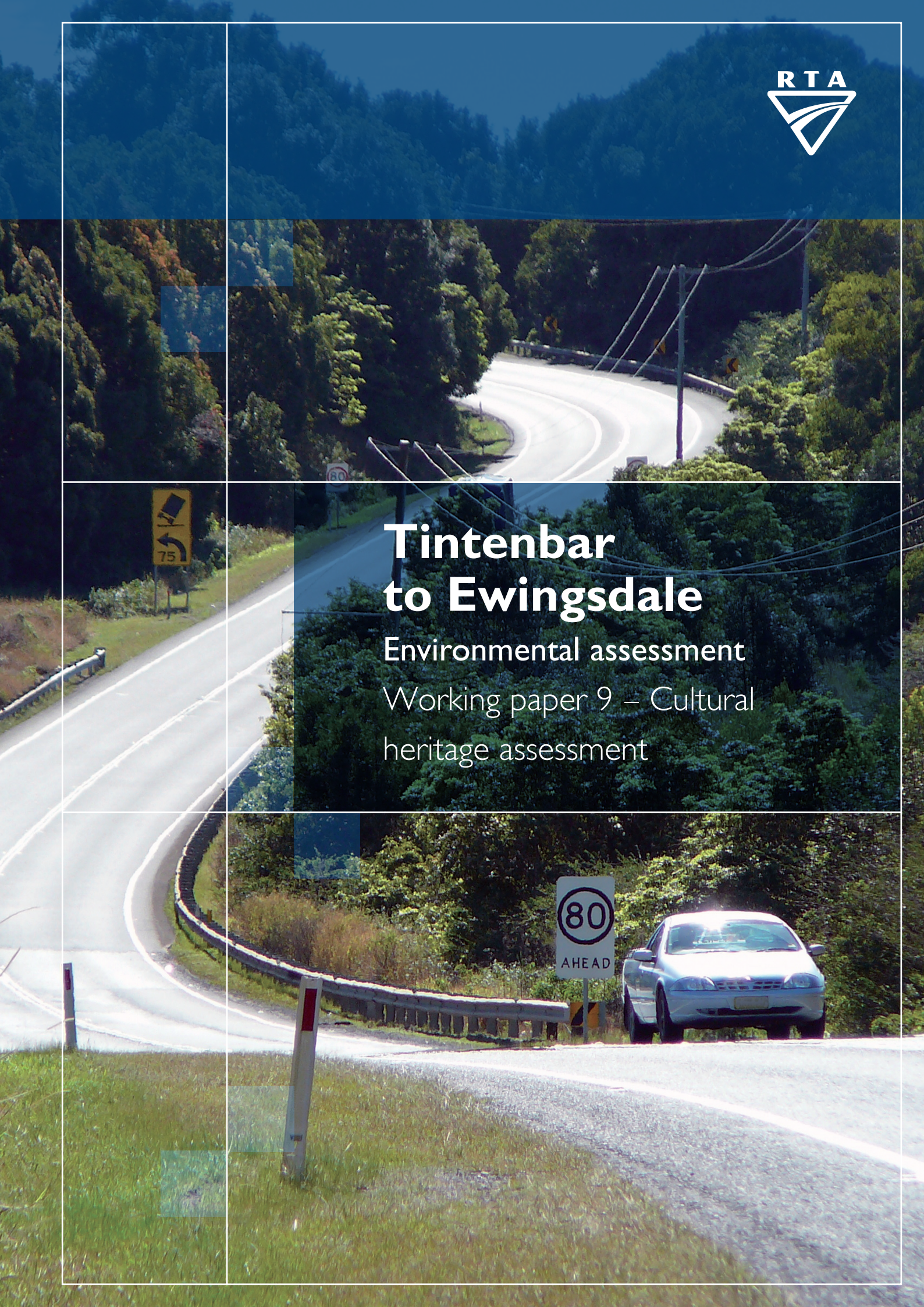

Tintenbar to Ewingsdale

Environmental assessment

Working paper 9 – Cultural heritage assessment

Pacific Highway Upgrade
Tintenbar to Ewingsdale

Cultural Heritage Assessment

June 2008

A Report to Arup
for the NSW Roads & Traffic Authority

Navin Officer

heritage consultants Pty Ltd

acn: 092 901 605

Number 4
Kingston Warehouse
71 Leichhardt St.
Kingston ACT 2604

ph 02 6282 9415
fx 02 6282 9416

EXECUTIVE SUMMARY

Introduction

The NSW Roads and Traffic Authority (RTA) propose to upgrade the Pacific Highway between Ross Lane at Tintenbar and Ewingsdale, on the far north coast of NSW. The proposed upgrade involves the construction of approximately twenty kilometres of four-lane divided carriageway.

Approval for this project is sought under Part 3A of the Environmental Planning & Assessment Act 1979.

A cultural heritage assessment of the proposed upgrade, including both Aboriginal and non-Aboriginal heritage, was conducted in 2007. The methodology included literature, heritage register and database reviews, field survey, and community consultation. This assessment drew upon the findings of previous route option development stages and relevant information from these studies has been incorporated into this report.

This report addresses the cultural heritage issues specified in the Director General's requirements for the Environmental Assessment and extends the assessment beyond this minimum, to include non-Aboriginal cultural heritage.

Environmental Context

The proposed upgrade is situated on the Alstonville plateau, a dissected Tertiary basalt plateau to the west of the coastal plain between Lennox Head and Byron Bay. The plateau would have sustained a sub-tropical rainforest with a predominantly tall and closed forest structure, known as the 'Big Scrub'. Despite the paucity of archaeological evidence accumulated to date for the plateau there is ethnographic evidence for Aboriginal visitation and exploitation of the Big Scrub. Exploitation of the area was probably sporadic and involved hunting and gathering activities, while areas on the coastal plain were preferred as occupation sites.

Aboriginal Heritage

The proposed upgrade is located within the boundaries of the Jali and the Tweed-Byron Local Aboriginal Land Councils, and within the areas of claimed traditional affiliation for the Bundjalung Elders Council Aboriginal Corporation, the Arakwal Aboriginal Corporation, and the Burabi Aboriginal Corporation.

Consultation with these stakeholder groups has been variously structured through Aboriginal Focus Groups meetings, individual liaison, and field participation. The RTA has implemented the *DECC Interim Guidelines for Aboriginal Community Consultation – Requirements for Applicants* for the assessment of the proposed upgrade route.

Comparatively little archaeological information is known from the Alstonville Plateau. The small number of known sites are mostly small in size and low in artefact density, suggesting Aboriginal occupation predominantly related to dispersed resource extraction, specialised ceremonial activities, and interim campsites along through-access routes. Past archaeological surveys have encountered low ground visibility and rarely proceeded into subsurface investigation programs. For this reason, it is not known if low recording rates of surface archaeological sites are a reliable indication of the potential below-ground archaeological resource. Similarly, there is little comparative data to evaluate the likely nature of identified potential archaeological deposits.

General statements of cultural significance provided by local Aboriginal community representatives regarding the importance of the land have included reference to prominent features and regions which supported traditional lifeways, including seasonal occupation, resource exploitation and ceremonial life and obligations. Broad landscapes are mentioned in this context, such as the coastline, coastal hinterlands, escarpment and plateau. The cultural significance of the Alstonville Plateau (which includes the proposed upgrade route), is described in terms of the importance of the escarpment and its views, the use of ridgelines as pathways, cultural continuity demonstrated

through archaeological sites, and the past exploitation of the resources of the former forest vegetation known as the *Big Scrub*. Beyond these generalised references, no specific places or locations of particular Aboriginal cultural value have been mentioned or referred to as occurring within the area of the proposed upgrade.

The selection of the proposed upgrade route across the plateau, was partly based on Aboriginal stakeholder views that alternative options which traversed the escarpment slopes and coastal plain would have constituted a more substantial and destructive impact on Aboriginal cultural values.

No Aboriginal archaeological sites have been previously recorded as occurring in the Tintenbar to Ewingsdale study area. One small scatter of two stone artefacts (A10), two isolated finds (A8 & A9) and thirty six potential archaeological deposits were identified in the course of the survey of the proposed upgrade route in 2007.

All of the recorded Aboriginal archaeological sites are assessed as having local significance within a local context. This is based on the comparative rarity and scientific values of these sites, together with the stated cultural values communicated by Aboriginal stakeholders.

Of the 39 Aboriginal heritage recordings, all but one (A8 an isolated find) would be subject to direct impact from construction of the proposed upgrade. Thirty six of these constitute potential archaeological deposits (PADs), which are subject to further investigation to determine if subsurface archaeological material is present. None of the PADs constitute unique or rare landform contexts, and many extend outside of the upgrade footprint, or are represented elsewhere in the local region.

The assessment found that there were no permanent Aboriginal heritage constraints to the proposed upgrade and that the anticipated impacts could be effectively managed through a variety of salvage strategies and a program of selective archaeological excavation within a representative sample of the PADs.

The following is a summary of the proposed strategies for the management of impacts to Aboriginal cultural heritage values:

1. Conduct a salvage collection of surface artefacts at sites A9 & 10.

2. Conduct a limited program of subsurface archaeological salvage at sites A9 & 10.

3. The location of site A8, and a requirement not to disturb the area, should be identified on mapping relevant to any construction activities conducted within adjacent areas. If, due to unforeseen circumstances, there is an assessed risk of disturbance to site A8, then the site should be temporarily fenced and/or the artefacts collected.

4. Conduct an initial program of archaeological subsurface testing across a representative sample of the 36 PAD locations (PAD1-36). Following a review of the test results, assess whether additional excavation is required. Table 5.2 presents a list of 13 PADs which are considered to be representative.

5. Conduct further PAD investigations if and as considered necessary.

6. All recovered artefactual material should be the subject of standard archaeological description and analysis.

7. An adequate level of funding should be made available to conduct age determinations on any suitable archaeological materials recovered, in consultation with local Aboriginal community stakeholders.

8. The Aboriginal Focus Group (AFG) convened for the upgrade should continue to be consulted regarding the ongoing management of Aboriginal cultural heritage. .

9. Representatives of registered Aboriginal stakeholders should be offered the oppoprtunity to apply to participate in Aboriginal cultural heritage fieldwork.

10. Following the completion of archaeological analysis, all recovered artefactual material (except materials required for age determinations) shall be returned to the local Aboriginal community, to be managed according to community and legislative requirements.

11. The RTA should where feasible, and in consultation with Aboriginal stakeholders, establish nomenclature and public signage within the upgrade easement which promotes local Aboriginal language names and presents Aboriginal interpretations.

12. The development of landscape treatments and land rehabilitation within the upgrade easement should, where feasible, incorporate components which address Aboriginal cultural landscape values.

13. Protocols which specify actions in the event of the discovery of previously unrecorded Aboriginal objects (including human remains) should be followed for the period of construction (refer Appendices 2 and 3).

Non-Aboriginal Heritage

In the early 1800s European people visiting the Northern Rivers district were generally limited to escaped convicts and wood-cutters seeking the pine and cedar forests. The cedar trade on continued to develop into the mid 1800s, but it was the gold rushes of the later 1800s and the Robertson Land Acts from 1861 which brought a dramatic increase in the European population, the main effect of which was to accelerate trade, to open new means of transport, and to hasten development of the District. Most of the permanent European settlement and associated land clearance across the upgrade dates from the 1870s. This was promoted by the development of the sugar cane, and dairying industries, and the subsequent production of a variety of tropical agricultural crops. A consequence of this agricultural development was the nearly total clearance of the Big Scrub, and its replacement with a pastoral and agricultural landscape.

Most of the non-Aboriginal sites recorded in the upgrade relate to the early to mid nineteenth century pastoral, agricultural and town development of the district. All sites are apparently of European origin.

Five previously recorded European heritage sites (T2E H9, H13, H18, H21 and H23) occur within the upgrade. These sites were recorded in the context of the route development studies.

Thirteen European heritage sites/features (T2E H28, H29, H30, H31, H32, H33, H34, H35, H36, H37, H38, H39 and H40) were identified within the proposed upgrade during survey in 2007.

Site types include houses, yards and fences, trees plantings and stumps, the site of the former Knockrow School site and teachers residence, a cricket pitch and ground, the site of a former dairy, car remnants, scatter of glass and ceramics, and a concrete floor and footings. Table 1 provides a summary of the non-Aboriginal cultural heritage recordings within the upgrade.

Table 1 Summary of non-Aboriginal cultural heritage recordings within the upgrade

Site Number	Site Type Name
T2E H9	cricket pitch and ground
T2E H13	*Arundel* farm complex and plantings
T2E H18	Former Knockrow School site and teachers residence
T2E H21	*Corn-Brae* Lodge
T2E H23	weatherboard house
T2E H28	fig tree

Site Number	Site Type Name
T2E H29	forestry stump
T2E H30	derelict farm building
T2E H31	remnant yards and fencing
T2E H32	weatherboard house
T2E H33	weatherboard cottage
T2E H34	site of former dairy
T2E H35	family memorial
T2E H36	property entrance
T2E H37	car remnants
T2E H38	tree plantings
T2E H39	scatter of glass and ceramic fragments
T2E H40	concrete floor and footings

Six of these recordings, (H13, 18, 23, 30, 32 & 35) are assessed as having moderate significance within a local context, the remainder are considered to fall below the threshold for local significance rating.

Of the eighteen non-Aboriginal cultural heritage recordings, twelve would be wholly or partially subject to direct impact by the proposed upgrade, a further two occur in close proximity and may be subject to direct impact from construction activities (H29 & 39), one would not be directly impacted but would be subject to property acquisition and incorporated into the highway easement (H30), and three would not be directly impacted or subject to property acquisition (H18, 32 &38).

The assessment found that there were no permanent non-Aboriginal heritage constraints to the proposed upgrade and that the anticipated impacts could be effectively managed through a variety of strategies. These variously involve the conduct of archival recordings prior to impact, limited salvage, and in one case (H30), the evaluation of the viability of in situ conservation and archival recording prior to demolition remaining a possible outcome.

The following is a summary of the proposed strategies for the management of impacts to non-Aboriginal cultural heritage values:

1. Conduct an archival recording of sites H13, 23 and 30 prior to the commencement of any demolition and construction works.

2. Conduct an assessment of the viability of a conservation management strategy for site H30 and based on this assessment, make and follow a decision regarding an appropriate management strategy.

3. Make provision for the potential salvage of timbers and other architectural elements during and following the demolition of sites H13 and 23 (and from H30 in the event that conservation is considered to be unviable). This provision would be subject to health and safety standards and legal liability considerations.

4. Conduct a limited archival record at sites H9, 21, 31, 33 & 40 prior to development impact.

5. No further action is required at sites H34, 37 and 39.

6. Where feasible, and consistent with OH&S, construction and operational requirements, consider retaining the trees alive and *in situ* at sites H28 and 29.

7. If feasible, recover the concrete grass roller at the former Newrybar cricket ground (H9) and reposition in an appropriate local place, in consultation with the local Council and historical society.

8. If feasible, recover and reposition remnants of old agricultural machinery from around the western *Corn Brae* cottage (H21), in consultation with the owner of the remaining Corn Brae property.

9. The private family memorial (H35) and iron fencing within the property entrance at H36 to be recovered and returned to the current property owners.

10. In the event of an assessed risk of accidental damage to sites H18 and 32, erect a temporary fence between the site and area of construction.

11. Protocols which specify actions in the event of the discovery of previously unrecorded non-Aboriginal relics (including human remains) should be followed for the period of construction (refer Appendix 3).

Cumulative Impacts

Within the bounds of available methodologies for determining the cumulative impact of the proposed upgrade, it is determined that the level of impact, when combined with the conduct of the proposed cultural heritage management strategies will not be substantial.

General Management Strategies

1. When access is available, conduct comprehensive archaeological survey on those properties which were unavailable for field survey during the environmental assessment.

2. The location of all heritage items and their associated management strategies to be included in the Construction Environmental Management Plan (CEMP), and appropriate reference to the presence of heritage items, their cultural value, and related management strategies to be included within construction site induction courses.

3. During the public display of this document, the relevant sections on Aboriginal cultural heritage should be provided to Aboriginal stakeholders for their information and with an invitation to comment within the prescribed period.

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TABLE OF CONTENTS

1. INTRODUCTION

The NSW Roads and Traffic Authority (RTA) proposes to upgrade the Pacific Highway between Ross Lane at Tintenbar, and Ewingsdale, on the far north coast of NSW. The proposed upgrade of the Highway involves the construction of approximately 17 km of four-lane divided carriageway (Figures 1.1 – 1.4).

Approval of this project is sought under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report addresses the cultural heritage issues specified in the Director General's requirements for the Environmental Assessment and extends the assessment beyond this minimum, to include non-Aboriginal cultural heritage. The Director General's requirements with regard to cultural heritage consist of the following:

> **Aboriginal Heritage** – including but not limited to:
>
> - the consideration of both artefact and landscape scale mitigation measures, where relevant; and
>
> - consideration of regional scale cumulative impacts and identify the significance of the impacts of the project in the context of the Pacific Highway Upgrade Project.

In addition, the Director General's requirements specify that consultation be conducted and documented with relevant local State and Commonwealth government authorities, together with specialist interest groups such as Local Aboriginal Land Councils.

This report documents the Aboriginal and non-Aboriginal cultural heritage assessment of the proposed upgrade. The assessment addressed both permanent and temporary works associated with the project, and included literature and database reviews, Aboriginal consultation and archaeological field survey. The report identifies sites and places of known or potential heritage significance that may be impacted by the project, provides significance assessments of those recordings, and presents strategies to manage impacts to heritage values.

The report was commissioned by Arup Pty Ltd on behalf of the RTA. It comprises the cultural heritage component of the environmental assessment for the proposed upgrade.

1.1 The Proposed Works

The proposed Pacific Highway upgrade between Tintenbar and Ewingsdale is for an approximately 17 km section of the existing Pacific Highway within the Ballina and Byron local government areas.

The existing highway currently bypasses the townships of Newrybar and Bangalow, and traverses St Helena Hill. The proposed upgrade follows a similar alignment to the existing highway between Tintenbar and the Bangalow bypass, before diverting east and tunnelling beneath St Helena Hill. The upgraded highway would then follow a similar alignment to the existing highway north of St Helena Hill before tying-in with the existing Ewingsdale interchange.

The proposed upgrade includes:

- Construction of a two lane (with provision for future conversion to three lane) dual carriageway motorway standard road between the approved Ross lane interchange and the existing Ewingsdale interchange;
- Construction of a tunnel about 350 m long beneath St Helena Hill;
- Construction of two half interchanges, one at Ivy Lane and one at Bangalow, to permit access to the upgraded highway for local residents; and
- Modifications to the existing Ewingsdale interchange.

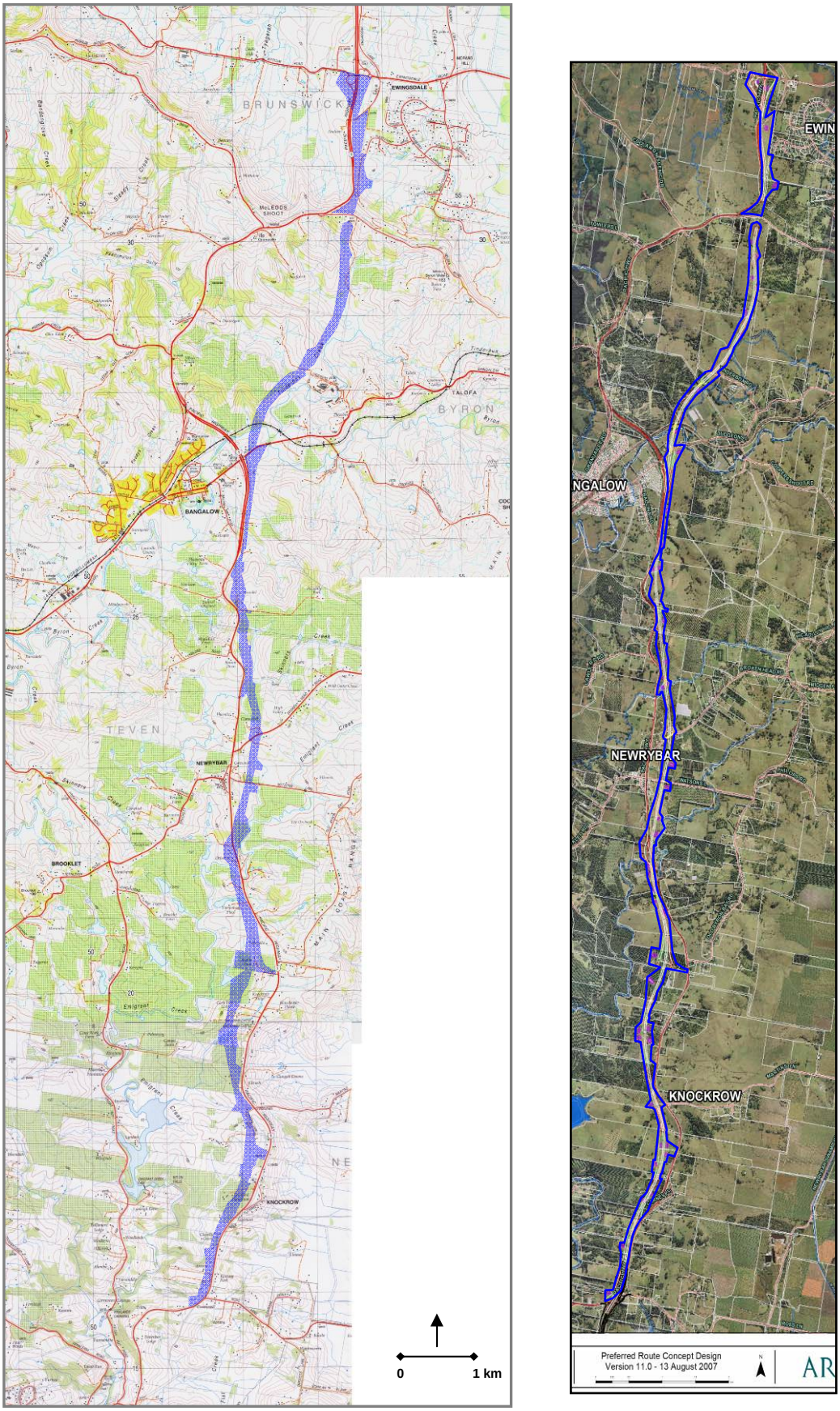


Figure 1.1 Tintenbar to Ewingsdale Pacific Highway Upgrade Study Area
(Left: Ballina and Byron Bay 1:25,000 topographic maps (reduced)
3rd ed Dept of Lands and Land Property Information 2002, respectively. Right: Aerial and cadastral map provided by Arup, based on 2002 and 2005 photography).

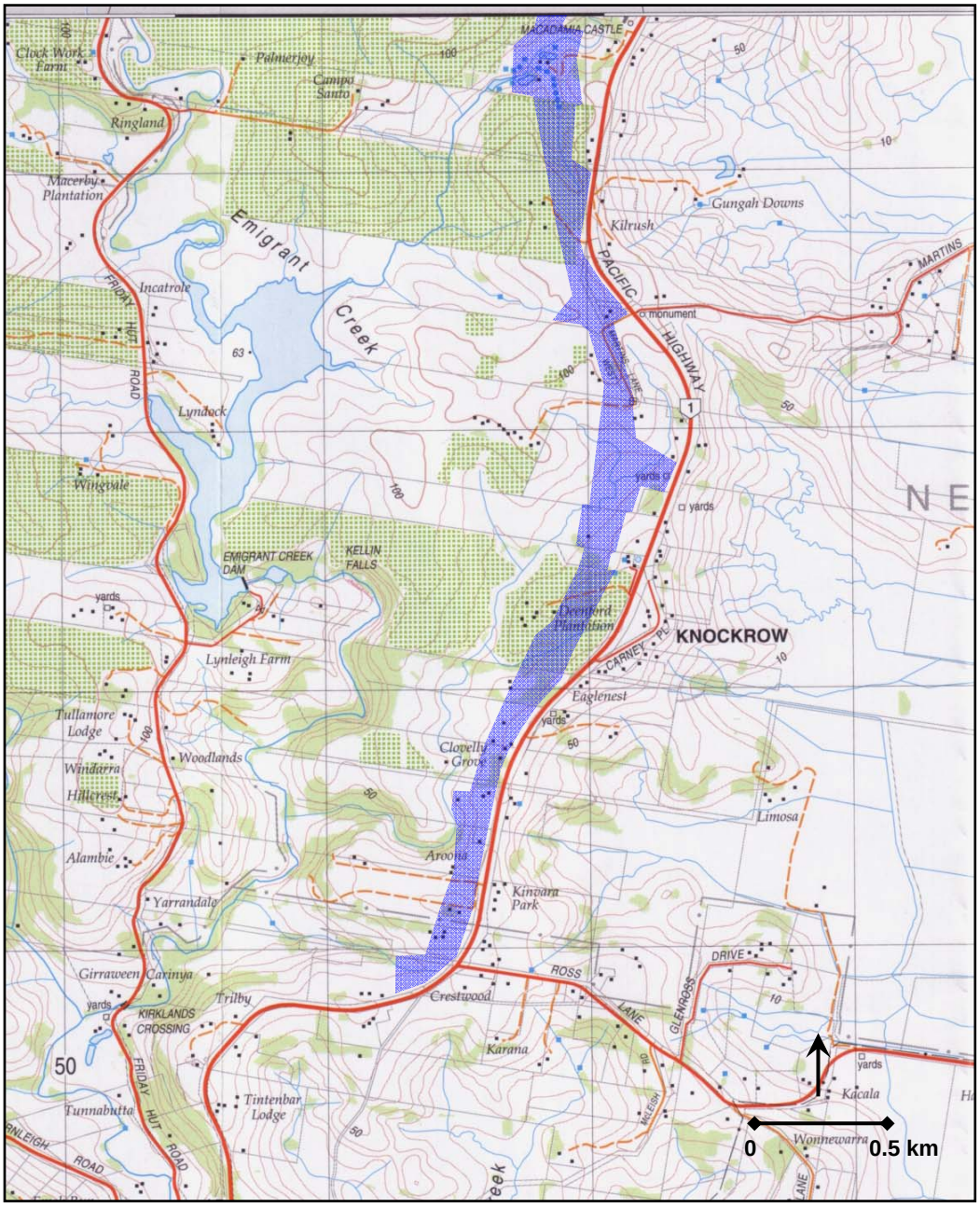


Figure 1.2 Tintenbar to Ewingsdale Pacific Highway Upgrade Study Area
(Ballina 1:25,000 topographic map, 3rd ed Dept of Lands 2002)

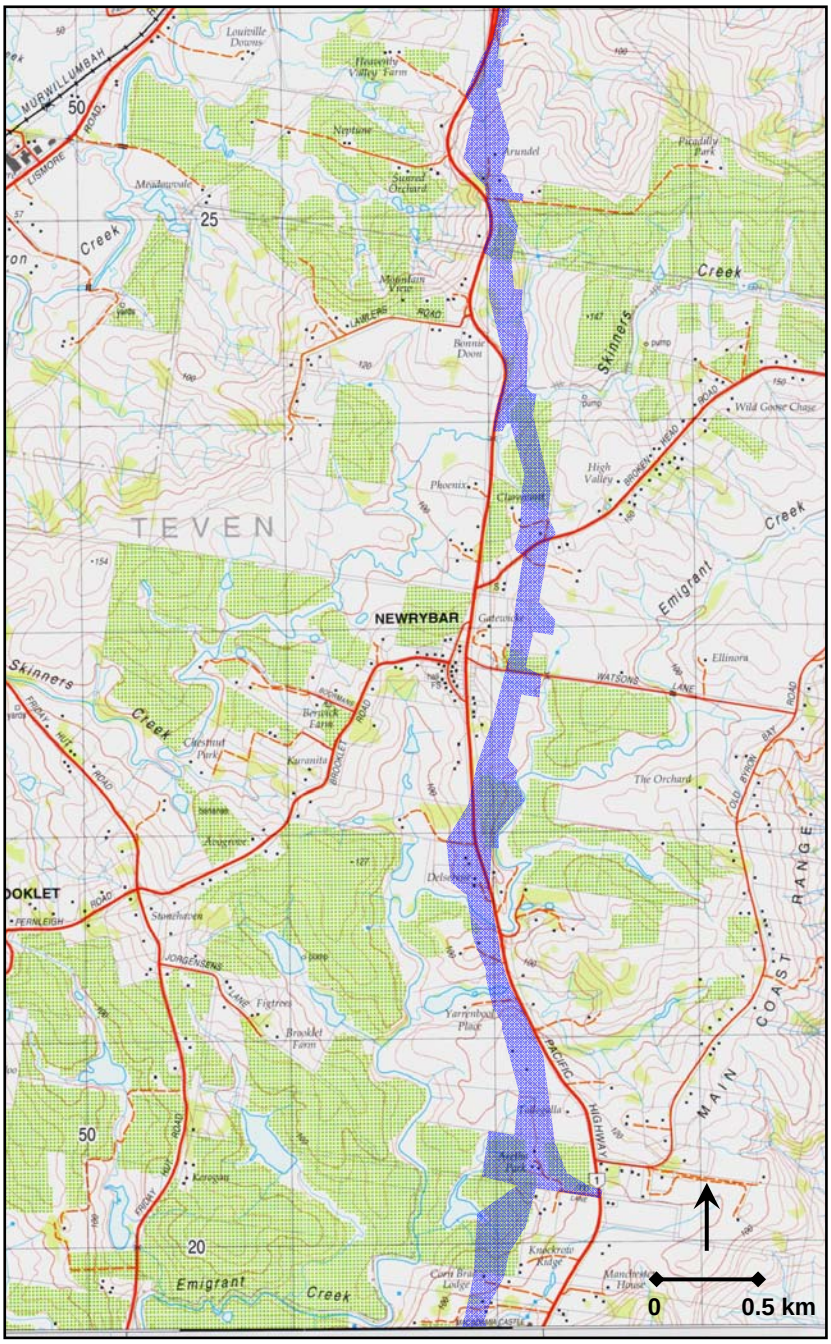


Figure 1.3 Tintenbar to Ewingsdale Pacific Highway Upgrade Study Area
(Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002)

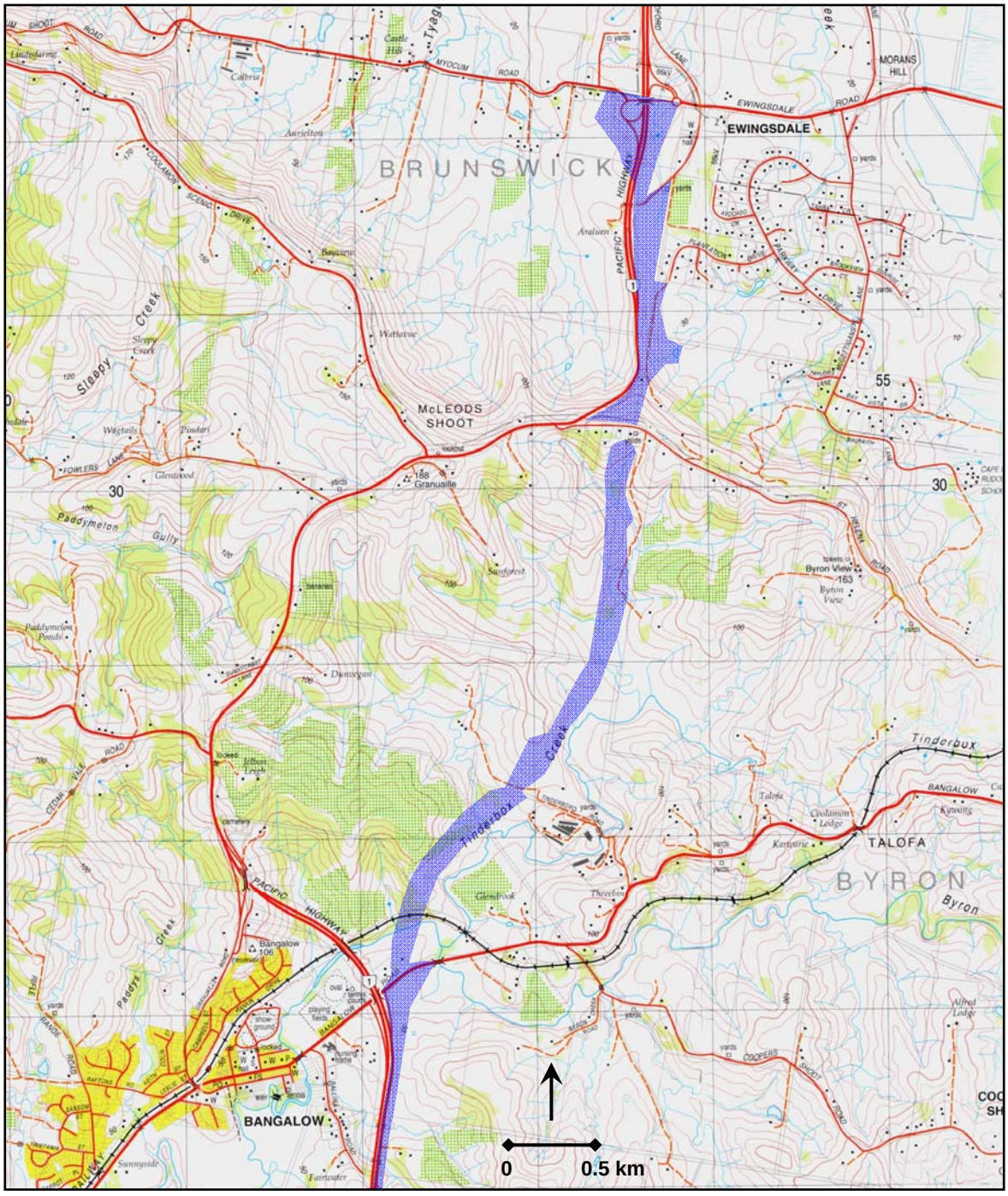


Figure 1.4 Tintenbar to Ewingsdale Pacific Highway Upgrade Study Area
(Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002)

2. METHODOLOGY

This section describes the methodology followed for the Aboriginal and non-Aboriginal cultural heritage assessment, and defines the parameters used in identifying and recording sites and features. The survey coverage achieved across the upgrade is represented in Figures 2.1 – 2.3.

The following methodology is compliant with the policies and guidelines of the NSW Department of Environment and Climate Change (DECC), the RTA, and the NSW Heritage Office.

2.1 Studies Prior to the Preferred Route Assessment

The review and assessment of cultural heritage issues has been an integral component of the previous and prerequisite studies which have informed the selection of the preferred route for the upgrade. Previous work has included the compilation of previously recorded and registered sites, consultation with representative Aboriginal community groups, the conduct of archaeological field survey within selected sample areas of the study area, and Aboriginal participation within those surveys. Principle cultural heritage inputs into the previous studies were:

- Compilation and review of previous cultural heritage assessments, site recordings and heritage register listings with in the original and extended study areas;
- Aboriginal stakeholder consultation following announcement of the original study area (Nov 2004);
- Conduct of sample archaeological survey and site inspection (for both Aboriginal and non-Aboriginal heritage values) within the original study area (Nov 2004);
- Aboriginal stakeholder consultation following announcement of the eastern extension to the study area (May and August 2005);
- Conduct of sample archaeological survey and site inspection (for both Aboriginal and non-Aboriginal heritage values) within the extended study area (May 2005);
- Assessment of potential impacts to known and predicted cultural heritage values for the Route Options Development Report (Oct 2005);
- Convening of an Aboriginal Focus Group and its first meeting in Nov 2005;
- Various landowner meetings following the Route Options Development Report (0ct 2005) regarding Aboriginal and non-Aboriginal sites;
- Feedback from the Community Liaison Group, Corridor Assessment Workshop (July 2005), Value Management Workshop (Dec 2005) regarding primarily non-Aboriginal heritage values; and
- Assessment of potential impacts to known and predicted cultural heritage values for the Preferred Route Report (August 2006).

Relevant information collated in these previous assessment stages for the upgrade has been incorporated into this report.

2.2 Literature and Database Review

A range of archaeological and historical data was reviewed for the Tintenbar to Ewingsdale study area and the surrounding region. This literature and data review was used to determine if known Aboriginal and non-Aboriginal sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included

heritage registers and schedules, local histories, parish maps and portion plans, and archaeological reports.

Aboriginal documentary sources included the NSW DECC Aboriginal Heritage Information Management System (AHIMS), its associated files, and catalogue of archaeological reports.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Statutory Listings:
  - Aboriginal Heritage Information Management System (AHIMS) (NSW DEC);
  - World Heritage List;
  - The National Heritage List (Australian Heritage Council);
  - The Commonwealth Heritage List (Australian Heritage Council);
  - National Historical Shipwreck Register and Database (NSW Heritage Office);
  - The State Heritage Register (NSW Heritage Office);
  - Section 170 Heritage and Conservation Register(s) compiled by the RTA;
  - Heritage Schedule attached to the Ballina Shire Council Local Environmental Plan (LEP) 1987; and
  - Heritage Schedule attached to the Byron Shire Council LEP 1988.
- Non-Statutory Listings:
  - The Register of the National Estate (Australian Heritage Council);
  - The State Heritage Inventory (NSW Heritage Office);
  - Register of the National Trust of Australia (NSW);
  - Royal Australian Institute of Architects Register;
  - Institute of Engineers (NSW) Heritage Register;
  - Professional Historians Association (NSW); and
  - Art Deco Society Register.

2.3 Consultation

2.3.1 Aboriginal Community Consultation

Consultation with the local Aboriginal community concerning the Tintenbar to Ewingsdale upgrade proposal commenced with the assessment of the original study area in late 2004, and has continued through the various stages of route option development into the current assessment phase. A matrix which summarises the consultation program, and the organisations and individuals involved is presented in Appendix 6.

Studies prior to the preferred route assessment

The key components of the consultation program prior to the commencement of the preferred route assessment were:

- Identification of the key Aboriginal stakeholder groups for the study area (2004 – 2007);
- Consultation for, and conduct of sample archaeological survey and site inspection within the original study area (Nov 2004);

- Consultation for, and conduct of sample archaeological survey and site inspection within the extended study area (May and August 2005); and

- Convening of an Aboriginal Focus Group and its first meeting in Nov 2005.

Proposed Upgrade assessment

The proposed upgrade is located within the boundaries of the Jali Local Aboriginal Land Council (Ross Lane to McLeods Shoot) and the Tweed-Byron Local Aboriginal Land Council (McLeods Shoot to Ewingsdale). It is also situated within the areas of claimed traditional affiliation for the Bundjalung Elders Council Aboriginal Corporation, the Arakwal Aboriginal Corporation, and the Burabi Aboriginal Corporation.

The RTA implemented the *DECC Interim Guidelines for Aboriginal Community Consultation – Requirements for Applicants* (DECC 2005) for this project. No responses were received as a result of the newspaper advertisements and letters sent to Aboriginal organisations, as specified by the DECC. As a consequence, consultation continued to be conducted with the known local Aboriginal groups that had been identified in the course of the previous route selection studies and associated Aboriginal Focus Group. The RTA determined that the Jali Local Aboriginal Land Council would participate in the survey of the proposed upgrade alignment.

A duly notified Aboriginal Focus Group meeting was conducted on 9 February 2007. No representatives from the invited Aboriginal organisations attended the meeting. However, heritage representatives from the Ballina and Byron Shire Councils were able to attend.

The Jali Local Aboriginal Land Council's sites officer, Mr Marcus Ferguson, participated in the field survey of the proposed upgrade in April 2007. A Record of this Participation is provided in Appendix 1. Based on his local knowledge, Mr Ferguson contributed in the field identification of Aboriginal sites and of potential archaeological deposits.

A meeting was held with Mr Ashley Moran (DECC) at Alstonville. The proposed upgrade was discussed and advice sought on local knowledge holders. Mr Moran indicated that the representatives listed below were appropriate people to be consulted.

Ms Bertha Kapeen of the Bundjalung Elders Council Aboriginal Corporation was contacted by phone and the highway upgrade project was discussed. She indicated that the study area was located within the boundaries of the Jali LALC and that she was happy for Arthur Ferguson to represent her interests in the project.

Ms Yvonne Stewart (Arakwal Aboriginal Corporation) was contacted by telephone and the proposed upgrade was discussed. A meeting was organised with Ms Stewart, however, Ms Stewart did not attend at the arranged time. Follow up contacts have been unsuccessful and at the time of writing further attempts to organise an interview are planned.

A representative of the Burabi Aboriginal Corporation was contacted by telephone and the proposed upgrade was discussed. Unfortunately a representative was unavailable to attend a meeting.

A meeting was held at Ballina with Jali elder, Mr Arthur Ferguson, to discuss the project, results and cultural values of the proposed upgrade.

Mr Clarence Phillips, Chairperson of the Tweed Byron LALC, was contacted by telephone and the highway upgrade project was discussed. Clarence undertook to ask within his community as to whether people wished to meet with the consultants to discuss the cultural values of the proposed upgrade.

On the 11 December 2007, an Aboriginal Focus Group Meeting was duly notified and held. Invited participants were drawn from previous AFG meeting invitees and known Aboriginal stakeholder groups. The meeting was well attended, including representation from the DECC. The meeting included the presentation of a (previously circulated) summary report of the findings and recommendations of the cultural heritage assessment of the proposed upgrade and a proposed methodology for a program of archaeological subsurface testing (as recommended in this report). A copy of the proposed methodology is provided in Appendix 2. Both the findings and proposed

methodology were discussed, together with future opportunities for Aboriginal stakeholder participation. In line with DECC community consultation guidelines, invitations were extended to all Aboriginal stakeholders to formally comment on the assessment findings and assessments, along with the proposed testing methodology.

Prior to the finalisation of this report, follow up phone contact was attempted with all Aboriginal people who had provided information, and not previously provided their consent to include their name and information within a publicly accessible report. Information which was not considered appropriate for a public document, or which related to sources which could not be subsequently contacted, has been placed within Appendix 6. Access to Appendix 6 is restricted to authorised stakeholders.

Consultation relating to cultural values is continuing and an on-going component for this project.

2.3.2 Non-Aboriginal Community Consultation

Information relating to the presence and location of non-Aboriginal sites and heritage values was collected during the community consultation program and incorporated as applicable into this assessment.

Inputs were provided through:

- Contributions from the Corridor Assessment Workshop (July 2005) and Value Management Workshop (Dec 2005);
- Landowner meetings following the Route Option Development Report (Oct 2005), including a meeting with Cornelia Burless regarding local area historical sites (12 Dec 2005);
- Phone consultation and on-site liaison with land-owners prior to and during the archaeological field survey of the proposed upgrade route; and
- Representatives from the Ballina and Byron Shire Councils attending various community and stakeholder consultation forums.

2.3.3. Consultation with Statutory Authorities

Consultation occurred with a variety of personnel from the NSW Department of Environment and Climate Change (DECC) with regard to Aboriginal issues. This included discussions regarding archaeological sensitivity, appropriate stakeholders, consultation methodology, and appropriate field methodologies. Consultation occurred through personal meetings, attendance at Aboriginal Focus Group meetings, and phone discussions.

Consultation with the NSW Heritage Office remained at an informal level given that no issues of state level significance have been identified regarding non-Aboriginal heritage. Liaison with the Byron and Ballina Shire Councils with regard to non-Aboriginal heritage has occurred via personal and phone contact with heritage officers or other responsible Council personnel, and review comments made on draft reports.

2.4 Field Survey

A corridor approximately 17 km long and variously 50 to 120 m either side of the alignment centreline formed the study area for cultural heritage survey. Field survey of the proposed upgrade corridor and construction footprint was conducted in April 2007 by archaeologists Kerry Navin and Kelvin Officer, and Jali Local Aboriginal Land Council representative, Marcus Ferguson. The survey aimed to identify all visible Aboriginal and non-Aboriginal sites and features in the defined study area, and to identify areas of archaeological potential that may require subsurface testing.

Survey for Aboriginal sites involved walking through accessible properties within the study area. Traverses were also conducted along adjacent micro-topographic features considered to have archaeological potential (such as creek banks, crest lines and terrace edges). All existing natural ground surface exposures were inspected. All examples of old growth native trees in the survey area were inspected for possible Aboriginal scarring.

Where access to private property within the impact area was not available, sections of the propose upgrade were assessed from nearby access roads and/or accessible properties. The assessment of archaeological potential included those areas in which access to conduct archaeological surface survey was denied. This assessment was aided by the use of aerial photography and topographic mapping.

Following the completion of field survey, the boundaries of the proposed upgrade corridor were further refined. This resulted in some surveyed areas no longer being considered for development, and the inclusion of some peripheral areas which had not been included in the survey program.

Survey for non-Aboriginal sites was conducted concurrently with the survey for Aboriginal sites.

A graphic approximation of the survey coverage achieved by the survey is shown in Figures 2.1, 2.2 and 2.3.

2.5 Recording Parameters

2.5.1 Terminology and Ethnicity

Much of the heritage legislation within Australia makes a distinction between places and remains associated with Aboriginal occupation, and those associated with other ethnicities, often grouped together as non-Aboriginal or European, Asian, etc. Sometimes distinctions are also made according to an age threshold, but not always. The distinction according to ethnicity has implications for both archaeological analysis and the use of terminology in heritage assessment. Although sometimes subtle, these implications are worth noting.

The state legislation and its associated requirements relevant to this assessment are primarily based around a (variously termed) Aboriginal and non-Aboriginal distinction. The Director-General's requirements for this Environmental Assessment are particular with regard to Aboriginal cultural heritage. For this reason, the terms Aboriginal and non-Aboriginal are used in the report headings. However, this distinction, based on ethnicity, is not necessarily observable in the archaeological record. This is because artefacts made of ceramic, glass, and metal may not reveal the ethnicity of its makers and user(s), especially from the later nineteenth century when the use of new materials and material culture by Aboriginal people became widespread. In contrast, the history of Australian occupation and the sharp differences in social and material culture between Aboriginal and non-Aboriginal peoples in the eighteenth and early nineteenth century make the interpretation of an Aboriginal origin for most stone artefacts and other Aboriginal occupation remains a relatively easy analytical distinction.

Given the difficulty of distinguishing ethnicity from some types of archaeological remains, in some circumstances it can be more accurate to distinguish between prehistoric and historic archaeological remains. These terms relate simply to the age of occupation, before or after the commencement of written records, and before or after contact with or occupation by European or Asian peoples and their material culture.

For the purposes of this report, the terms Aboriginal and Indigenous have the same meaning and are interchangeable. Non-Aboriginal refers to occupation by people of any ethnicity other than Aboriginal. It is worth noting that the description of cultural groups according to what they are not, is a poor practice in the humanities (such as non-white or non-European), and the use of the term non-Aboriginal in this report is justified only by the statutory and government policy requirements it addresses.

In this report the use of terms such as European or historic, is intended to specify ethnicity or relative chronology (respectively) and their use is deliberate. It should be noted that the terms Aboriginal and historic archaeology are not necessarily mutually exclusive, European and prehistoric nearly always are mutually exclusive (in the Australian context), and non-Aboriginal and historic are likely to be equally applicable to the same material, but need not necessarily be so.

2.5.2 Aboriginal Heritage

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts. Potential recordings fall into three categories: isolated finds, sites and potential archaeological deposits.

Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

- Random loss or deliberate discard of a single artefact;
- The remnant of a now dispersed and disturbed artefact scatter; and
- An otherwise obscured or sub-surface artefact scatter.

Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* present within any particular landform.

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations. Given the varied incidence of ground surface exposure and deposit disturbance within the study area, and the lack of background baseline data, the specification of 60 metres is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Background scatter

Background scatter is a term used generally by archaeologists to refer to artefacts which cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses).

However, there is no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. Commonly agreed is that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated discard of artefacts during travel along a route or pathway. Examples of 'focused activity' are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.

Sites

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity.

Frequently encountered site types within southeastern Australia include open artefact scatters, coastal and freshwater middens, rock shelter sites including occupation deposit and/or rock art, grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in the identification of site types detected in the study are described.

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees. Artefacts situated within, or on, a sedimentary matrix in an open context are classed as a site when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). In a rockshelter, a site is defined as one or more artefacts occurring within or immediately adjacent to the sheltered space. Unlike a single artefact in an open context, a rock shelter provides a probable occupational focus to the interpretation of a single artefact and can therefore be considered to be indicative of a site. An exception would be a single artefact which may have been deposited in the shelter through natural processes.

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of the marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity of the site.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present was assessed using the following criteria:

- The presence of broad scale landforms and/or micro-topographic features which have been found to contain archaeological deposits in previous surveys and excavations relevant to the local and/or broader region;

- The presence of features which may be indicative of the presence of archaeological deposits based on predictive site location and content modelling prepared for the local or broader region;

- A relative absence of a degree of ground disturbance which could reasonably be considered to have largely destroyed or removed an archaeological deposit, or reduced its archaeological and cultural values to a minimal level.

- Where the results of geotechnical test pits or boreholes conducted in PAD locations were available, these records were reviewed and the PAD identification confirmed or amended accordingly. This effectiveness of this review process was found to be very limited due to the broad scale of classification used in the profile records. In most cases, the upper profile was classified as a single unit between 0.8 and 2.2 m in depth, preventing an assessment of finer scale divisions such as A or B-horizons within the upper 30 cm.

Although it is correct to observe that agricultural impacts can reduce the significance or archaeological potential of a PAD (such as from vegetation clearance, ploughing and soil loss through erosion), there are a number of other factors to be considered when determining if a deposit reaches a threshold for PAD identification. These include rarity, persisting scientific values, cultural values, and potential depth below the plough zone. Despite compromised spatial integrity from agricultural disturbance, some deposits may be of value due to the rarity of their context or content, or to non-archaeological cultural values associated with that location.

Ploughing will typically effect the vertical distribution of artefacts within the top 20 to 30 cm of the soil profile. Despite this, some site-use patterns in the horizontal plane, such as knapping floors, may survive albeit with an extended vertical distribution and possible mixing with artefacts from other events. For examples of the complexities of this process see Cahen and Moeyersons (1977), and Moeyersons (1978). This persisting spatial information may have scientific value.

The subsurface vertical movement of artefacts from ploughing is similar in effect to a sped-up and scaled-up version of the normal disturbances from root, insect and animal activity. This natural process is termed bioturbation and results in an upper soil profile zone which can be termed the

biomantle (Johnson 1989, 2002). Due to bioturbation, most open context soil profiles (outside of rapidly aggrading contexts) display a mixed vertical artefact distribution where the relative depth of artefacts does not relate to age. Bioturbation over thousands of years has already 'shuffled' the artefacts in these contexts. The act of ploughing in some contexts may not therefore be causing any greater degree of artefact disturbance than that already present. Archaeological value may still be present in such artefact assemblages however, given that they may have horizontal spatial integrity, representative value based on technological traits, or research value based on their environment context, or assemblage size and density.

Where a deposit occurs within an aggrading context, such as a valley floor terrace or flood plain, archaeological deposits may potentially extend below the zone of plough impact. They may also have been minimally disturbed from bioturbation if deposited during or just before a rapid accumulation event, such as silt from a flood, a sediment pulse after fire, or a landslide. In these circumstances, there remains potential for archaeological deposits to have scientific value by being stratified, that is, consisting of a sequence of layers or intrusive deposit which relate to the chronology of site use.

Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit. Table 2.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

Table 2.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit.

		Potential to contain Aboriginal objects		
		Low	*Moderate*	*High*
Potential archaeological significance	*Low*	---	**low**	**moderate**
	Moderate	---	**moderate**	**high**
	High	---	**high**	**high**

In the case of rock shelter contexts, the following criteria are used as guidelines for identifying the presence of potential archaeological deposits:

- Shelter should contain a sediment floor at least around one square metre in area;
- Deposit must be at least 15 cm deep (determined by inserting tent pegs);
- Deposit should be relatively compact and show evidence for a significant period of accumulation (deposit should not be spongy and contain only clean sand derived from recent stone weathering);
- The shelter space should be at least one metre high and one metre deep (but exceptions may occur, such as where the deposit is deep); and

- The shelter should be relatively dry.

2.5.3 Non-Aboriginal Heritage

In Australia, non-Aboriginal heritage relates to a period during and following contact between Aboriginal and European or Southeast Asian peoples. The identification and assessment of non-Aboriginal cultural heritage in Australia is primarily an exercise that draws upon historical archaeology, documentary and data records, and oral history. Historical archaeology refers to the archaeology of human occupation following the commencement of written records. Historical archaeology involves the study of the past using physical evidence in conjunction with historical sources. Archaeological remains relating to non-Aboriginal occupation are mostly to be characterised by finds including the manufactured materials of ceramic, glass and metal.

The two primary types of places or items that may form part of the historical archaeology context with the proposed upgrade are:

1. Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined; and

2. Areas of land that display evidence of human activity or occupation

Within these broad parameters, an historical archaeological site may include:

- Topographical features and evidence of past environments (that is, resident in pollens and diatoms);

- Evidence of site formation, evolution, redundancy and abandonment (that is, features and materials associated with land reclamation, sequences of structural development, demolition/deconstruction, and renewal);

- Evidence of function and activities according to historical theme/s represented (for example, an industrial site may contain diagnostic evidence of process, products and by-products);

- Evidence associated with domestic occupation including household items and consumables, ornaments, personal effects and toys;

- Evidence of diet including animal and fish bones, and plant residues;

- Evidence of pastimes and occupations including tools of trade and the often fragmentary signatures of these activities and processes;

- Methods of waste disposal and sanitation, including the waste itself which may contain discarded elements from all classes of artefact as well as indicators of diet and pathology; and

- Any surviving physical evidence of the interplay between site environment and people.

In the context of the proposed upgrade, site types are most likely to fall into domestic, agricultural, transport, commercial and industrial categories. Examples of site types in these categories are provided in table 2.2.

Table 2.2 Examples of historical site types which may be encountered within the study area.

Domestic	Agricultural	Transport	Commercial	Industrial
residential farm buildings	farm outbuildings, sheds and utility areas	roads and tracks and pathways	former and existing hotel buildings	former or existing factory or cottage industry sites
homesteads	dairy buildings	former roads and easements	former and existing retail and/or postal service buildings	former saw mill sites
cottages	field and orchard systems	bridges and culverts or their remains		gravel or other material quarries
abandoned cars	stock yards, pens, and dips			
refuse dumps	fencelines			
	drainage ditches			
	abandoned machinery			

The information found in historical archaeological sites is often part of a bigger picture which offers opportunities to compare and contrast results between sites. The most common comparisons are made at the local level, however, due to advances in research and the increasing sophistication and standardisation of methods of data collection, the capacity for wider reference (nationally and, occasionally, internationally) exists and places added emphasis on identification and conservation of historical archaeological resources.

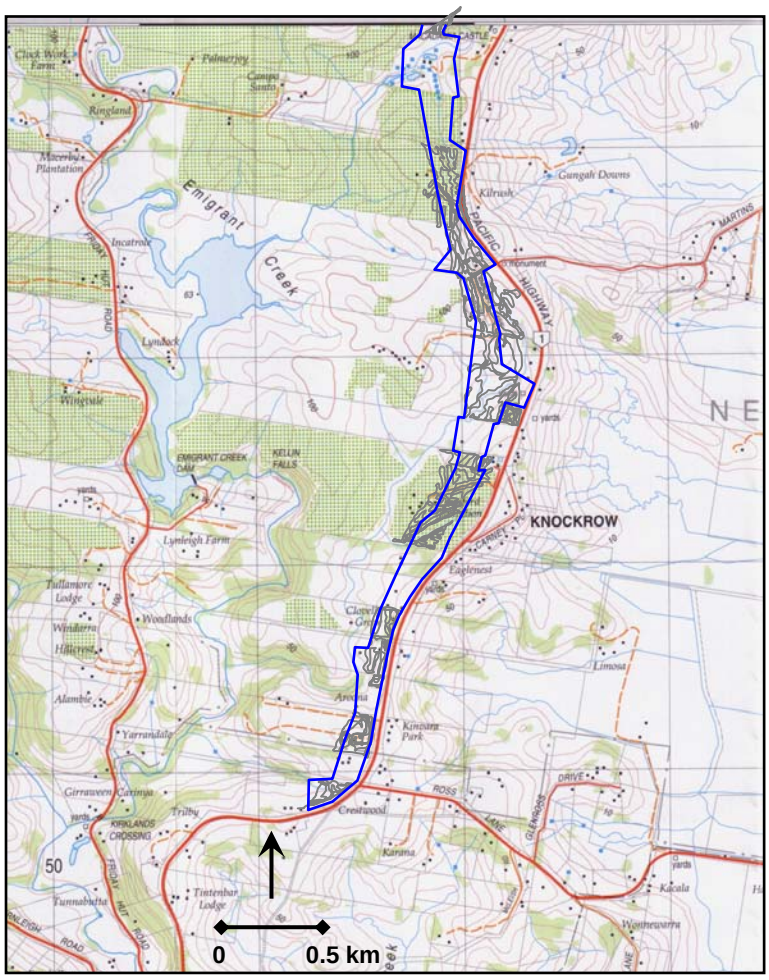


Figure 2.1 Graphic approximation of the survey coverage
(Ballina 1:25,000 topographic map, 3rd ed Dept of Lands 2002)

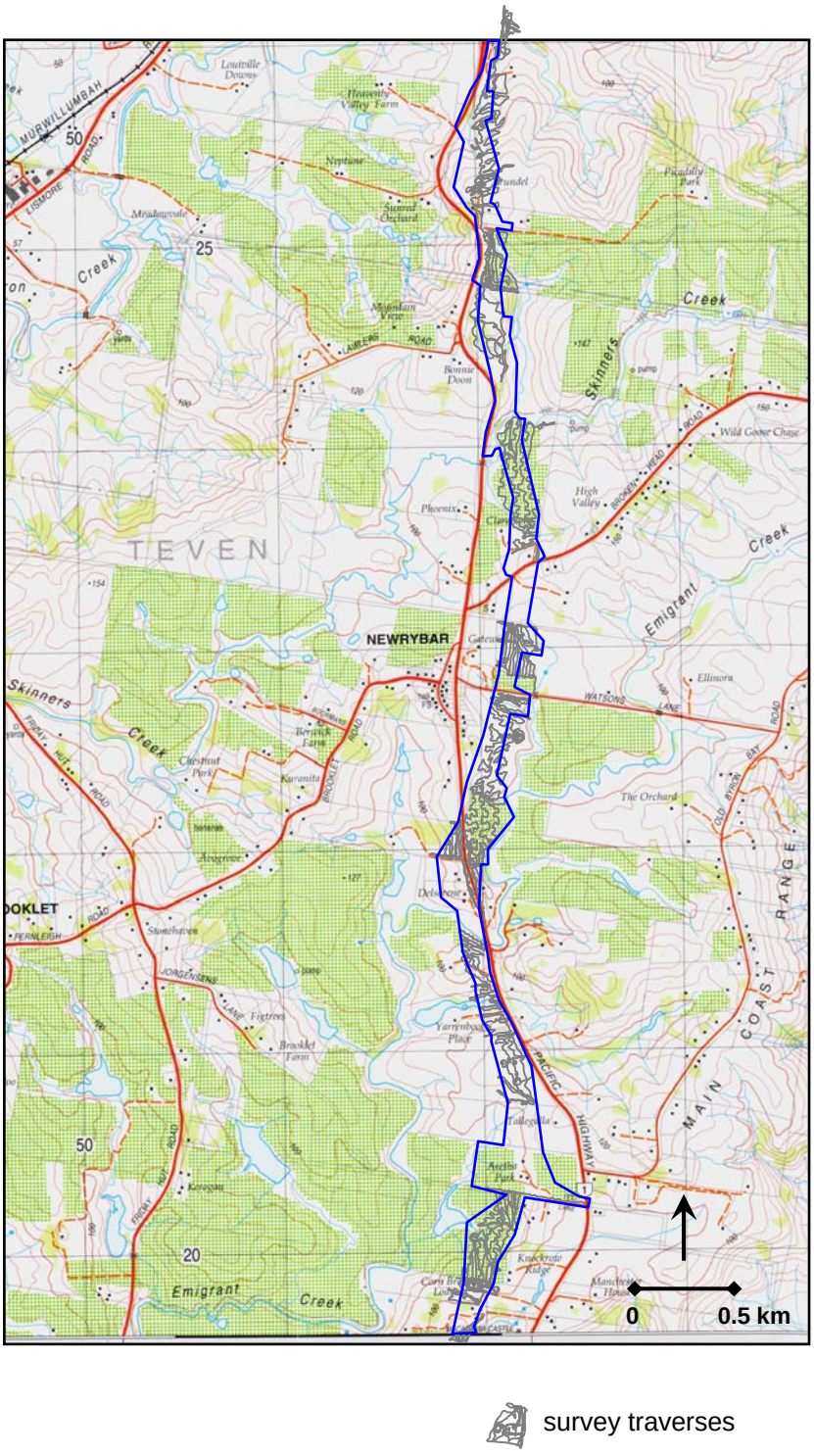


Figure 2.2 Graphic approximation of the survey coverage
(Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002)

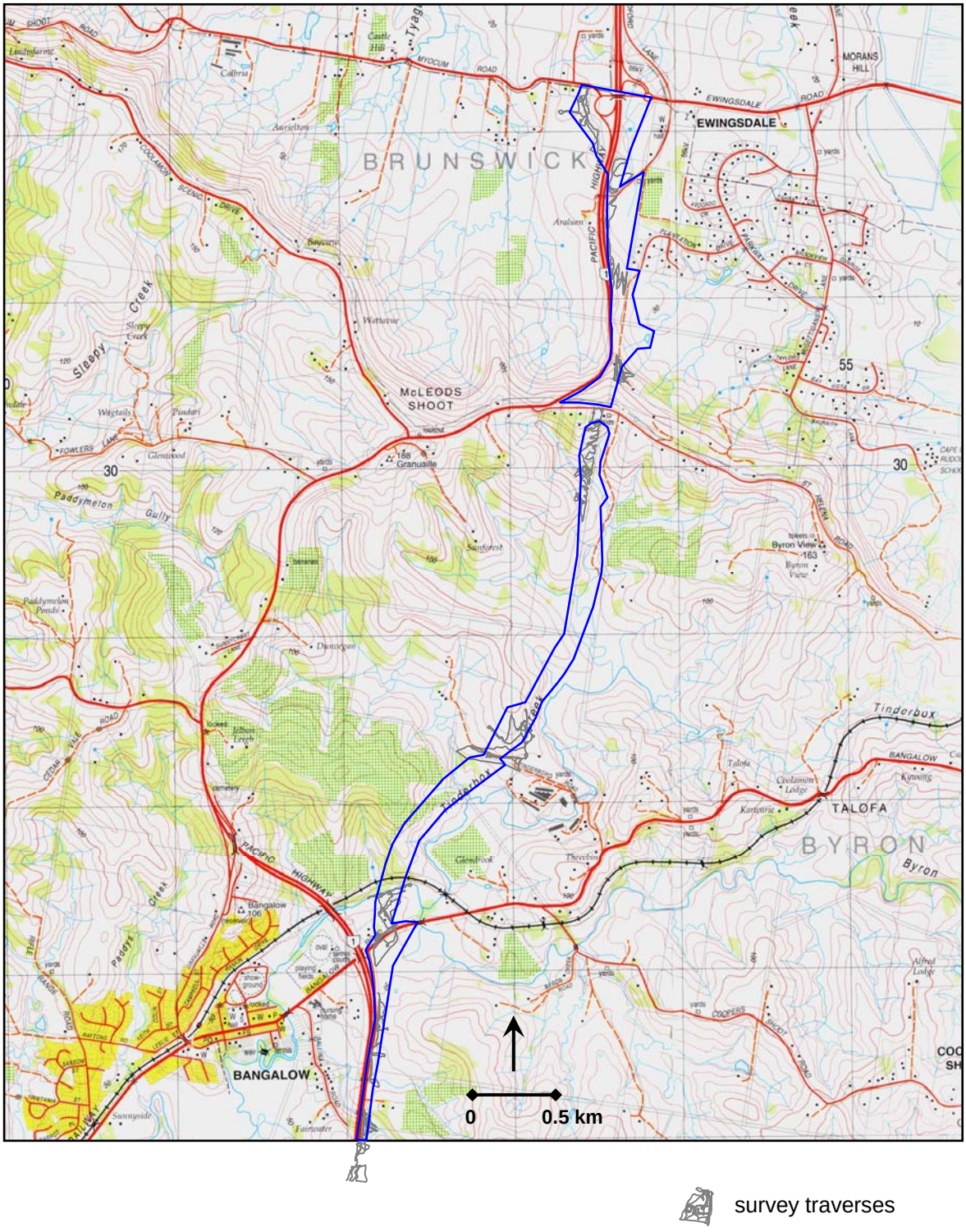


Figure 2.3 Graphic approximation of the survey coverage
(Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002)

3. POLICY CONTEXT AND LEGISLATIVE FRAMEWORK

This section provides a brief summary of legislation and government policy which has a direct bearing on the management of cultural heritage values within the upgrade.

This heritage assessment has been conducted in accordance with the policy guidelines of the Department of Environment and Climate Change (DECC), the Roads and Traffic Authority (RTA) and the NSW Heritage Office.

3.1 *Environmental Planning and Assessment Act 1979*

The EP&A Act and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment.

Approval of the proposed Tintenbar to Ewingsdale upgrade is sought under Part 3A of the Act.

Part 3A establishes a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, and other projects, plans or programs declared by the Minister for Planning.

Part 3A removes the stop-the-clock provisions and the need for certain approvals under eight other Acts, including the *National Parks & Wildlife Act 1974* and the *Heritage Act 1977* (refer to report sections 3.3 and 3.4 below for more detail). Environmental planning instruments such as the heritage provisions within Local Environmental Plans and Regional Environmental Plans and State environmental planning policies do not apply to projects approved under Part 3A.

Where warranted the Minister may declare any project subject to Part 3A to be a critical infrastructure project. On the 5 December 2006 the Minister for Planning declared the Tintenbar to Ewingsdale upgrade as one of several Pacific Highway projects which form a single project to which Part 3A of the EP&A Act applies. On the 8 December 2006, the Minister declared this project to be a critical infrastructure project.

Under the provisions of Part 3A, proponents of major and infrastructure projects must make a project application seeking approval of the Minister. A project application report for the Tintenbar to Ewingsdale upgrade project, seeking Project Approval, was submitted in April 2007. Subsequently, the Department of Planning issued Director General's requirements for the preparation of an environmental assessment and a Statement of Commitments. The Statement of Commitments will include how the project will be managed in an environmentally sustainable manner, and consultation requirements.

This report addresses the Director General's requirements and forms part of the environmental assessment for the proposed upgrade.

Following submission of an environmental assessment and draft Statement of Commitments to DoP, these documents are variously evaluated, reviewed, circulated and exhibited. The proponent may modify the proposal to minimise impacts in response to submissions received during this process. The proponent then provides a Statement of Commitments and, following any project changes, a preferred project report. An assessment report is then drafted by the Director-General and following consultation with relevant agencies, a final report with recommendations for approval conditions or application refusal is submitted to the Minister. The Minister may refuse the project, or approve it with any conditions considered appropriate.

3.2 *Native Title Act 1993*

'Native title' is the name given by the High Court to Aboriginal property rights recognised by the court in the *Mabo* judgment (3 June 1992). The Mabo judgment overthrew the legal fiction of *terra nullius* – that the land of Australia had belonged to no one when the British arrived in 1788.

The judgment found that a native title to land existed in 1788 and may continue to exist provided it has not been extinguished by subsequent acts of government and provided Aboriginal groups continue to observe their traditional laws and customs.

The main purpose of the Act is to recognise and protect Native Title, which can be defined as the 'rights and interests in land and waters that Aboriginal and Torres Strait Islander people have under laws and customs and that are recognised by the common law' (s223). The traditions of Aboriginal and Torres Strait Islander peoples can change with time and sometimes people stop following a tradition. Therefore, the Act states that native title rights can change or even finish.

The Act contains a process for determining whether native title exists, what rights and interests native title holders have, and whether people who have title have 'exclusive possession' (s13, s61 and s225).

The Act states that native title is only extinguished in a few cases where it is necessary to make past acts legal. The Act provides for the validation of various categories of past government acts and grants of rights to use or own land or waters (prior to 1/1/94), which might have been invalid because the land or waters was native title land or waters at the time (s14 and s19). As a consequence, native title does not exist over grants of freehold land, private freehold, all exclusive possession leases (residential, commercial, agricultural and some pastoral leases, defined in s246 to s249), roads, and the construction of a public work (defined in s253). Other forms of leasehold interest, licences and permits do not extinguish native title, or may only extinguish native title tights where these cannot co-exist with the granted rights and interests (as in the case of some leasehold rights). The determination of where and when native title rights have been extinguished by past acts is complex and remains subject to court interpretation.

The Act establishes the National Native Title Tribunal which has various responsibilities regarding the hearing and processing of native title claims.

In order to demonstrate native title rights to a piece of land, claimants must be able to prove that:

- They owned the land under Aboriginal or Torres Strait Islander customs and laws;
- They have not lost their traditional links with the land; and
- Governments have not used the land or given it to anyone else in a way which 'extinguishes' native title.

Following the 1998 amendments to the Native Title Act, every native title application constitutes a proceeding in the Federal Court. An administrative test is applied to all Native Title claims to determine if a claim can be considered to be registered. A registered claim entitles the claimants to certain procedural rights, including the right to negotiate, pending the making of a determination of native title.

The Act allows 'non-claimants' with an interest in land to ask for a determination about native title. If no one opposes a non-claimant application, future acts over the lands or waters are valid (s61, s67 and s24). The Act also allows for and defines procedures for the acquisition of native title lands for public purposes.

One native title claim occurs within the area of the proposed upgrade. This is the *Byron Bay Bundjalung People #3* claim which was registered in 2003. The boundary of the claim includes the proposed bypass to the north of Newrybar. Further detail of this claim is provided in section 4.1.8 of this report.

3.3 The *National Parks and Wildlife Act 1974*

The *National Parks and Wildlife Act 1974* (as amended) provides for the legal protection and management of Aboriginal sites within NSW. The implementation of the Aboriginal heritage provisions of the Act is the responsibility of the Department of Environment and Climate Change (DECC).

With the exception of some artefacts in collections, or those specifically made for sale, the Act generally defines all Aboriginal artefacts to be 'Aboriginal objects' and to be the property of the Crown. An Aboriginal object has a broad definition and is inclusive of most archaeological evidence The Act then provides various controls for the protection, management and disturbance of Aboriginal objects.

An Aboriginal object is defined as:

> '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.' [s5(1)].

In practice, archaeologists use a methodology that groups 'Aboriginal objects' into various site classifications according to the nature, occurrence and exposure of archaeological material evidence. The archaeological definition of a site may vary according to survey objectives; however, a site is not recognised or defined as a legal entity in the Act. It should be noted that even single and isolated artefacts are protected as Aboriginal objects under the Act.

Under the Act, the investigation, use or destruction of Aboriginal objects may only occur following the receipt of a Heritage Impact Permit under the provisions of s87 and s90 of the Act. Section 87 relates to actions which do not involve direct damage to Aboriginal objects (such as archaeological excavations and artefact collections), and section 90 relates to damage or defacement of Aboriginal objects (such as may be involved during construction activities).

An important exception to these permit requirements are projects which are approved under the provisions of Part 3A of the Act (s75U of the *EP&A Act 1979*). In the event that the proposed Tintenbar to Ewingsdale upgrade is approved under part 3A of the EP&A Act, as is sought by this environmental assessment, sections 87 and 90 of the NP&W Act will not apply to the upgrade project.

However, prior to any such approval, the RTA have determined that the conduct of any actions, such as archaeological test investigations, which may involve the disturbance of Aboriginal objects, will require a s87 Heritage Impact Permit from the DECC.

Under s87 of the Act, it is an offence to do any of the following without a Permit from the Director-General of the DECC: disturb or excavate any land for the purpose of discovering an Aboriginal object; disturbing or moving an Aboriginal object; take possession of or removing an Aboriginal object from certain lands; and erecting a building or structure to store Aboriginal objects on certain land (s86). The maximum penalty is $11,000 for individuals and $22,000 for corporations.

In January 2005, the (then) Department of Environment and Conservation introduced *Interim Guidelines for Aboriginal Community Consultation* with regard to the preparation of applications for a consent or permit under Part 6 (s87 and s90) of the NP&W Act (DECC 2005). The Interim guidelines include a required process of notification of intended applications in the local media, an invitation for stakeholder groups to register interest, and various time periods providing an opportunity for registered stakeholders to comment and review proposed methodologies and assessments.

The processing and assessment of permit and consent applications is dependent upon adequate archaeological review and assessment, together with an appropriate level of Aboriginal community liaison and involvement (refer Standards for Archaeological Practice in Aboriginal Heritage Management in 1997 NPWS Standards and Guidelines Kit).

It should be noted that some provisions of the *NP&W Act* and the associated derived DECC policy still apply to the management of Aboriginal objects encountered or recovered from archaeological excavations or salvage programs conducted as part of projects approved under part 3A of the *EP&A Act 1979*. The Act provides for the curation of Aboriginal objects at the Australian Museum, Sydney, or according to the conditions of a Care Agreement for Aboriginal Objects approved by the DECC. In addition, the DECC must be notified in writing of the discovery of previously unrecorded Aboriginal objects as soon as practicable (s91).

3.4 The NSW *Heritage Act 1977*

Overview

The purpose of the NSW *Heritage Act 1977* is to ensure that the heritage of NSW is adequately identified and conserved. In practice the Act has focused on items and places of non-Aboriginal heritage to avoid overlap with the NP&W Act 1974..

The *Heritage Amendment Act 1998* instigated changes to the NSW heritage system, which were the result of a substantial review begun in 1992. A central feature of the amendments was the clarification and strengthening of shared responsibility for heritage management between local government authorities, responsible for items of local significance, and the NSW Heritage Council. The Council retained its consent powers for alterations to heritage items of state significance.

The Heritage Act is concerned with all aspects of conservation ranging from the most basic protection against damage and demolition, to restoration and enhancement. It recognises two levels of heritage significance, state significance and local significance across a broad range of values. Some key provisions of the Act are:

- The establishment and functions of the Heritage Council (Part 2);
- Interim heritage orders (Part 3), the State Heritage Register (Part 3A);
- Heritage Agreements (Part 3B);
- Environmental planning instruments (Part 5);
- The protection of archaeological deposits and relics (Part 6); and
- The establishment of Heritage and Conservation Registers for state government owned and managed items (Part 7).

Generally this Act provides protection to items that have been identified, assessed and listed on various registers including State government s170 registers, local government Local Environmental Plans (LEPs) and the State Heritage Register. The Interim Heritage Order provisions allow the minister or his delegates (local government may have delegated authority) to provide emergency protection to threatened places which have not been previously identified.

In addition, the Act includes provisions which relate to the definition and protection of relics.

Protection of Relics and Archaeological Deposits

Section 139 of the Act specifically provides protection for any item classed as a relic. A relic is defined as "...any deposit object or material evidence -

(a) Which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and

(b) Which is 50 or more years old." (Heritage Act 1977, Part 1, Section 4)

Section 139 of the Act prohibits disturbance of a relic unless in accordance with an 'excavation permit' from the Heritage Council. This section also allows the Heritage Council to create exceptions to the requirement for an excavation permit with respect to certain types of relic, contexts, or types of disturbance (refer below).

Section 146 of the Act requires that the discovery of a previously unknown relic be reported to the Heritage Council within a reasonable time of its discovery.

Current policy and interpretation by the NSW Heritage Office (Department of Planning) limits the scope of the 'relic' definition. Certain above ground structures and ground features or 'works' which may include roads, embankments and other forms of constructed ground relief may not be considered to be relics. Where appropriate, consultation with the Heritage Office regarding this matter is advised.

Permits and Approval Requirements

The Act includes two key approval requirements;

- A permit must be obtained for works which have the potential to interfere with a heritage item or place which is either listed on the State Heritage Register or the subject of an interim heritage order (s57); and

- A permit must be obtained to disturb or excavate land where it is known (or there is reasonable cause to suspect) that such action will or is likely to uncover or affect a relic (s139). This permit is known as an excavation permit and can be applied for under s140 of the Act.

Neither of these approval requirements are likely to apply to the construction of the Tintenbar to Ewingsdale upgrade. There are no items on the State Heritage Register which occur within the proposed upgrade, nor any identified items assessed as having State significance.

In the event that the proposed upgrade is approved under part 3A of the EP&A Act, as is sought by this environmental assessment, section 139 of the Heritage Act will not apply (s75U of the *EP&A Act 1979*). Any potential impact to relics during construction, would only occur following project approval, and the management of those impacts will be according to the conditions of that approval.

The State Heritage Register

Changes to the Heritage Act in the 1998 amendments established the State Heritage Register which includes all places previously protected by a Permanent Conservation Order (PCO) and items identified as being of state significance in heritage and conservation registers prepared by State Government instrumentalities. Sites or places which are found to have a state level of heritage significance should be formally identified to the Heritage Council and considered for inclusion on the State Heritage Register.

There are no places of assessed state significance, or places registered on the State Heritage Register which occur within the proposed upgrade.

4. EXISTING CONDITIONS

This section presents contextual information and describes the existing condition of the upgrade study area with regard to cultural heritage. The contextual information provides a basis for the interpretation and assessment of the cultural heritage recordings. Contextual information for the Aboriginal (Section 4.1) and non-Aboriginal (Section 4.2) arenas are presented separately. Cultural heritage recordings within the proposed upgrade are described in section 4.3 and the significance of these recordings is assessed in section 4.4.

4.1 Aboriginal Heritage Context

4.1.1 Tribal Boundaries

Tribal boundaries within Australia are based largely on linguistic evidence and it is probable that boundaries, clan estates and band ranges were fluid and varied over time. Consequently tribal boundaries as delineated today, must be regarded as approximations only, and relative to the period of, or immediately before, European contact.

Tindale (1974) places an Arakwal 'tribe' between Ballina and Cape Byron, extending inland to Lismore and Casino. However he only recorded groups that might be given the status of tribes and did not define horde divisions. It was the subsidiary groups of the tribe (the horde or clan groups) that were more important in the life of Aboriginal people. The family was the basic unit with a number of families in a loose association forming a clan. This group would exploit a particular area of country, the size of which was fluid and was based on the social, religious and economic needs of the time.

The Tintenbar to approximately Newrybar section of the proposed upgrade lies within the territory of the Arakwal dialect of the Bandjalung group (Tindale 1974). Early sources suggest that the range of the Arakwal was quite small, extending only as far as the eastern edge of the Big Scrub - only about eight to 10 km (Ainsworth 1922). The section of the proposed upgrade from about Newrybar to Ewingsdale was inhabited by the Minjangbal tribal group, which extended northwards along the coastal strip past Tweed Heads (Tindale 1974).

Linguistic studies using word lists compiled by early residents suggest that the tribes in the Tweed and surrounding districts were part of a larger tribal and linguistic grouping stretching from the Clarence River to the Logan River. This linguistic area, known as Bundjalung, was probably divided into up to 20 dialect areas that roughly approximated tribal boundaries (Longhurst 1980:18). Livingstone (1892) determined that the language of Brunswick Heads and Byron Bay was Minyungbal, while the Ballina and Evans Head area was Nyangbal. The boundary of the two dialects is an approximate line from Newrybar to Broken Head.

Crowley (1978) however, proposes that the Bandjalung linguistic boundary contained a number of dialectic groups. According the dialectic boundaries proposed by Crowley, the southern part of the study area contains the Nyangbal and the northern section the Minjangbal dialect group.

Ainsworth (1922) resided in the Ballina area from 1847 and noted that in 1847 there were 400-500 Aborigines in the tribes of east and west Ballina, and that at that time they lived in their traditional ways with little influence from Europeans (1922:28).

In his descriptions of the Ballina tribes, Ainsworth (1922) says their hunting grounds extended north to Broken Head and then only as far west as the Big Scrub. Although there was likely an extensive range of food and material resources within the wet sclerophyll and rainforest of the scrub, the descriptions of the use of some hunting techniques, such as exceptionally long the game nets, and the use of boomerangs and sticks for the hunting of flying foxes, would suggest that the Ballina tribes at least were not observed within the Big Scrub. The Big Scrub would have been too thick, and the hunting techniques described too cumbersome, for such closed forest conditions. He also noted that the Aborigines usually camped at different locations but during the oyster season would congregate at Chickaba on North Creek and feast.

Ainsworth (1922) mentioned that battles were not infrequent between the tribes. He recalls that the "Brunswick blacks hostile to those of Ballina would meet on Seven Mile Beach as a battleground" (Ainsworth 1922:44). This information leads to the conclusion that although a similar language was spoken, there were identified differences in territory, probably relating to dialectal differences. However, there were occasions when large groups gathered to feast on the seasonally available foods.

Hewitt (undated) records that the name of the village Tintenbar is derived from the Nyamgbal word 'Chin-chun-bar', meaning place of the short-tailed pademelons. It is reported that this locality was named following a hunt by Aborigines which involved the driving of pademelons onto nets in the area bounded by Teven and Emigrant Creeks on the edge of the Big Scrub (cited in Collins 1998:17).

4.1.2 Settlement Patterns

Aboriginal population densities are difficult to estimate given the lack of reliable data. Belshaw (1978) compiled figures for the broad geographical area termed the humid coastal zone, which extends from the Macleay River to the Queensland border and inland to the edge of the northern tablelands. Based on observations from early settlers, Aboriginal population density at the time of European contact for the northern coast of NSW have been estimated at one person per 0.4 - 2.6 km^2 on the coastal plain and one person per 5 km^2 for areas further inland from the coast. The high population on the coastal plain is explicable in terms of the region being a rich resource zone.

There are a number of differing models that attempt to explain original patterns of movement within the coastal zone. Belshaw (1978) postulates a semi-settled pattern of occupation for the northern rivers of NSW that is based on the availability of particular resources, for example fish, shellfish and certain vegetable foods. McBryde (1976:53) sees movement on a seasonal basis with groups spending winter hunting in the foothills and moving down to the coast in spring to take advantage of good fishing. Sullivan (1978) postulates limited movement between riverine and coastal areas bordering the rainforest belt, noting that country inland may have been used only in times of flood.

Coleman (1980) sees the coastal alignment of tribal territories, which were relatively small and densely settled, as forming a block to movement by groups inhabiting the inland-foothills territory. In a review of ethnographic material, Coleman found that observed movements appeared to have been parallel to the coast. These movements involved large groups of people, but were made to attend gatherings for fighting, initiation etc, rather than to take up seasonal residence in another location.

All of these models suggest that geographical access routes both along and across the coastal plain would have been important areas of Aboriginal occupation. This is reiterated in oral information provided by members of the local Aboriginal community (Aboriginal Focus Group meetings in 2006). The coastal plain was regarded as a key area for sites. The area acted as both a foci for economic subsistence and ceremonial gatherings that were supported by an abundance of coastal plain resources. The proximity to the resource zones of the Big Scrub, the Newrybar Swamp and the beaches and headlands of the coastline would have provided extensive food and material resources.

Collins (1998) has reviewed the literature and ethnohistoric sources relating to the Aboriginal occupation and exploitation of the subtropical rainforests which formerly dominated the vegetation of the Alstonville Plateau (Collins 1996 and 1998). Although references indicate the exploitation of pademelons, and yams from the 'scrubs', and mention is also made of Aborigines passing through the 'big scrub', the extent and scale of this exploitation remains to be established (Ainsworth 1922:43, Collins 1998:17). Collins concludes that there is little evidence to indicate that Aboriginal groups habitually camped within the rainforest proper. Many of the available foods and resources of the rainforest provided a diffuse and year round supply and did not favour large scale and focused seasonal exploitation. By comparison, the margins of the rainforest, the interface with other vegetation communities, and the edges of tracks, clearings and water courses probably presented better targets for systematic harvesting of both vegetable and animal resources (Collins 1998:17).

The exploitation of stone resources for tool manufacture would also have influenced patterns of settlement and trading. Collins notes that no mention of stone sources occurs within the local ethnographic literature, but notes a number of potential sources including:

- white chert pebbles within conglomerate near Byron Bay;
- basalt shingles, quartz pebbles and a vein of chalcedony at Lennox Head;
- calcite cobbles at Black Head;
- and chalcedony and fine grained silcrete outcrops in places across the basalt soil lands (Collins 1998:18, Rich 1994:24)

Oral tradition communicated by a Bundjalung Elder and noted by Collins reported that 'the old people' used to say that the Tintenbar hills provided the stones used in manufacturing flaked tools (L. Cook pers. comm., cited in Collins 1998:18).

4.1.3 Contact History

Early historical references to the Aborigines of the Tweed and surrounding districts are rare. The first sighting of Aborigines was made by Captain James Cook on May 15, 1770, 25 km south of the Tweed River – 'we discovered smoke in many places and saw a group of natives' (Cousins 1933:9). The first direct contact with the Aborigines of northern coastal NSW was made by the explorer Lieutenant John Oxley on October 31, 1823. Uniake (1825:40) describes the contact as occurring with 200 Aboriginal men approximately 5 km from the mouth of the Tweed River.

From the 1820's until the early 1860's the number of white people visiting the northern rivers district was generally limited to escaped convicts and wood-cutters exploiting the pine and cedar forests. 'Aborigines on the Tweed had early on assisted the first cedar-getters in guiding them to valuable stands of timber in return for rum and tobacco' (Longhurst 1980). The first white settlers arrived in the Ballina district from about 1842.

The early 1860's saw the arrival of white settlers under the Robertson Land Acts. By 1863 the region was occupied by timber getters and farmers. Relations between the Aborigines and white settlers were at times hostile. Ainsworth (1922:45-46) relates the story of a massacre in 1853 or 1854 of Aborigines at a hill at east Ballina. He says that 30-40 people were killed by the police with many more injured and that the graves could still be found on the hill (that is, in 1922).

European incursion and eventual settlement of the region resulted in the breakdown of the traditional economy and occupation patterns of the local Aborigines. European settlement of the most fertile land alienated the Aboriginal people from their tribal lands and hunting areas. Aborigines became increasingly dependent on Europeans and their money economy for their survival.

4.1.4 The Alstonville Plateau

The study area is situated on the Alstonville Plateau, a dissected tertiary basalt plateau to the west of the coastal plain between Lennox Head and Byron Bay. The fractured basalt aquifers of the plateau are extensively used for stock and domestic needs, horticultural enterprises and town water supply.

A number of archaeological studies have assessed areas on the plateau and on the spurlines descending on to the coastal plain in the region around the study area.

An investigation of a proposed Telstra fibre optic cable was undertaken by Davies between Lismore and Andersons Ridge in 1991. No sites were located in the section of the surveyed route that crossed the undulating basalt Alstonville plateau. Kuskie (1993) also undertook a survey for a fibre optic cable between Coffs Harbour and Tweed Heads. No sites were located in the section of the surveyed route that traversed the slopes and ridges of the Alstonville Plateau.

An assessment of the Ewingsdale to Tyagarah Pacific Highway upgrade was undertaken by Collins (1996b). The proposed route traversed a series of low coastal hills and ridges before dropping down to the coastal plain. Three areas of low to moderate archaeological potential were identified in the area, comprising the basal slopes of the hills either side of Tyagarah Creek, and the basal slope adjacent to flats south of Myocum Road intersection (Collins 1996b:26).

Collins also undertook an archaeological assessment for the Pacific Highway Ballina bypass in 1998. The investigated alignment crossed a range of topographies and environments. The southern portion crossed the Richmond River floodplain, with elevations from 0-1 m. The northern portion crossed the Alstonville Plateau which was typified by ridges, spurs and associated slopes. The maximum elevation of the study area was 87 m AHD. A single stone artefact was located on the floodplain during the survey however the provenance of the artefact was uncertain. She concluded that the floodplain had low archaeological potential and the basal spurs and hillslopes fringing the rainforest/swamp ecotone had high archaeological potential. Three areas of potential archaeological deposit were identified in these areas and it was recommended that each be tested prior to highway construction.

No Aboriginal sites were identified in the course of an archaeological survey of the basal slope of a spurline that formed a watershed between Emigrant Creek and Maguires Creek (Collins 2003a).

No Aboriginal sites have been identified as a result of surveys conducted on the hills of the Alstonville plateau that fringe the lowland coastal plains (Piper 1994a, Collins 1991, 1992, 1996a, Dallas et al 1991, Davies 1991). Similarly, most surveys conducted across the wider big scrub areas have been unable to detect sites (Bonhomme and Craib 1995, Piper 1996a, 1996b, Mills and Wilkinson 1994, Kuskie 1993 and Davies 1991). An exception is a survey conducted by Collins (1992) which recorded a single surface site of three flaked chalcedony artefacts on flats close to the Wilson River at Booyong. She estimates that travel to Booyong would have entailed a minimum walk of 10 km through the forests of the big scrub. Also relevant are reports of stone axes found by landowners at Pierces Creek and Alstonville (Piper 1994b:10, Mills 1997a:19), and the recovery of six flaked artefacts and an isolated find during test excavations in creek terraces for the Alstonville bypass (Mills 1997b). The latter were made from cream-grey chert and occurred within 20 cm of the ground surface. Mills concluded that similar small subsurface sites will remain on other creek terrace landforms on the Alstonville Plateau.

Craib (1997, 1999) examined the section of the Pacific Highway from the Bangalow bypass to St Helena Hill and then to the Ewingsdale interchange for a proposed highway upgrade. The St Helena Hill to Ewingsdale Craib portion also occurs within the current upgrade assessment area. Craib encountered 'very poor' levels of ground surface visibility across the majority of the surveyed area. In addition to the surface survey, a series of twenty geotechnical test trenches, situated between Ewingsdale and St Helena Hill, were monitored for the presence of subsurface cultural deposits. The trenches were located in all major topographic divisions and each averaged 2.8 m^2 in surface area. Most of the trenches contained red to red-brown silty clays, with increasing clay with depth (Craib 1999: 30-31). No Aboriginal sites were identified in the surveys or the geotechnical trenches and Craib concluded that the area had generally low potential for sites due to four factors:

- The absence of permanent water or major drainage lines;
- The basalt based geology had previously been identified as having low archaeological potential;
- Only a small amount of level ground suitable for Aboriginal occupation was present; and
- The flat ground that may have been suitable for Aboriginal occupation had been heavily disturbed or modified by the existing highway and farming practices.

The absence of sieving from Craib's monitoring of the geotechnical trenches limited the methodology to the visual detection of obtrusive archaeological deposits such as shell middens or those containing large or a high density of stone artefacts. The most probable site type for this location however is a small area and low density subsurface distribution of stone artefacts, and this type of deposit is very difficult to detect in a monitoring context, especially in moist clay rich soils. As a consequence, the subsurface data from Craib's investigation has limited application and does not preclude the presence of such sites.

Based on the results of these studies, and on ethnographic data for the region it appears that landforms based on the Lismore basalt and the associated big scrub vegetation on the Alstonville Plateau (and associated spurs and ridges) may be associated with a restricted and limited

archaeological record. Exploitation of these areas may have been largely diffuse, sporadic, and relatively unfocused, and involved hunting and gathering by small groups. Exceptions to this may be associated with exploitation of the margins and transitional ecotones around the rain forest, and with ceremonial activities to specific places. In contrast, areas on the coastal plain appear to have been preferred as occupation sites and areas of focused exploitation and residence. However, limited ground surface visibility has been a factor in all of the prior archaeological assessments and the validity of these assumptions requires further assessment. Collins (1998:34) postulates that the lack of archaeological material from the plateau may be the result of post-depositional processed associated with European landuse, including soil loss, slumping and re-deposition.

4.1.5 Route Option Assessment

The development of route options and the selection of a preferred route (the proposed upgrade) was informed by a staged review and desktop analysis of known Aboriginal sites and landforms with assessed Aboriginal archaeological potential. This process included the compilation of existing site recordings and the mapping of broad scale archaeological sensitivity. Table 4.1 provides a summary of the landform categories which were identified as having archaeological potential. The results of the predictive analysis were confined to broad scale trends and were, correspondingly, applied in the initial stages of the route selection analysis.

A preliminary assessment of the proposed upgrade in 2006 (and prior to the conduct of the archaeological survey of the proposed upgrade), found that the route did not directly affect any Aboriginal sites known at that time, but did traverse landforms with assessed archaeological potential. These consisted of two areas of basal slopes with high potential, and eleven spurs and ridgelines with moderate to high potential. It was noted that further refinement of this potential was dependent upon further investigation (Navin Officer Heritage Consultants 2006).

The subsequent identification of potential archaeological deposits (PADs) based on the findings of the archaeological survey documented in this report, differed substantially in scope and topographic scale from the previously defined areas of potential. These differences in scale, are manifest by the contrast between a small number of large and broadly defined landforms (with archaeological sensitivity identified at a desktop level), and a multiple number of small PADs differentiated by micro-topographic variation, arising from on-ground inspection.

Table 4.1 Summary of broad scale landform categories with assessed Aboriginal archaeological potential (Navin Officer Heritage Consultants 2006)

Archaeological Potential	Landform Types	Comments
High	Low gradient to level spur terminations and spur basal slopes	In particular, overlooking or elevated above swamps and the permanent water of the coastal plain
	Beach barrier (sand plain) deposits	Contains a concentration of known sites
Moderate	Ridge and spur crests	Particularly where they provide a link between, or offer access to, resource zones
	Low gradient or flat benches on spurs	Especially when overlooking swamp
	Alluvial fans	Potential to bury older landforms and preserve older sites
Low	Side slopes of hills, ridges and spurs	Majority of study area
	Swamp areas/floodplain	Some potential to contain preserved wooden implements within peat deposits.

Archaeological Potential	Landform Types	Comments
Negligible	Crests containing modified ground	Spurs and ridges that contain roads, houses and other buildings

Following the desktop analysis, archaeological field survey was conducted in a sample of 40 properties as part of the route selection component of the upgrade project. This fieldwork was undertaken at different stages of the project. Information collated in these studies was used in preparation of the Route Options Development Report. Further field investigations were undertaken after the Route Options Development Report was prepared and this information was incorporated into the Cultural Heritage Working Paper (Navin Officer Heritage Consultants 2006).

Sixteen Aboriginal sites and 13 Aboriginal PADs were identified within the route selection component of the upgrade project. Nine of the Aboriginal sites (all stone artefact scatters) had been previously recorded. An additional seven sites and all of the 13 PADs were recorded in the course of the route options assessments. The sites comprised three scatters of stone artefacts, two scatters of stone artefacts with potential archaeological deposit, and two isolated finds.

The PADs included: elevated terraces above creek lines, the crests of prominent spurs that could have been used as access routes from the high ridges to the creeks; and micro-topographic features such as basal slopes of spurs that were elevated above the former Newrybar Swamp or other permanent water and alluvial flats.

4.1.6 Site Location Parameters

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place that can be reliably related to that activity. Most Aboriginal sites on the NSW north coast are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix; marks located on or in rock surfaces; and scars on trees.

Eighty three Aboriginal sites have been recorded on the DECC AHIMS as occurring in an area of 324 km^2 (12x27 km) around the proposed upgrade. There are a number of sites recorded more than once from the same locality, and there are sites with a range of different elements. Taking this into account, there are 77 individual recordings. Site types include: artefact scatters and isolated finds; middens; bora/ceremonial sites; stone arrangements; burials, mythological sites; rock shelter sites; a rock engraving; and a stone quarry. Site locations indicate a geological and environmental bias toward the coastal plain.

The open campsite is the most common site type recorded within the broader region. However, they are seldom recorded on the Alstonville Plateau. Most of the artefact scatter sites have been recorded in non-basalt contexts close to the coast.

Although a wide range of Aboriginal site types has been recorded for the broader Ballina to Byron Bay area, a limited range of sites could be expected within the proposed upgrade.

The proposed upgrade is situated on the basalt-based geological formations of the Alstonville Plateau, which would have sustained a sub-tropical rainforest with a predominantly tall and closed forest structure, known as the Big Scrub. Despite the paucity of archaeological evidence accumulated to date, there is ethnographic evidence for Aboriginal visitation and exploitation of the Big Scrub. Aboriginal informants (in the context of the route selection study) also suggested that the Big Scrub was not an absolute barrier to Aboriginal movement through the area. The presence of a stone arrangement just 1.5 km west of Bangalow indicates that people were visiting and constructing sites within the Big Scrub, some of which were probably ceremonial in nature.

The lack, or limited nature, of the archaeological record so far detected may be a result of limited archaeological investigations combined with other factors such as poor visibility, or it may be a real representation of the level of Aboriginal activity in this area compared to the coastal plain. It is also

reasonable to assume that if people were building stone arrangements within the Big Scrub that they also discarded other archaeological evidence such as isolated and scattered stone artefacts. Those artefacts present may reflect specialised activities which possibly characterised the exploitation of the plateau environment.

Based on the above overview, the following predictive statements can be proposed for site types and locations across the Alstonville Plateau:

- Sites are likely to be low in artefact surface incidence and/or subsurface density;
- The content of sites is likely to reflect a limited and specialised range of activities and more sporadic and shorter individual occupation times;
- Sites are likely to be obscured by dense grass cover;
- Archaeological deposits may occur within aggrading landforms in valley floor contexts, such as terraces, creek flats and basal slopes;
- General location preferences for occupation sites are still likely to be evident, namely level, non-rocky, well drained ground in relative proximity to fresh water sources;
- Sites associated with through-access travel routes are likely to include isolated finds and low incidence surface and subsurface scatters of artefacts. It is probable that such sites will occur on the crests of ridgelines and major spurs which it can be hypothesised afforded the easiest pedestrian movement. This is due to their topographic continuity and the greater density of vegetation which could be expected along the creeklines and gully slopes;
- Sites may be focused around environments which represented the margins of the rainforest community, and/or creeklines which were broad enough to provide an access route or opening within the forest canopy; and
- Sites may also be focused around areas of repeated raw material exploitation, such as stone procurement sites and quarries where suitable stone for tool manufacture could be gained.

4.1.7 Cultural Values

The Jali Local Aboriginal Land Council's sites officer, Mr Marcus Ferguson, participated in the field survey of the proposed upgrade in April 2007 (Plate 4.1). Mr Ferguson has extensive experience in recording and managing Aboriginal sites in the region as well as liaising with traditional knowledge holders. Mr Ferguson confirmed that there was minimal knowledge about archaeological sites on the Alstonville Plateau. He stated that traditional activities which may have occurred in the study area included passage of groups of people from the hinterland to the coast, hunting of small game, collection of food and medicinal plants, and ceremonial activities in special areas.

A meeting was held at Ballina with Jali elder, Mr Arthur Ferguson, to discuss the project, results and cultural values of the proposed upgrade. Arthur noted that the Jali LALC has a custodial interest in the study area and that all Aboriginal sites and artefacts are important to the Aboriginal community. He also noted that much of the proposed upgrade had been subject to previous disturbance, particularly areas along the existing highway easement and in plantation areas. Arthur did not see any major cultural heritage constraints to the proposed upgrade.

Most of the Aboriginal stakeholders consulted, expressed the opinion that archaeological sites and the artefacts they contain are of significance to Aboriginal people. Some also variously explained this significance in terms of the cultural values of the broader landscape, or as a manifestation of tribal heritage, past lifeways, and ownership.

Refer also information provided in section A6.2 in Appendix 6.

4.1.8 Native Title Claim

A native title claim exists over the northern part of the proposed upgrade. The claim, known as the *Byron Bay Bundjalung People #3* was registered in 2003 and is now in mediation. The claim is made by seven individuals. Its Federal Court Number is N6020/01 and National Native Title Tribunal (NNTT) number is NC01/8.

The claim area is north of Newrybar, from the coast inland and includes the northern part of the proposed upgrade. The NNTT have determined that there is a prima facie case for establishment of some rights and interests. These include the right to occupy, use and make decisions about the use and enjoyment of the area (non-exclusive). The claimants also have a prima facie right to protect and maintain places of importance and to speak for the determination area.

There are other matters within the claim that may have implications for the proposed upgrade, although no native title claim has been granted to date.

The area of the claim is shown in Figure 4.1. It should be noted that not all of this land is subject to claim or claimable. The application does not include freehold land or areas where native title has been extinguished such as roads, public works and certain leases. Refer also to section 3.2 of this report.

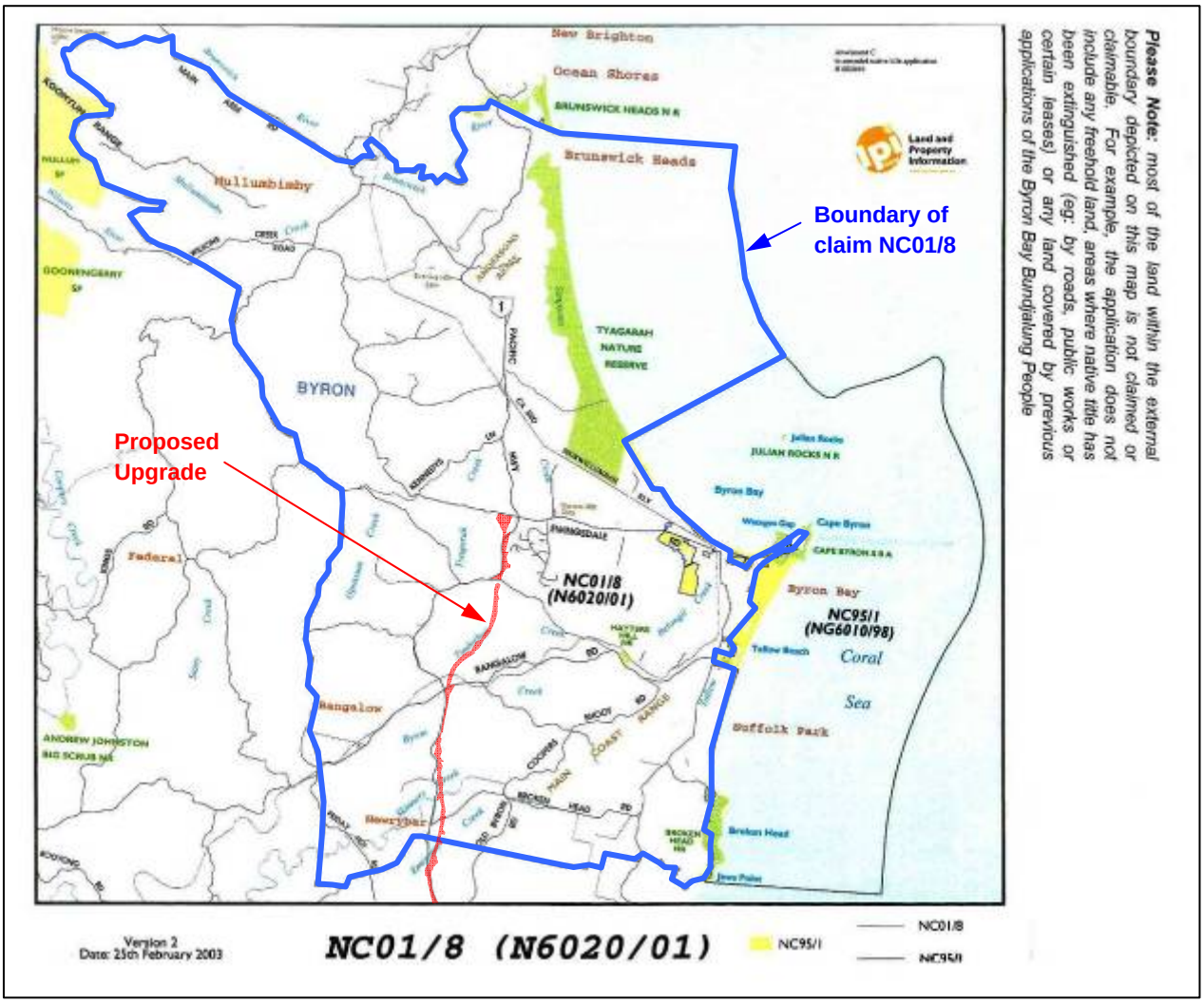


Figure 4.1 Map showing boundary of native title claim no NC01/8 (N6020/01) relative to area of proposed upgrade (Base map provided by National Native Title Tribunal).

Plate 4.1 Jali LALC Sites Officer Marcus Ferguson participating in field survey

4.2 Non-Aboriginal Heritage Context

4.2.1 Exploration

Lieutenant James Cook named Cape Byron in his voyage up the eastern coastline of Australia in 1770. On 13 June 1827, Captain Henry John Rous of the Government frigate the *Rainbow* followed the coast north of Sydney on a run to the penal colony of Moreton Bay. On the evening of 20 August 1828, on a subsequent trip northward, *HMS Rainbow* dropped anchor at Byron Bay. In the next few days Rous explored the delta of the Tweed River. Rous' log is the first textual evidence of Europeans in that area. On 26 August 1828, the *Rainbow* returned to the shelter of the big headland at Cape Byron and anchored off the mouth of a large river to the south, which Rous named the Richmond. Rous explored this river for a distance of about 20 miles. The first recorded landing of white people in Byron Bay was a group from the *Rainbow* who landed and set up survey markers and produced a detailed map of the Bay (Ryan and Smith 2001:7).

In the early 1800s European people visiting the Northern Rivers district were generally limited to escaped convicts and wood-cutters seeking the pine and cedar forests. In 1841, under the leadership of Steve King, seven sawyers took a whaleboat overland by bullock team to the Richmond River in search of cedar stands. Others from the Clarence, Macleay, Nambucca and Bellinger Rivers quickly followed these sawyers and their families (Mackey 2001:18, Vader 1998:95).

The cedar trade on the Richmond River continued to develop throughout the 1840s as new camps were formed at Teven Creek, Duck Creek, Emigrant Creek, Bald Hill and Cooper's Creek. The trade continued to develop on the Richmond River after 1850 (Mackey 2001:18-19). Cedar cutters had been taking cedar from the Clarence River from 1838, the Richmond River from 1842 and the Tweed River from 1844, but it wasn't until 1849 that cedar was shipped from the Brunswick River (Mackey 2001:20). In 1851, the first licences to cut cedar in the North Creek and Emigrant Creek areas were issued at Grafton.

The gold rushes in the latter 1800s and the Robertson Land Acts from 1861 brought a dramatic increase in the European population, the main effect of which was to accelerate trade, to open new means of transport, and to hasten development of the District.

At the end of the 1850s and in the early 1860s the mountains south of Tooloom, near the Queensland border, were alive with gold diggers (Daley 1981:62). In March 1870, payable gold was discovered in beach sand at Shaws Bay, Ballina. Gold was mined on the beaches from north of Port Macquarie to the Tweed River but the richest deposits were between the Clarence River and Byron Bay (Helman 2002:175). By the late 1890s the beaches were robbed of nearly all the gold but seasonal beach mining and leads two kilometres inland in the Pleistocene dunes continued sporadically in the early 1900s.

Three decades of beach mining had provided employment for a huge number of men and had produced considerable income. Some of the more successful miners selected land and became successful farmers in the area. Many of the small selectors worked the beaches when farming was slow and many regular miners worked in agriculture especially during the cane crushing season (Helman 2002:175).

4.2.2 Settlement

'Selection before survey' resulted in a lack of documentary recording of the very earliest occupancy of the various land holdings in the Big Scrub. Although development and progress was marked in all areas adjoining it, the area of the Big Scrub was the last to be settled.

In the 1870s Thomas Robinson of Dungog journeyed to the Big Scrub on the Richmond River to investigate the possibility of settling in the area. Guided by Charles Jarrett of Ballina, he inspected the scrub country around Bangalow, then known as Byron Creek. In 1881, Robinson selected 488 acres 2 roods in the area (Furnell 1981:16-17). There is convincing evidence that the name Byron Creek was changed to Bangalow in 1907 (Furnell 1981:92-93).

Robinson, his brother Jack and William Barby, arrived at Ballina where they procured a pull-boat to convey them up Emigrant Creek, a tributary of the Richmond River, to Tintenbar. From there it took the three of them three weeks to clear an old timber-getters track until they reached Byron Creek, a distance of some 12 miles (Furnell 1981:18).

Early in the 1880s sugar cane was replacing the scrub around Tintenbar, and a sugar mill, which at that time was considered to be one of the largest in the country, was erected by the Toohey brothers (from the well known Sydney brewery family). However, settlers had not reckoned on the frosts and growing cane away from the coast proved to be a complete failure. Toohey's machinery was subsequently shipped to Bundaberg in Queensland. Byron Creek settlers benefited by this early experience at Tintenbar and turned their attention to dairying and grew corn and grasses for their cattle (Furnell 1981:21).

Robert Campbell (the third generation of that family in Australia) selected a block of 640 acres on the present site of Bangalow and arrived in Ballina with his wife and three children in 1881. After five months Campbell completed a two-roomed house on his property and Mrs Campbell and the children began the four day trek through trackless bush to the new home. All around was dense jungle, so thick that the sun could be seen only at midday when it was directly overhead. They cleared the land for cultivation and their first crop was maize, pumpkins and watermelons (Furnell 1981:26).

Other early pioneers in the district included Ted Slattery, Tom Leahy, Ted Boyle, W. C. and Ben Brooks, Andrew French, Tom Armstrong of Coopers Shoot and Tom Armstrong, W. Hayter and Mr. Jarrett of Newrybar (Furnell 1981:41).

The settlers arrived so quickly and in such great numbers during the 1870s and 1880s, many coming with their stock from the south coast, that they had no means of access to the land they had selected. The selectors consequently built the first road to the wharf on Duck Creek, working with the government on a pound for pound basis. When a log road across the marshland and a bridge across Emigrant Creek were built, the farmers in the Big Scrub could drive to Ballina in their wheel-carts. By 1885 a mail coach regularly travelled over this route from Ballina to Lismore.

By 1883, two thirds of freeholders in the Counties of Richmond and Rous owned less than 200 acres, and as a consequence hundreds of small holdings were scattered all through the area.

Once the land was cleared and enclosed, the pioneers experimented with various types of crops in the district including tea, coffee, jute, vanilla, arrowroot, ramie, tropical and sub-tropical fruits. While many of the trials failed, others were successful. However it was concluded that the area was best suited to dairying. In 1895, the North Coast Fresh Food and Cold Storage Co-op. Ltd. (NORCO) began operations at Byron Bay and the company remains in operation today (Furnell 1981:51, Wheatley & Hathaway 1980:9).

4.2.3 Route Option Assessment

Archaeological field survey for non-Aboriginal heritage sites was conducted concurrently with the Aboriginal heritage survey for the route option assessment component of the upgrade project. In addition to survey, sites were identified as a result of consultation with local residents and land owners.

In response to the publication of the Route Options Development Report in October of 2005, a number of submissions were received from land owners identifying heritage aspects of their properties not raised in the report. These submissions were reviewed and where appropriate field inspections were undertaken to confirm the nature and significance of items.

Of note was the assistance provided by Ms Cornelia Burless who provided a list of 35 locations she considered warranted inspection and assessment. These were examined during fieldwork conducted in December 2005.

Twenty seven non-Aboriginal (European) heritage sites were identified during the route option assessment field studies. The sites included: churches and cemeteries; early cottages; monuments;

village sites; stone walls; trees; schoolhouses; homesteads and farmsteads; and a cricket pitch. Five of these recordings occur within the proposed upgrade (refer Section 4.3.3).

4.2.4 Site Location Parameters

Structures of historical interest and heritage significance may be standing, ruined, buried, abandoned or still in use.

Unrecorded historic sites and features of heritage significance that may occur within the proposed upgrade include:

- Buildings and structures along the early centres and corridors of occupation, industry, travel and transport;
- Nineteenth-century structures, such as farm dwellings, outbuildings, selector's and timber-getters huts. These are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes;
- Former timber mills and associated infrastructure such as timber pole structures, remains of machinery, tracks and tramways. These may survive in valley clearings adjacent to forest areas;
- Traces of agricultural and industrial processing or extractive sites such as dairies, factories, and quarries. These may be found throughout agricultural lands on the valley floor and adjacent low ranges;
- Sites associated with early roads. These will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points;
- Archaeological sites such as the remains of former dwellings including homesteads, houses and huts. These will be distributed in close association with land settlement patterns and correlated with favourable agricultural lands, trading nodes and transport corridors;
- Transport and access routes such as bridle paths, stock routes, and highway alignments of varying forms and ages. These may survive as abandoned remnants adjacent to modern transport routes, or as alignments now followed by more modern or upgraded road and track infrastructure; and
- Old fence lines (such as post and rail fencing) which may occur along road easement boundaries and farmlands. Other indications of field systems, such as drainage channels and ridge and furrow ploughlands, are likely to survive in low lying agricultural ground, especially in areas that are now used for grazing, rather than cropping.

4.3 Cultural Heritage Recordings within the Proposed Upgrade

4.3.1 Aboriginal Sites and PADs

No previously recorded Aboriginal sites are listed on the DECC AHIMS as occurring within the proposed upgrade.

In 2007, one small scatter of stone artefacts, two isolated finds and 36 areas of potential archaeological deposit (PAD) were identified in the course of the survey of the proposed upgrade.

Site numbers continue on from the numbering system employed for the route selection study.

The location of the PADs are shown in Figures 4.2, 4.3 and 4.4. Information relating to the location of Aboriginal archaeological sites is culturally sensitive and has consequently not been included in the publicly accessible version of this report. Figures, plates and text relating to site locations have been presented in restricted Appendix 6.

T2E A8 – isolated find

This site comprises a single stone artefact visible on a cutting (about three metres high) on the eastern side of the existing Pacific highway, in the southern portion of the upgrade. The site is located on the crest of a ridgeline. The artefact was located about one metre below the top of the soil profile and has presumably fallen from its original position on the top of the ridge crest. The deep soil is dark brown clayey loam, with eroded bedrock evident at about one metre (Plates 4.2 and 4.3).

Jali LALC sites officer, Marcus Ferguson, noted that this lithic material dominates the artefactual assemblages that he is familiar with on the lowlands (coastal plain).

The exposure provided by the road batter extends for approximately 40 m. Exposure incidence was 60%. Visibility in the exposures was 85%.

Artefact Description

1. Light creamy brown fine grained siliceous material with faint banding flake fragment, broken laterally and along the opposite margin, 45% rough cortex, (possibly tuff or chert); 31 x 19 x 11 mm

Plates 4.2 and 4.3 Side views of Isolated Find T2E A8
(the pen cap is 52 mm long)

T2E A9 – isolated find

This site comprises a ground edge hatchet found and collected by a land owner, in the southern portion of the upgrade. The hatchet was found when the owner was using a slasher to clear an area on the crest of a high ridgeline. This area is now the location of a workshop and shed.

Artefact Description

1. Ground edge stone hatchet on an grey/green patinated alluvial pebble (dark green medium grained dense material –possibly greywacke or a volcanic), also used as a top grindstone (polish evident on one face), and as an anvil (pitting evident on both sides), the end opposite to the ground edge has been trimmed by bifacial flaking to create a narrower area, 138 x 112 x 32 mm (Plate 4.4).

Plate 4.4 T2E A9 – Edge and side views of ground edge hatchet

T2E A10 – artefact scatter

This site comprises two stone two artefacts, approximately 60 m apart, located in a macadamia plantation in an upper catchment context in the middle portion of the upgrade. Artefact 1 was visible in the first row of macadamias parallel to a northern boundary fence. Artefact two was visible in a small exposure c3 x 15 m located at the upstream end of a small swamp basin on the elevated southern bank of a very high catchment tributary (Plates 4.5- 4.8).

Artefact Descriptions

1. Light grey/cream to white fine grained siliceous material (banded with large angular inclusions up to 6 mm) broken blade trapezoidal segment, possibly a preform for a geometric microblade, proximal and distal portions missing, 13 x 15 x 5 mm

2. White patinated fine grained siliceous material flake with translucent inclusions and surface crazing from heat damage across whole artefact, focal platform, 47 x 34 x 20 mm

Plate 4.5 Location of first artefact T2E A10

Plate 4.6 Location of second artefact T2E A10

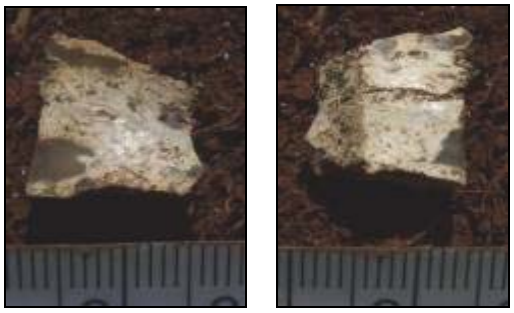


Plate 4.7 Detail of artefact one

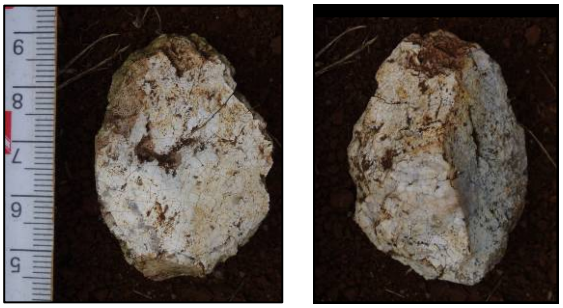


Plate 4.8 Detail of artefact two

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding proposed upgrade landscape. The assessment of potential is based on a number of criteria developed from predictive modelling and previous survey and research results (refer section 2.4). The predictive broad and fine scale criteria employed in the identification of PADs for this investigation are outlined in sections 4.1.5 and 4.1.6.

Given the very limited amount of knowledge about the type and incidence of archaeological deposits on the Alstonville Plateau the identification of PADs has required a conservative approach whereby most landforms with predicted potential based on generalised modelling criteria were included. This requirement to be inclusive partly explains the number of PAD identifications made. Another factor is the density and pattern of drainage and ridge lines across the Plateau. Any north-south traverse across the Plateau will intersect a high proportion of these landforms, and as a consequence include a high incidence of micro-topographic contexts with archaeological potential.

The relative lack of comparative archaeological data for the Alstonville Plateau, also meant that a further and finer scale rating of PAD archaeological potential, based on a combined assessment of the potential to contain artefacts, and the potential archaeological value of the deposit, could not be attempted (refer section 2.4 and Table 2.1).

The boundaries of the PAD recordings presented below are defined by the extent of particular micro-landforms known or predicted to have high correlations with archaeological material. Thirty six areas of archaeological potential have been identified in the proposed upgrade (Plates 4.9 - 4.14, Table 4.2). The assessment of archaeological potential included those areas in which access to conduct archaeological surface survey was denied.

Plate 4.9 Looking north towards PAD 5, 6 and 7 which occur along the creek flats, basal slopes and spurline crest shown in the picture.

Plate 4.10 Looking southwest across PAD 8 which consists of a spurline crest and associated slopes adjacent to a creekline.

Plate 4.11 PAD 10 consists of an elevated and broad spurline crest, looking north.

Plate 4.12 PAD 15 is situated on the flats and basal slopes adjacent to Skinners Creek, looking northwest.

Plate 4.13 PAD 21 is situated on vegetated creek flats

Plate 4.14 Looking north towards PADs 26-28 on west side of Tinderbox Creek, and PAD 28 on the middle distance spurline crest.

Table 4.2 Aboriginal potential archaeological deposit descriptions

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	MGA Reference (approximate mid points)
1	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spurline slopes adjacent to, and east of creekline	551495.6816600
2	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spurline slopes adjacent to, and east of creekline	552000.6817640
3	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spur crest and slopes, east of and, adjacent to creek	552125.6817690
4	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	valley floor flats and basal slopes adjacent to and west of the confluence of two streamlines	552040.6817775
5	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	elevated bench and adjacent slopes to creekline, on east side of creek	552245.6817800
6	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	valley floor flats and basal slopes adjacent to and north of the confluence of two streamlines	552155.6817880
7	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spurline crest situated between two upper catchment tributaries, and upslope of PAD3	552210.6817990
8	Knockrow (W of Macadamia Castle)	upper catchment of unnamed tributary to Emigrant Creek	narrow spur crest and slopes adjacent to streamline	551950.6819610
9	Between Knockrow and Newrybar	upper valley slopes in upper portion of Emigrant Creek catchment, high spur adjacent to main watershed range	elevated spurline crest adjoining main range	552132.6820906
10	Between Knockrow and Newrybar	upper valley slopes in upper portion of Emigrant Creek catchment, high spur adjacent to main watershed range	elevated spurline crest adjoining main range	552090.6821100
11	Newrybar *Delserene*	valley floor of upper portion of Emigrant Creek catchment	valley floor flats and adjacent basal slopes on north (west) side of Emigrant Creek	551970.6851960
12	Newrybar	valley floor of upper portion of Emigrant Creek catchment	western bank and adjacent slopes of Emigrant Creek	551998.6821975
13	Newrybar	lower valley slopes of upper portion of Emigrant Creek catchment	spur crest and knoll adjacent to tributary of Emigrant Creek	552100.6822590

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	MGA Reference (approximate mid points)
14	Newrybar (Skinners Creek)	valley floor of upper portion of Skinners Creek catchment	spur crest and shoulder adjacent to and east of Skinners Creek, overlooking flats and PAD12	552153.6823975
15	Newrybar (Skinners Creek)	valley floor of upper portion of Skinners Creek catchment	valley floor flats and adjacent basal slopes on southern (East) side of Skinners Creek	552175.6824091
16	Bangalow *Arundel*	main ridgeline forming watershed between Skinners and Byron Creek	elevated crest and upper slope of main watershed ridgeline	552045.6825300
17	Bangalow	eastern valley slopes of upper to middle portion of Byron Creek catchment	upper catchment basal slopes adjacent to bank of unnamed tributary stream	552036.6825647
18	Bangalow	eastern valley slopes of upper to middle portion of Byron Creek catchment	upper catchment basal slopes adjacent to bank of unnamed tributary stream	552050.6825705
19	Bangalow	eastern valley slopes of upper to middle portion of Byron Creek catchment	spur crest and adjacent slopes on adjacent to, and on the west side of an unnamed tributary stream	552080.6825931
20	Bangalow (tributary of Byron Creek)	eastern valley slopes of upper to middle portion of greater Byron Creek catchment	spur crest, slopes and adjacent creek flats on south side and bank of unnamed tributary stream	552105.6826066
21	Bangalow (tributary of Byron Creek)	eastern valley slopes of upper to middle portion of greater Byron Creek catchment	creek flats and banks on north side and bank of unnamed tributary stream	552133.6826150
22	Bangalow (Byron Creek)	valley floor of upper to middle portion of Byron Creek catchment	alluvial terrace on south side of Byron Creek	552305.6827464
23	Bangalow (Byron Creek)	western basal slopes and valley floor of upper to middle portion of Byron Creek catchment	Spurline crest and upper slopes situated between Byron Creek and Tinderbox Creek	552350.6827725
24	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	spur crest and adjacent slopes and flats on south side of, and adjacent, to lower reaches of an unnamed tributary of Tinderbox Creek	552650.6828025
25	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	basal slopes and flats on north side of, and adjacent to, lower reaches of an unnamed tributary of Tinderbox Creek	552805.6828180
26	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	basal slopes and terrace remnants on west side and bank of Tinderbox Creek, at confluence with tributary stream	553210.6828630

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	MGA Reference (approximate mid points)
27	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	small elevated rise (possible terrace remnant) situated between two drainage channels	553230.6828700
28	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	creek flats and adjacent basal slopes (including elevated terrace deposit) on north side of unnamed tributary of Tinderbox Creek	553275.6828740
29	Bangalow (Tinderbox Creek)	basal slopes of middle portion of Tinderbox Creek catchment	spurline crest and upper slopes situated between Tinderbox Creek and unnamed tributary	553325.6828875
30	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	creek flats on west side of lower reaches of unnamed tributary of Tinderbox Creek	553435.6829065
31	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	creek flats and adjacent basal slopes on east side of lower reaches of unnamed tributary of Tinderbox Creek	553460.6829220
32	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	spur crest and adjacent basal slopes on west side of lower reaches of unnamed tributary of Tinderbox Creek	553455.6829350
33	Bangalow (Tinderbox Creek)	valley floor of middle portion of Tinderbox Creek catchment	creek flats and adjacent basal spurline slopes on east side of lower reaches of unnamed tributary of Tinderbox Creek	553500.6829450
34	Bangalow (Tinderbox Creek)	basal slopes of middle portion of Tinderbox Creek catchment	creek flats and adjacent basal spurline slopes on west side of lower reaches of unnamed tributary of Tinderbox Creek	553505.6829585
35	Bangalow (Tinderbox Creek)	south facing mid slopes of the middle portion of the Tinderbox Creek catchment	basal slopes and flats adjacent to unnamed tributary of Tinderbox Creek	553496.6829997
36	Ewingsdale	elevated major spurline crest adjacent to main coast range and descending to coastal plain	low knoll on prominent ridgeline crest, situated at northern end of extensive spurline shoulder	553611.6831181

4.3.2 Aboriginal Cultural Values

The interviews conducted to date with Aboriginal community representatives and traditional knowledge holders (refer Sections 2.3 and 4.1.7) have identified the importance of the cultural association between a person's tribal affiliation or family grouping, and their corresponding tribal lands and country. This is the basis for their experience of a continuing cultural link and association with their ancestors and traditional values.

General statements regarding the importance of the land have included reference to prominent features and regions which supported traditional lifeways, including seasonal occupation, resource

exploitation and ceremonial life and obligations. Broad landscapes are mentioned in this context, such as the local coastline, estuaries, coastal plain, escarpment, plateau, and the *Big Scrub* which once occupied the plateau and coastal escarpment.

With regard to the proposed upgrade and the associated plateau landscape, the following points summarise the statements provided by community representatives and Elders:

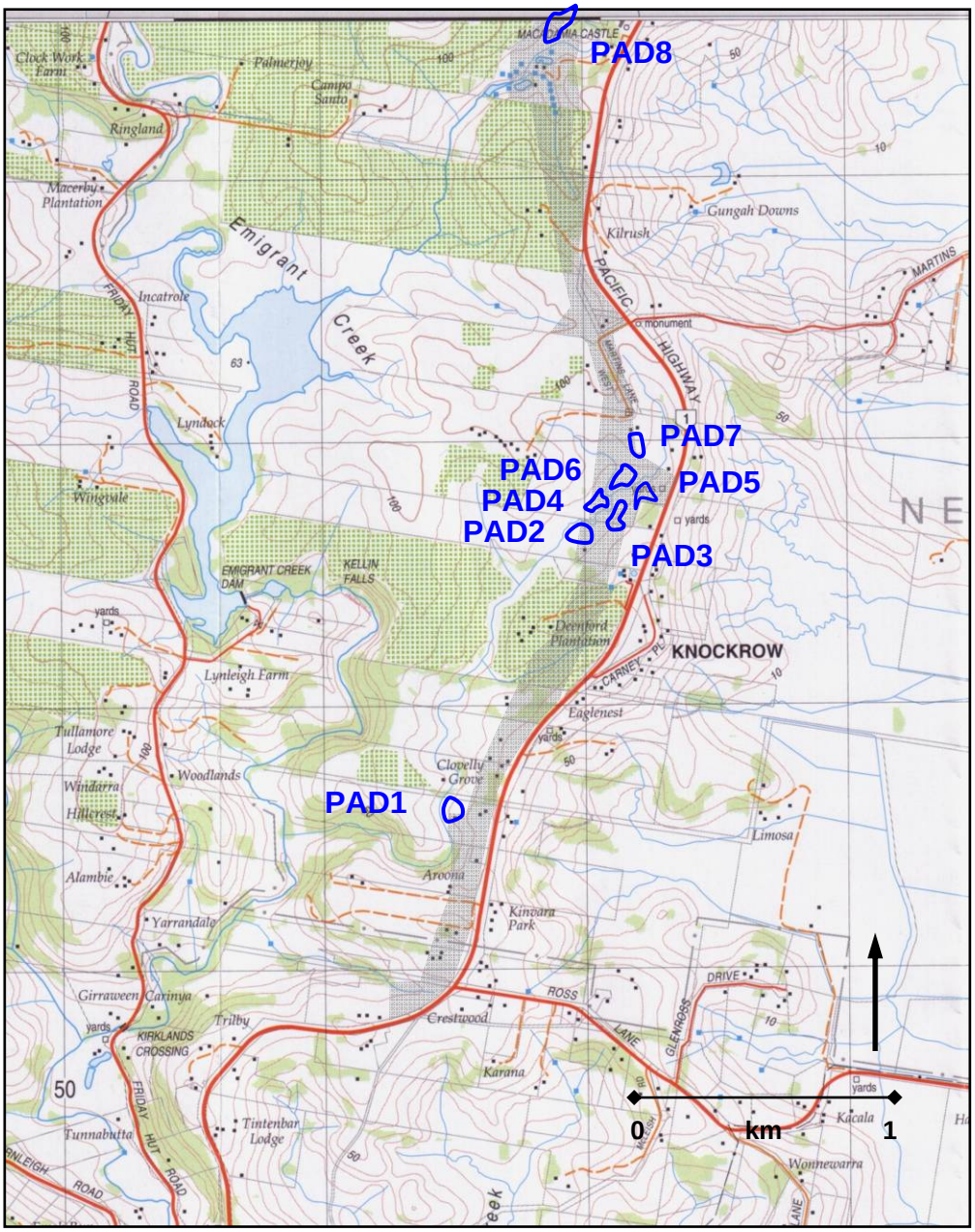
- The escarpment margin of the plateau is a significant and sacred landscape, with the views to and from the escarpment having cultural value;
- The existing Pacific Highway across the plateau may approximate the location of an Aboriginal pathway;
- The plateau and its resources (and notably the *Big Scrub*), was exploited for its food and medicinal resources, but was not an occupation focus such as is indicated by the large sites on the coastal plain and coast;
- Aboriginal through-travel between the hinterland and coastal plain must have involved crossing the plateau and watershed ridgelines on the plateau may have served as travel routes or pathways;
- Ceremonial activities also occurred on the plateau (as indicated by a stone arrangement site west of Bangalow); and
- Aboriginal stone artefacts present within the landscape are an important component of the cultural value of that landscape;

Apart from these generalised references, no specific places or locations of particular Aboriginal cultural value have been mentioned or referred to as occurring within the area of the proposed highway upgrade.

Feedback from attendees of an Aboriginal Focus Group meeting on the 11 December 2007 were positive regarding a summary of the findings of this report, and a proposed methodology for the archaeological investigation of a representative sample of the PADs identified in the upgrade area. No additional information relating to the cultural values of the upgrade area or the identified sites was conveyed.

Consultation with Aboriginal community members is a continuing and an on-going component of the investigation. Further opportunities for comment from Aboriginal community representatives and individuals include:

- Responses to the participation/conduct and results of a program of archaeological subsurface testing on a representative sample of potential archaeological deposits (PADs), (refer Section 5.2); and
- Responses to the public release and display of the Environmental Assessment.



Proposed highway upgrade route study area

Figure 4.2 Location of Aboriginal potential archaeological deposits (PADs) (Ballina 1:25,000 topographic map, 3rd ed Dept of Lands 2002). Refer to Figure A7.1 in restricted Appendix 6 for the location of Aboriginal sites.

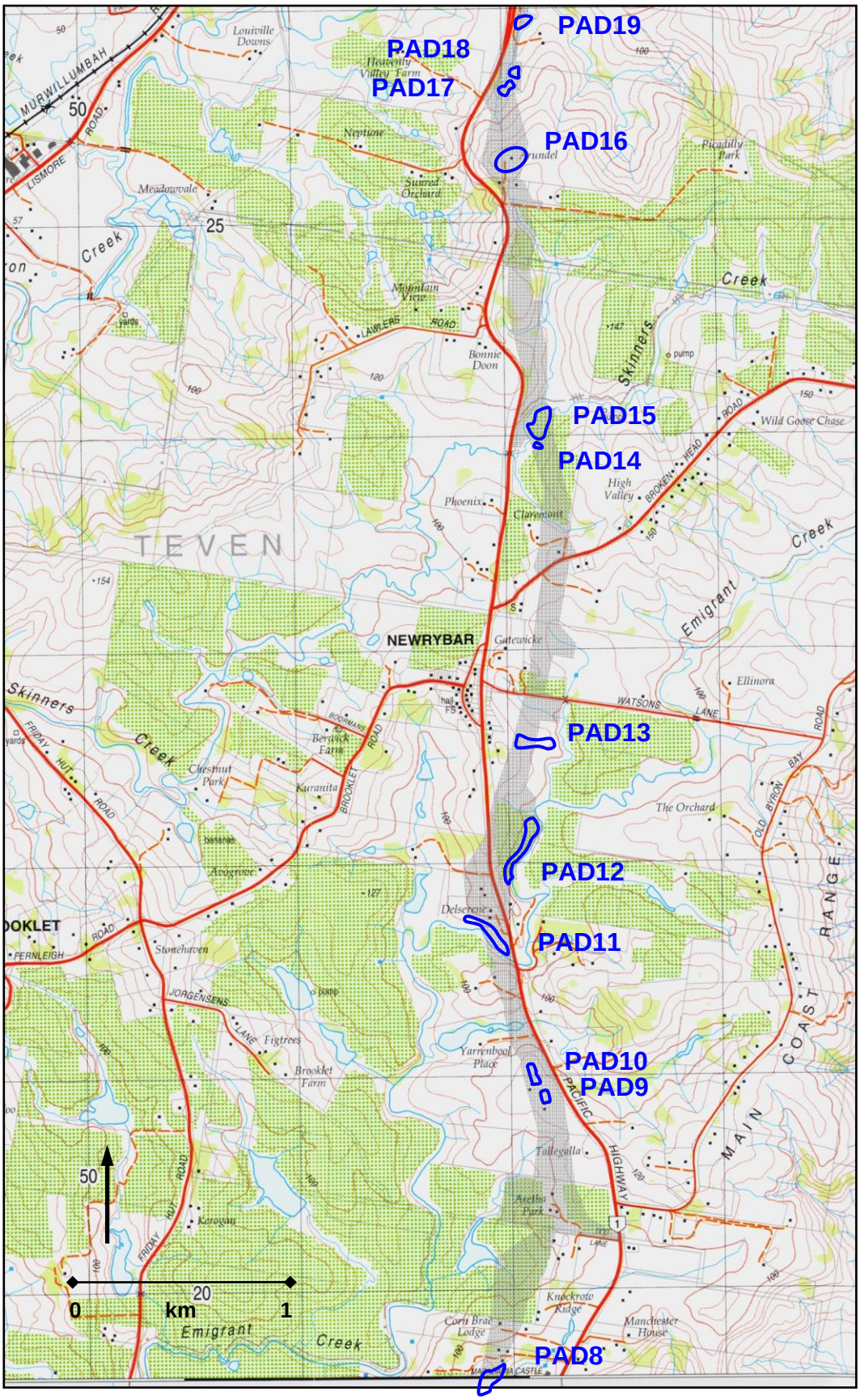


Figure 4.3 Location of Aboriginal potential archaeological deposits (PADs) (Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002). Refer to Figure A7.1 in restricted Appendix 6 for the location of Aboriginal sites.

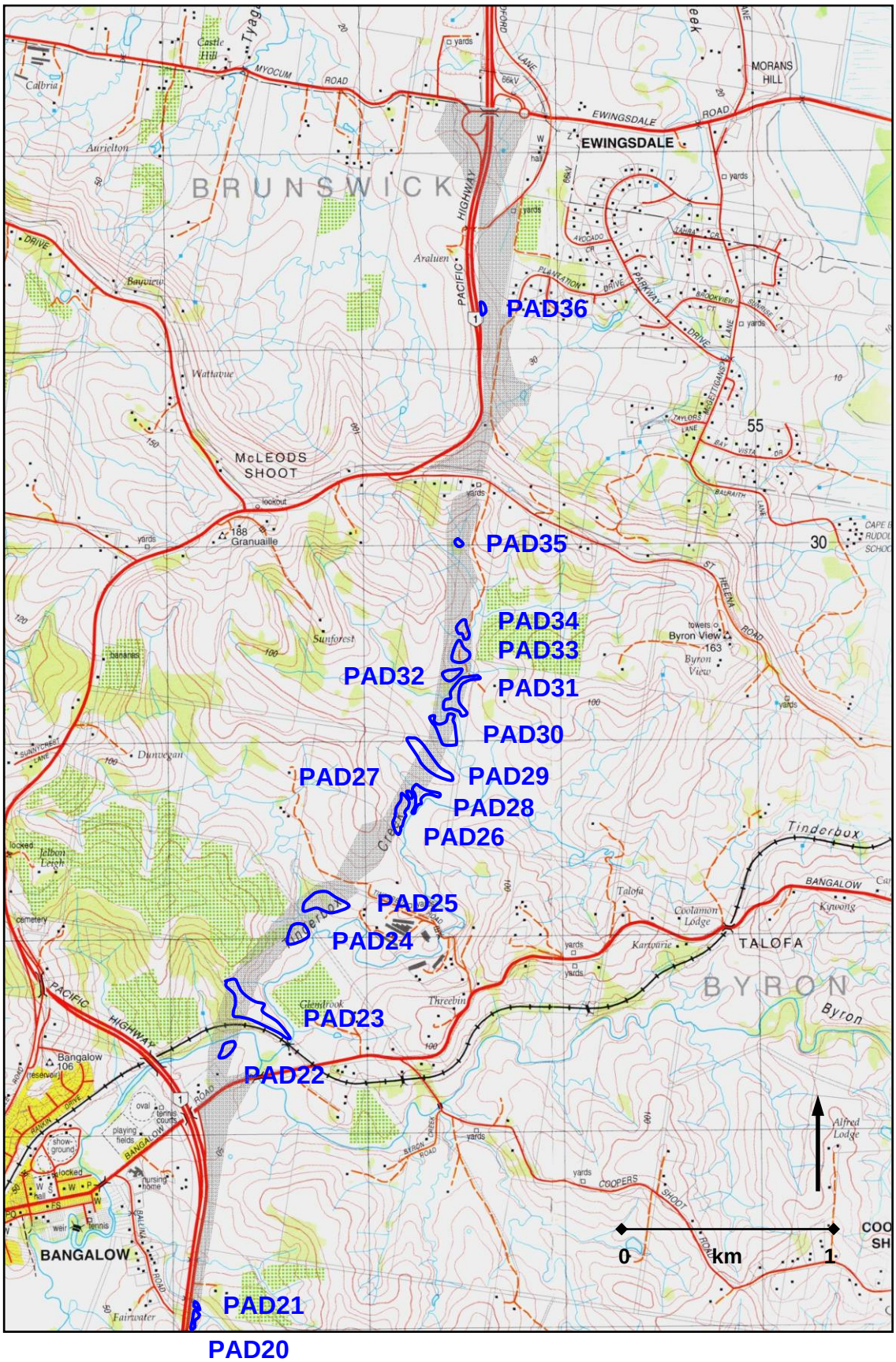


Figure 4.4 Location of potential archaeological deposits (PADs) (Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002). Refer to Figure A7.1 in restricted Appendix 6 for the location of Aboriginal sites.

4.3.3 Non-Aboriginal Sites and Features

None of the heritage recordings within the upgrade appear on Commonwealth government heritage registers, the NSW State Heritage Register, or the current heritage schedules for local or regional environmental plans compiled by local governments.

Five previously recorded European heritage sites (T2E H9, H13, H18, H21 and H23) occur within the proposed upgrade alignment. These sites were recorded in the context of the route selection study. In 2007, an additional 13 European heritage sites/features (T2E H28, H29, H30, H31, H32, H33, H34, H35, H36, H37, H38, H39 and H40) were identified during the proposed upgrade route alignment survey.

Site numbers continue on from the numbering system employed for the route selection study. Site locations are shown on Figures 4.5 and 4.6.

T2E H9 - Cricket Pitch and Ground

This site is a concrete cricket pitch located to the east of the Pacific Highway at Newrybar, at the northwestern end of the property at 73 Watsons Lane. It is situated in a cleared field adjacent to (and east of) a passion fruit plantation. Although mostly covered by turf, which the landowner has partly cleared from the surface of the pitch, it appears to be in good condition (Plate 4.15 - 4.17). The pitch is orientated in a northeast/southwest direction. The remains of a home-made concrete grass roller are located approximately 50 m to the southeast of the pitch. The roller is about 65 cm in diameter and has engraved on its northern end 'S. A. I M. J./ 17/7/34 / T. T. C' (Plate 4.18). The roller is probably associated with the cricket pitch but may not have been made specifically for the pitch.

Records indicate that the cricket pitch and surrounding grounds were first used after World War II. Gallagher (2001:159) states,

> The new Newrybar cricket ground was situated on the right hand side of the road, which runs beside the Newrybar Public School. It was a tolerably level area with a slope running back up to the road and there was a Morton Bay fig tree under which the players could seek shelter during the heat of the day.

He further notes that Newrybar entered a team into the Clunes District Cricket Association reserve grade competition on 10 November 1945, and there is evidence to suggest it might have been in use for the 1959-60 cricket season (Gallagher 2001:160-161). The landowner, Mr G. Hornery, and a long time local resident, Mr G. Swain, confirmed the approximate date of operation of the pitch and grounds (pers. comm., 13 December 2005).

Although the pitch remains intact, the surrounding grounds have been compromised by the passionfruit plantation and paddock fencing. The Morton Bay fig tree remains in the plantation, some 100 m to the southwest of the pitch.

Plate 4.15 T2E H9 – view of the cricket pitch (facing southwest).

Plate 4.16 T2E H9 – View of the fig tree which sheltered spectators, looking west.

Plate 4.17 General view of eastern portion of former cricket ground and grass roller in gully, looking north.

Plate 4.18 T2E H9 - remains of home-made concrete grass roller, near the cricket pitch.

T2E H13 –*Arundel* Farm Complex and Plantings

This site consists of an early to mid twentieth century farm complex located on the eastern side of the Pacific Highway, 1.5 km south of Bangalow. It is situated on a prominent ridge crest overlooking Bangalow to the north (Plate 4.19). The complex includes a weatherboard bungalow, probably built circa 1930, the remains of a dairy, a weatherboard shed, stock yards and animal pens (possibly a piggery). The original house has been modified as a result of additions and alterations. Additions include an extension to the northern end of the original bungalow, and a laundry and carport. The original front entrance on the southern side of the house has been sealed and the front steps have been removed. Railings have been added and other modifications have been made to the verandah (Plate 4.20 - 4.22).

A weatherboard shed, stock yards, the remains of a small dairy, and a block of concrete floored animal pens are located to the west of the house (Plate 4.25 - 4.26).

Four large fig trees and a Norfolk Island Pines have been planted around the house. The fig trees are of similar age and appear to be contemporary with the original house.

Note that Aboriginal PAD16 is situated in the same location as the *Arundel* farm complex.

Plate 4.19 View looking south towards *Arundel* – T2E H13, situated on a prominent ridgeline crest.

Plate 4.20 T2E H13 – The main and original cottage at *Arundel,* looking east.

Plate 4.21 T2E H13 - The backyard of *Arundel* showing a northern extension to the original building, looking south.

Plate 4.22 T2E H13 – View looking west towards former dairy building and modern yards

Plate 4.23 T2E H13 – Three large fig trees planted on the northwestern side of *Arundel*

Plate 4.24 T2E H13 – The remains of concrete animal pens (possibly a piggery) at the southwestern end of the complex

Plate 4.25 T2E H13 – View of the old dairy outbuilding, and tree fringed residence and grounds in background, looking northeast.

Plate 4.26 T2E H13 – Remains of brick built fire pit and heating platform, possibly for the heating of a laundry copper.

T2E H18 – Former Knockrow Public School Site and Teachers Residence

This site is located on the western side of the Pacific Highway at Knockrow. It consists of the teacher's residence of the former Knockrow Public School (pers. comm. current resident) and the associated former school grounds. The existing building is now used as a private residence (Plates 4.27 and 4.28).

The Knockrow Public School was opened in 1901 and closed in 1947 (Fletcher & Burnswoods 1983). The original school house was located immediately to the north of the residence and has now been demolished or re-located. The grounds have been developed as a residential garden but retain many large and mature trees, including fig trees along the northern and western boundaries which are likely to have been planted by former teachers and students.

Multiple stages of development are evident in the present structure, with a central original building, an extension to the living space in the north, an addition to the south and an added entrance area to the rear (west).

An extension to the north includes numerous windows typical of a school classroom and may indicate that these were recycled from the old school house. A chimney near the northwest corner of the present structure no longer extends above the roof-line and is covered by roof-sheeting (Plate 4.29). The addition to the southern face was reported by the owner as being more recent and as replacing an open parking area.

Fig trees and camphor laurels are present along the northern and western boundary of the school block (Plate 4.30 and 4.31). Scattered fragments and remains which appear to be related to both the school and house are present in the area (Plate 4.32).

Plate 4.27 T2E H18 – former Knockrow School teacher's residence

Plate 4.28 T2E H18 – view of eastern face (front) of former teacher's residence

Plate 4.29 T2E H18 – view of rear (northwest corner) of former teacher's residence

Plate 4.30 T2E H18- large fig trees along northern and western boundary – looking south

Plate 4.31 T2E H18 – View along western boundary of property, showing large mature fig trees

Plate 4.32 T2E H18 – Possible remains of a concrete urinal

T2E H21 – *Corn-Brae* Lodge

Corn-Brae Lodge, and is located on the western side of the Pacific Highway north of Knockrow. The property includes two houses with a similar basic footprint and design that were both constructed over 100 years ago. The property has been owned by the same family (the Alcorns) since original selection in 1888 (Plates 4.33 - 4.38).

The easternmost (more downslope) house was built in 1902. This structure retains many features of the original building but has later additions to the northwestern, western and southwestern sides. Other aspects of the walls and roof-line are largely original with some newer inclusions (windows and doors).

The second house, which was constructed after the lower house, has extensions to the living space involving the infilling of most of the original verandah areas. About half of the original (eastern) front wall-line remains visible and the materials (fibro-sheeting, windows and doors) are all new. Both buildings have modern outbuildings.

The second (western) house would be directly impacted by the upgrade proposal.

Remnant pieces of agricultural farm machinery are scattered on the slopes to the south of the buildings.

Plate 4.33 T2E H21 - View of the two *Corn Brae Lodge* cottages and entrance, looking west.

Plate 4.34 T2E H21 - Closer View of the two *Corn Brae Lodge* cottages, looking west.

Plate 4.35 T2E H21 – The southeastern aspect of the western cottage.

Plate 4.36 T2E H21 – Detail of veranda on first (eastern) cottage.

Plate 4.37 T2E H21 – Abandoned machinery remnant.

Plate 4.38 T2E H21 – Looking northeast towards back of western cottage.

T2E H23 - Weatherboard House

This site is a large weatherboard house located on the western side of the Pacific Highway south of Knockrow. It is likely to date from the 1920's or earlier.

The present structure strongly reflects the original although modifications have been made to some windows and doors, and the northwestern corner of the building has a recent raised covered decking addition with a sliding glass door. At the time of recording, the boarded railing around the verandahs was being removed and presumably subject to renovation (Plates 4.39 - 4.42).

Plate 4.39 T2E H23 - View of house, looking northwest

Plate 4.40 T2E H23 detail of south facing veranda

Plate 4.41 T2E H23 Front view of cottage

Plate 4.42 T2E H23 View of cottage from the northeast corner

T2E H28 – Fig Tree at Site of Reported Former Dairy and Milk Bottling Enterprise

This site consists of a large and mature fig tree which is located in horse paddocks at the back of a modern residential building on the western side of the Pacific Highway about 200 m north of its intersection with Ross Lane (Plate 4.43). The fig is growing on or near the reported site of a former dairy and milk bottling enterprise (pers. comm., current property owners). There are no remains of structures (which were apparently levelled) however numerous glass and ceramic fragments were present in the area.

Plate 4.43 T2E H28 – Large fig tree at reported site of a milk bottling establishment

T2E H29 – Forestry Stump

This site is a forestry stump, reportedly of a teak tree, located on the Deenford Plantation property on the western side of the Pacific Highway at Knockrow. The stump is in poor condition and is now incorporated into the buttress roots of a large fig and camphor laurel tree (Plates 4.44 and 4.45). The tree was reportedly felled to provide timber for the floor of a nearby c1910 homestead (pers. comm. current property owner Cliff James). One springboard notch is evident on the stump approximately 1.3 m above ground level. The stump is approximately 2.5 m high and had an estimated original diameter of 1.5 m.

Plate 4.44 T2E H29 – Forestry stump which now supports a fig tree

Plate 4.45 T2E H29 – Detail of forestry stump showing impact of fig tree growth

T2E H30 – Derelict Farm Building – possible former dairy

This site consists of a derelict farm building located west of the Pacific Highway at Knockrow. The buildings appear to have functioned as a dairy. Construction includes corrugated iron roofing, timber frame walls and horizontal weatherboard cladding (Plates 4.46 and 4.47). Access to this property was not available at the time of field survey in April 2007.

Plate 4.46 T2E H30 – General view of disused farm buildings, probably a dairy

Plate 4.47 T2E H30 – View of disused farm buildings, looking southwest

T2E H31 – Remnant Yards and Two Rail Fencing

This site comprises remnant wooden post and two rail fencing located on the Cassagrande property on the western side of the Pacific Highway just north of Martins Lane West. The fencing formed part of a stock race and yards, now disused (Plate 4.48 and 4.49). The posts have one drill hole in the middle of the post but no wire is present. This site is located at the northern end of the back yard fenced enclosures associated with the residence on this property.

Plate 4.48 T2E H31 – Remnant post and rail fencing

Plate 4.49 T2E H31 – Remnant post and rail stock race, and gate

T2E H32 – Weatherboard Cottage

This site consists of an early twentieth century weatherboard house and associated garden plantings located in the middle of a macadamia plantation to the west of the Pacific Highway, north of Knockrow. The building is in a good state of repair and is well maintained. The building has been extended at its southwestern end, and two portions of the north facing veranda have been enclosed. Both of these additions have been completed in similar materials and in a sympathetic style without altering the overall integrity of the original structure (Plates 4.50 - 4.53).

Plate 4.50 T2E H32 – Cottage, looking southeast

Plate 4.51 T2E H32 – Cottage, looking northwest

Plate 4.52 T2E H32 – Front view of cottage, looking west

Plate 4.53 T2E H32 – Front verandah

T2E H33 – Weatherboard Cottage

This site consists of a weatherboard cottage located to the west of the Pacific Highway and about two kilometres south of Newrybar (Plates 4.54 and 4.55).The house has been relocated to its present site from its original position to the southeast, closer to the present highway (pers. comm. current property owner). The house has been re-roofed and a verandah has been added.

Plate 4.54 T2E H33 – Cottage, looking northwest

Plate 4.55 T2E H33 – Cottage, looking north

T2E H34 – Site of Former Dairy

This recording is the site of a former dairy located to the west of the Pacific Highway and about two kilometres south of Newrybar, on the same property as H33. Some original concrete floors remain (Plates 4.56 and 4.57)) and the site now has yards and sheds built over it. Reportedly a large amount of rubble and rubbish from the demolition of the dairy was buried in a large pit midway between the yards and the northern property boundary.

Plate 4.56 T2E H34 – Modern stock yards on a former dairy site, looking north

Plate 4.57 T2E H34 – Modern stock yards on a former dairy site, looking west

T2E H35 Family Memorial

This site consists of a private family memorial located in the *Yerrenbool Place* property on the western side of the Pacific Highway about 1.5 kilometres south of Newrybar. The site comprises a plantation of over 50 flame trees and a small cairn of sandstock bricks with an inscription on a metal plaque (Plates 4.58 and 4.59).

The inscription reads,

> 'This line of flame trees represents Dixon and Fanny's 21 grand misdemeanours. They were planted to commemorate a muster here on 24 February 1996. These bricks are from their old Fairfield home.'

Plate 4.58 T2E H35 – General view of memorial and western half of planted tree avenues, looking southwest

Plate 4.59 T2E H35 – Detail of memorial and plaque

T2E H36 – Modern property entrance feature

This site consists of a modern entrance feature on either side of the highway entrance to the *Yerrenbool Place* property on the western side of the Pacific Highway about 1.5 kilometres south of Newrybar. The feature includes two semicircular fence portions each including round pillars constructed from cemented found rock rubble, and connected with re-used wrought iron fence panels (Plates 4.60 and 4.61). The property owners report that the wrought iron elements of the feature were recovered from Kangaroo Point Queensland and are of significance to the family. They have requested that the panels be salvaged and re-incorporated into a new entrance after completion of the proposed upgrade.

Plate 4.60 T2E H36 modern property entrance incorporating older iron fencing elements

Plate 4.61 T2E H36 - modern property entrance incorporating older iron fencing elements

T2E H37 – Car Remnants

This site comprises of the panel and frame remains of two old Jaguar automobiles (Plates 4.62 and 4.63) which are rusted and in very poor condition. The history and origin of the cars is unknown.

Plate 4.62 T2E H37 – Remnants of abandoned car bodies

Plate 4.63 T2E H 37 – Detail of abandoned car bodies

T2E H38 – Tree Plantings

This site comprises of a group of tree plantings situated on a spurline knoll, adjacent to a tributary of Emigrant Creek. The plantings include a number of Norfolk Island Pines, a large fig tree, and other species (Plate 4.64). Some cow bone fragments, and a number of old wooden fence posts and fencing wire are associated with the plantings. A possible earth platform to the west of the trees may be indicative of a former building site.

This site is interpreted as the location of a former twentieth century residential farm house, based on the presence of the plantings and platform.

Plate 4.64 T2E H38 – tree plantings, looking east

T2E H39 – Scatter of Glass and Ceramic Fragments

This site comprises a sparse scatter of late nineteenth and early to mid twentieth century glass and ceramic fragments located in a macadamia plantation on the eastern side of the Pacific Highway about two kilometres north of Newrybar. The material is exposed on the devegetated ground under the macadamia trees. This site is probably the scattered remains of a refuse area for a former farm house residence located nearby and upslope, probably adjacent to the east side of the current highway (Plates 4.65 and 4.66).

Plate 4.65 T2E H39 – General view of the area over which fragmentary material is exposed

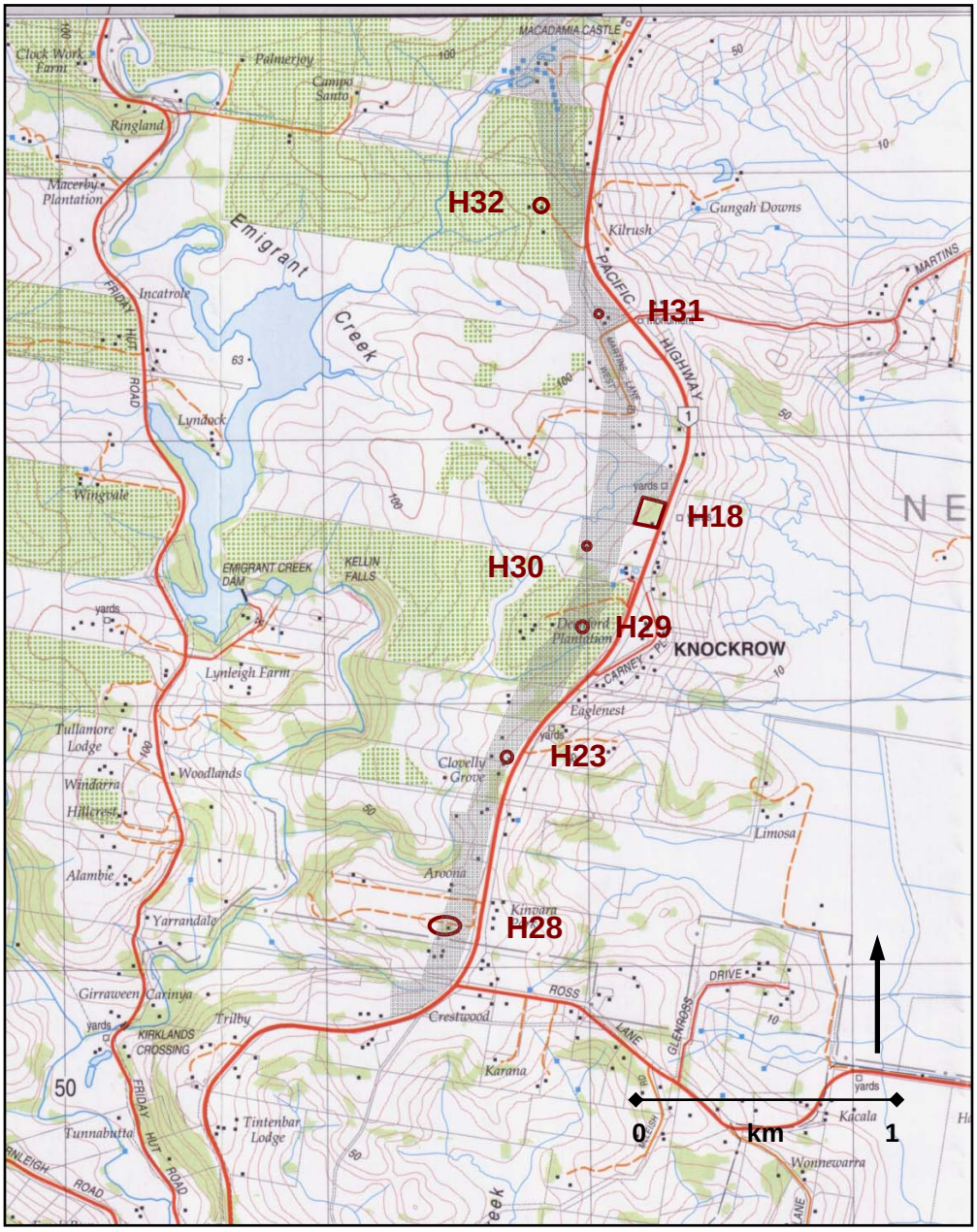
Plate 4.66 T2E H39 – A selection of the glass, metal and ceramic fragments which make up this site

T2E H40 – Concrete Floor and Footings

This site comprises the concrete footings and floor of a two compartment structure, probably a dairy, located on the eastern side of the Pacific Highway about 1.5 kilometres south of the Bangalow Road Pacific Highway interchange. The footings are aligned roughly north south and are approximately 4.5 x 3 m (Plates 4.67 and 4.68).

Plate 4.67 T2E H40 – Concrete footings and floor, looking northeast

Plate 4.68 T2E H40 – Concrete footings and floor, looking south



Proposed highway upgrade route study area

Figure 4.5 Non-Aboriginal cultural heritage recordings
(Ballina 1:25,000 topographic map, 3rd ed Dept of Lands 2002)

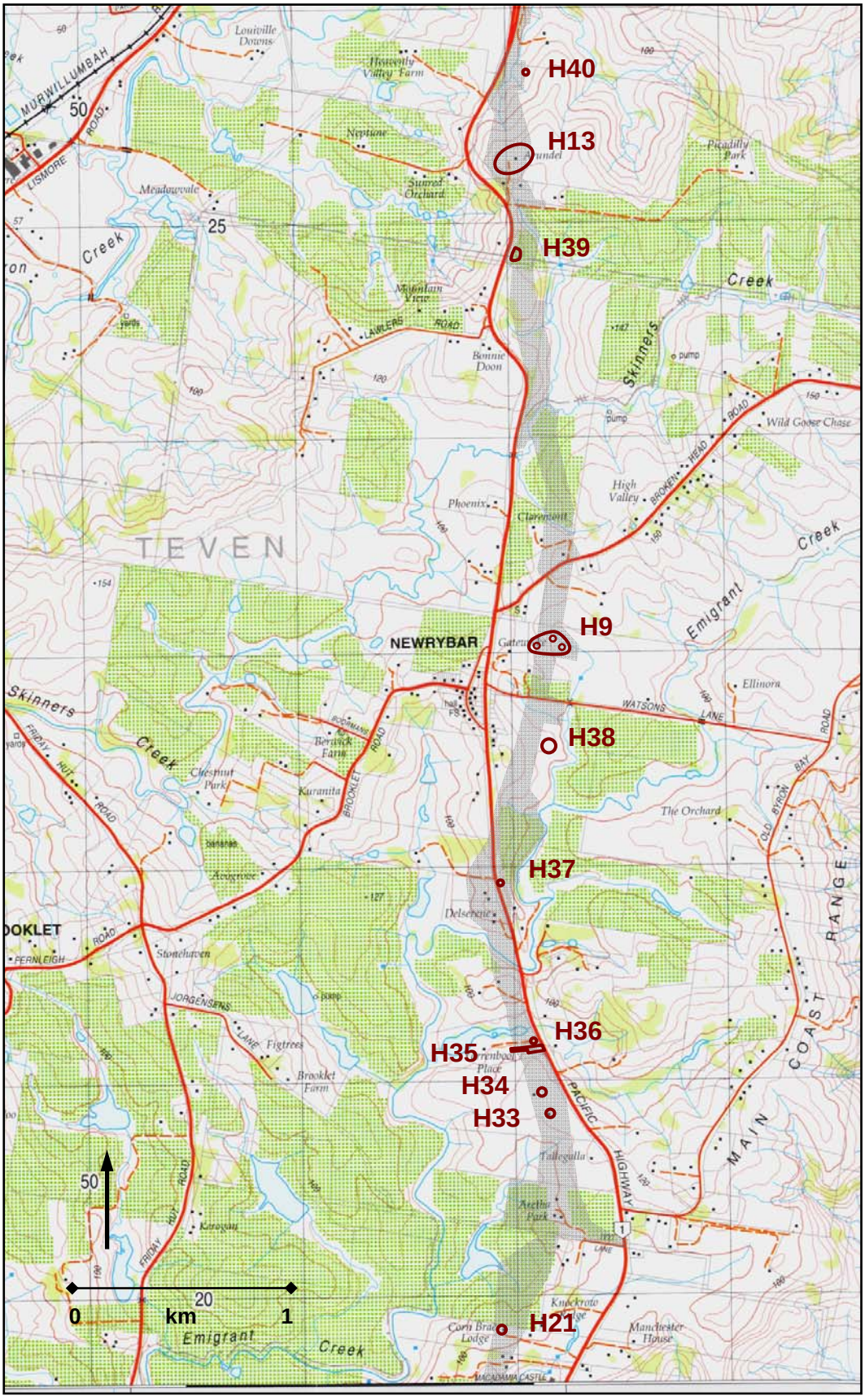


Figure 4.6 Non-Aboriginal cultural heritage recordings
(Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002)

Table 4.3 Inventory of all cultural heritage recordings

Site Number	Site Type	MGA Reference
T2E A8	Aboriginal isolated find	refer to restricted Appendix 6
T2E A9	Aboriginal isolated find	
T2E A10	Aboriginal artefact scatter	
PAD1	Aboriginal PAD	551495.6816600
PAD2	Aboriginal PAD	552000.6817640
PAD3	Aboriginal PAD	552125.6817690
PAD4	Aboriginal PAD	552040.6817775
PAD6	Aboriginal PAD	552155.6817880
PAD7	Aboriginal PAD	552210.6817990
PAD8	Aboriginal PAD	551950.6819610
PAD9	Aboriginal PAD	552132.6820906
PAD10	Aboriginal PAD	552090.6821100
PAD11	Aboriginal PAD	551970.6851960
PAD12	Aboriginal PAD	551998.6821975
PAD13	Aboriginal PAD	552100.6822590
PAD14	Aboriginal PAD	552153.6823975
PAD15	Aboriginal PAD	552175.6824091
PAD16	Aboriginal PAD	552045.6825300
PAD17	Aboriginal PAD	552036.6825647
PAD18	Aboriginal PAD	552050.6825705
PAD19	Aboriginal PAD	552080.6825931
PAD20	Aboriginal PAD	552105.6826066
PAD21	Aboriginal PAD	552133.6826150
PAD22	Aboriginal PAD	552305.6827464
PAD23	Aboriginal PAD	552350.6827725
PAD24	Aboriginal PAD	552650.6828025
PAD25	Aboriginal PAD	552805.6828180
PAD26	Aboriginal PAD	553210.6828630
PAD27	Aboriginal PAD	553230.6828700
PAD28	Aboriginal PAD	553275.6828740
PAD29	Aboriginal PAD	553325.6828875
PAD30	Aboriginal PAD	553435.6829065
PAD31	Aboriginal PAD	553460.6829220
PAD32	Aboriginal PAD	553455.6829350
PAD33	Aboriginal PAD	553500.6829450
PAD34	Aboriginal PAD	553505.6829585
PAD35	Aboriginal PAD	553496.6829997
PAD36	Aboriginal PAD	553611.6831181
T2E H9	cricket pitch and ground	552202.6823063

Site Number	Site Type	MGA Reference
T2E H13	*Arundel* farm complex and plantings	552050.6825300
T2E H18	former Knockrow School site and teachers residence	552260.6817685
T2E H21	*Corn-Brae* Lodge	551940.6819845
T2E H23	weatherboard house	551710.6816780
T2E H28	fig tree	551435.6816145
T2E H29	forestry stump	551987.6817281
T2E H30	derelict farm building	552000.6817576
T2E H31	remnant yards and fencing	552052.6818481
T2E H32	weatherboard house	551840.6818868
T2E H33	weatherboard cottage	552160.6820840
T2E H34	site of former dairy	552118.6820946
T2E H35	family memorial	552055.6821148
T2E H36	property entrance	552100.6821190
T2E H37	car remnants	551960.6821908
T2E H38	tree plantings	552152.6822558
T2E H39	scatter of glass and ceramic fragments	552033.6824843
T2E H40	concrete floor and footings	552068.6825694

4.4 Significance Assessment

4.4.1 Aboriginal Heritage

4.4.1.1 Assessment Criteria

The Burra Charter of Australia defines cultural significance as 'aesthetic, historical, scientific or social value for past, present and future generations' (Aust. ICOMOS 1987). The assessment of the cultural significance of a place is based on this definition but often varies in the precise criteria used according to the analytical discipline and the nature of the site, object or place.

In general, Aboriginal archaeological sites are assessed using five potential categories of significance:

- Significance to contemporary Aboriginal people;
- Scientific or archaeological significance;
- Aesthetic value;
- Representativeness; and
- Value as an educational and/or recreational resource.

Many sites will be significant according to several categories and the exact criteria used will vary according to the nature and purpose of the evaluation. Cultural significance is a relative value based on variable references within social and scientific practice. The cultural significance of a place is therefore not a fixed assessment and may vary with changes in knowledge and social perceptions.

Aboriginal significance can be defined as the cultural values of a place held by and manifest within the local and wider contemporary Aboriginal community. Places of significance may be landscape features as well as archaeologically definable traces of past human activity. The significance of a place can be the result of several factors including: continuity of tradition, occupation or action; historical association; custodianship or concern for the protection and maintenance of places; and the value of sites as tangible and meaningful links with the lifestyle and values of community ancestors. Aboriginal cultural significance may or may not parallel the archaeological significance of a site.

Scientific significance can be defined as the present and future research potential of the artefactual material occurring within a place or site. This is also known as archaeological significance.

There are two major criteria used in assessing scientific significance:

1. The potential of a place to provide information which is of value in scientific analysis and the resolution of potential research questions. Sites may fall into this category because they: contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a constituent of a larger significant structure such as a site complex.

2. The representativeness of a place. Representativeness is a measure of the degree to which a place is characteristic of other places of its type, content, context or location. Under this criteria a place may be significant because it is very rare or because it provides a characteristic example or reference.

The value of an Aboriginal place as an educational resource is dependent on: the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique

features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

The cultural significance of a place can be usefully classified according to a comparative scale which combines a relative value with a geographic context. In this way a site can be of low, moderate or high significance within a local, regional or national context. This system provides a means of comparison, between and across places. However it does not necessarily imply that a place with a limited sphere of significance is of lesser value than one of greater reference.

The following assessments are made with full reference to the scientific, aesthetic, representative and educational criteria outlined above. Reference to Aboriginal cultural values has also been made where these values have been communicated to the consultants. It should be noted that Aboriginal cultural significance can only be determined by the Aboriginal community, and that confirmation of this significance component is dependent on verbal or written submissions by Aboriginal stakeholders.

Opportunities for Aboriginal stakeholders to communicate the cultural values associated with the proposed upgrade area and archaeological sites recorded within it have been provided in accordance with DECC policy which relates to assessments for Part 3A projects. This policy is entitled *Guidelines For Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (issued July 2005). This document specifies that the *DECC Interim Guidelines for Aboriginal Community Consultation – Requirements for Applicants* (DECC 2005), be used as a guide in conducting Aboriginal community consultation.

4.4.1.2 The Study Area

T2E A8 – isolated find

This site consists of a single stone artefact, located on the batter of the existing highway. It is clear from the lack of other finds within the adjacent ground exposures that this find is either a single artefact, or part of a very low density subsurface artefact occurrence.

Apart from artefacts with rare or notable characteristics, the archaeological value of isolated finds is generally very limited, specific to a local context, and may not reach a threshold where collection or further analysis is warranted.

In this case, despite its limitation as a single item, this artefact has scientific and Aboriginal cultural value as one of a small number of surface finds so far recorded from the Alstonville Plateau. Its position on the crest of the main watershed ridgeline that defines the elevated eastern rim of the plateau, is suggestive of the use of this landform as a through-travel and access route. As a consequence this find is assessed as having low to moderate value within a local context.

T2E A9 – isolated find

This site consists of a single ground edge hatchet which is currently in the collection of a local land owner. Although its find-location is now occupied by a standing building, its reported original provenance is still known and provides a scientifically useful record of a hatchet find on the Alstonville Plateau in a spurline crest context. There may be other subsurface artefacts associated this find location and its presence provides data on the distribution and use of hatchets on the Alstonville plateau. As an artefact type with considerable aesthetic appeal and presence, and which would have originally represented a considerable investment in time to manufacture (and possibly to trade), this find has considerable Aboriginal cultural value.

Based on its research and cultural values, this site is considered to have moderate value within a local context.

T2E A10 – artefact scatter

This site consists of two artefacts in an upper catchment context, within the substantially disturbed context of a macadamia plantation. Based on surrounding ground surface visibility, this site is unlikely to be more than a low density distribution of surface and possibly subsurface artefacts.

Despite its level of disturbance and probable limited content, this site has a degree of scientific and Aboriginal cultural value as one of a small number of surface artefact scatters so far recorded from the Alstonville Plateau. As a consequence this find is assessed as having low to moderate value within a local context.

Potential Archaeological Deposits PAD1-36

Beyond the broad scaled assessment inherent in their identification, there is insufficient data from previous studies to provide further levels of predictive assessment regarding the potential values of the potential archaeological deposits identified.

An assessment of the significance of the 36 PADs recorded within the proposed upgrade can only be reliably conducted following a program of archaeological subsurface testing within a representative sample of the locations identified.

4.4.2 Non-Aboriginal Heritage

4.4.2.1 Assessment Criteria

The NSW Heritage Office has defined a methodology and set of criteria for the assessment of cultural heritage significance for items and places, where these do not include Aboriginal heritage from the pre-contact period (NSW Heritage Office & DUAP 1996, NSW Heritage Office 2000). The assessments provided in this report follow the Heritage Office methodology.

The following heritage assessment criteria are those set out for Listing on the State Heritage Register. In many cases items will be significant under only one or two criteria. The State Heritage Register was established under Part 3A of the Heritage Act (as amended in 1999) for listing of items of environmental heritage that are of state heritage significance. Environmental heritage means those places, buildings, works, relics, moveable objects, and precincts, of state or local heritage significance (section 4, Heritage Act 1977).

An item will be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the following criteria:

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.)

An item is not to be excluded from the Register on the ground that items with similar characteristics have already been listed on the Register. Only particularly complex items or places will be significant under all criteria.

In using these criteria it is important to assess the values first, then the local or State context in which they may be significant.

Different components of a place may make a different relative contribution to its heritage value. For example, loss of integrity or condition may diminish significance. In some cases it is constructive to note the relative contribution of an item or its components. Table 4.4 provides a guide to ascribing relative value.

Table 4.4 Guide to ascribing relative heritage value

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.

4.4.2.2 The Study Area

T2E H9 - Cricket Pitch and Ground

This site consists of the remains of the former Newrybar cricket ground which was used from the 1940s to the 1960s. An *in situ* concrete pitch and a concrete grass roller remain evident within a tree rimmed grassed paddock, however the former grounds have been largely obscured and dissected by the establishment of an extensive passionfruit plantation and associated wind breaks. A large and tall fig tree survives within the plantation and this is remembered to have served as shelter for participants.

This site is remembered in written and oral local history and is valued (though probably now rarely visited) for its role in the development and history of the local town's cricket playing.

It is considered likely that similarly aged and better preserved cricket grounds of this type occur elsewhere in the wider region.

Despite a limited degree of demonstrable social value associated with these cricket field remnants, the substantially altered nature of the original field, and the disparate and separate nature of the surviving elements combine to provide as assessment of little or very limited significance. Accordingly it is considered that this site does not meet the threshold for heritage listing at either the State or local level.

T2E H13 – Arundel Farm Complex and Plantings

This site consists of a farm complex dating from the first half of the twentieth century and includes a well maintained residential cottage, original mature tree plantings, and the remains of outbuildings, animal yards and pens. While the original bungalow has been modified, the modifications have been made in a sympathetic style with similar materials to the original. Despite this, the modifications have changed the formal entrance to the building and the back facing aspects and as such detract from the representative value of the complex.

Traces of a range of outbuildings and animal yards are present and indicate a changing history of agricultural production. The overall condition of the outbuildings and pens ranges from standing and secured structures to residual traces such as walls and foundations.

This complex is of an age and type which is typical of many surviving farm properties on the Alstonville Plateau. However, its landscape context, on a high ridge with commanding views, provides a degree of distinction. The surrounding mature tree plantings also add to this aesthetic value. Similarly, the absence of encroaching macadamia or other plantations allows a greater appreciation of its pastoral heritage, in contrast to other surviving sites of its type, now surrounded by plantations.

Under NSW Heritage Council's heritage significance criteria, it meets criteria (a), (c) and (g), as follows:

Criterion (a) Through its identified construction date, inherent original architectural elements and structural and landscape integrity, the house and grounds show the continuity of agricultural development and of various crop and animal production methods in the local area. This site is therefore important in the course, or pattern, of the cultural history of the area;

Criterion (c) The elevated, open and ridge crest context, surrounding grounds, and mature tree plantings, which characterise this complex provide for a degree of aesthetic value. These aesthetic components are also illustrative of various economic and functional factors which influenced the development of the complex over time. Some of these include the role of mechanised farm machinery and transport, the use of shade trees, and the separation of home and agricultural ground.

Criterion (g) The house is a representative example of its type from the early twentieth century, it has the principal characteristics of a class of household building types from that era and has attributes typical of a particular way of life and activity in the local area from that period. It is therefore considered to be an important item in demonstrating the principal characteristics of a class of the local area's cultural places.

As such, the house is considered to have moderate heritage significance and fulfils the criteria for local listing.

T2E H18 – Former Knockrow Public School Site and Teachers Residence

This site includes the original grounds and the remaining teacher's residence of the former Knockrow Public School. The school operated from 1901 to 1947. Subsequent use as a private residence has included the development of the grounds as a residential garden. A major feature of the current garden is an extensive and mature tree canopy, much of which is the result of large fig and camphor laurel trees. Many of these form a dense margin around the northern, western and southern boundaries of the property. It is probable that many of these trees were planted by former students and teachers.

The remaining building has been modified with extensions to the rear (west), north and south. The effect is that only a portion of the front (eastern face) of the building retains its original character and open verandas. The original school building appears to have been situated to the north of the remaining building and has previously been removed or demolished.

The loss of the school house and the extensions to the surviving building detract from the historical and representative significance of the site. Despite this, the surviving grounds and plantings have contextual and landscape values and the school's operation for nearly fifty years provides for considerable social significance within the local community.

Under NSW Heritage Council's heritage significance criteria, this site meets criteria (d) and (g), as follows:

Criterion (d) A consequence of the operation of this site as a local school for almost fifty years is that the place has considerable social significance and importance within the local Knockrow community. It is probable that many of the surviving mature plantings were planted by former students and teachers. These now form a prominent and aesthetic component of the landscape and act as a memorial to the history of the school.

Criterion (g) The remaining teachers residence, school grounds and plantings, combine to form a representative example of its type from the first half of the twentieth century. Despite the loss of the school house and some additions to the teachers residence, this site retains some principal characteristics of rural public school grounds and buildings of this era. It is therefore considered to be an important item in demonstrating principal characteristics of a class of the local area's cultural places.

As such this site is assessed as having moderate heritage significance and fulfils the criteria for local listing.

T2E H21 – Corn-Brae Lodge

This site consists of paired weatherboard cottages which comprised the family residences and core of a formerly larger land holding. This property remains in the ownership of the descendents of the original land selectors (the Alcorns). The first building was reportedly constructed in 1902, the second and more westerly cottage, was built at a later time but in the same style. Both buildings have been altered by various extensions and modifications, which substantially detract from the original character of the buildings. No original outbuildings appear to have survived.

This site provides an architectural record of the growth and contraction of a modest family estate. Despite a degree of aesthetic value in the placement and pairing of the two cottages, changes and additions to the buildings now substantially reduce heritage values. Similarly, the absence of original out buildings or other features relating to different modes of agricultural production reduces potential representative values.

Based on these limitations, this site is considered to have little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H23 - Weatherboard House

The site is a large weatherboard house and is likely to date from the 1920s or earlier. It is characteristic of a number of houses from the era. Under NSW Heritage Council's heritage significance criteria, it meets criteria (a) and (g), as follows:

Criterion (a) Through its identified construction date, inherent original architectural elements and structural integrity the house shows the continuity of a historical process in the local area and is therefore important in the course, or pattern, of the cultural history of the area; and

Criterion (g) The house is a representative example of its type from the early twentieth century, it has the principal characteristics of a class of household building types from that era and has attributes typical of a particular way of life and activity in the local area from

that period. It is therefore considered to be an important item in demonstrating the principal characteristics of a class of the local area's cultural places.

Although the house has some altered or modified elements (windows and doors), which of themselves have little heritage value, those alterations do not detract from its overall significance. It is considered that house has moderate heritage significance and fulfils the criteria for local listing.

T2E H28 – Fig Tree at Site of Reported Former Dairy and Milk Bottling Enterprise

When assessed against the NSW Heritage Office criteria for ascribing heritage value, the fig tree and adjacent artefact scatter have only incidental connections with historically important activities and people or events, have little archaeological or research potential and only contain information that is readily available from other archaeological sites. As such, it is considered that the tree and artefact scatter have little heritage value and do not meet the threshold for heritage listing at either the State or local level.

T2E H29 – Forestry Stump

When assessed against the NSW Heritage Office criteria for ascribing heritage value, the stump has been compromised by the growth of encompassing camphor laurel and fig trees, has only incidental connections with historically important activities and people or events, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the stump has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H30 – Derelict Farm Building – possible former dairy

The building is characteristic of a number of dairies from the era. Under NSW Heritage Council's heritage significance criteria, it meets criteria (a) and (g), as follows:

Criterion (a) Despite its apparent derelict condition, the dairy retains much of its original architectural elements and is associated with a significant historical activity (pastoralism) in the local area. It shows the continuity of a historical process in the local area and is therefore important in the course, or pattern, of the cultural history of the area; and

Criterion (g) The dairy is a representative example of its type from the early twentieth century, it has the principal characteristics of a class of such building types from that era and has attributes typical of a particular way of life and activity in the local area from that period. It is therefore considered to be an important item in demonstrating the principal characteristics of a class of the local area's cultural places.

Although the building is in a derelict state, its condition does not detract from its overall significance. It is considered that the building has moderate heritage significance and fulfils the criteria for local listing.

T2E H31 – Remnant Yards and Two Rail Fencing

The remnant has only incidental connections with historically important activities and people or events, has lost its design and technical integrity, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the remnant fence has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H32 – Weatherboard Cottage

The site consists of an early twentieth century weatherboard house and associated garden plantings and is now located in the middle of a macadamia plantation. It is characteristic of a number of houses from the early twentieth century. Under NSW Heritage Council's heritage significance criteria, it meets criteria (a) and (g), as follows:

Criterion (a) Through its identified construction date, inherent original architectural elements and structural integrity the house shows the continuity of a historical process in the local area and is therefore important in the course, or pattern, of the cultural history of the area; and

Criterion (g) The house is a representative example of its type from the early twentieth century, it has the principal characteristics of a class of household building types from that era and has attributes typical of a particular way of life and activity in the local area from that period. It is therefore considered to be an important item in demonstrating the principal characteristics of a class of the local area's cultural places.

As such, the house is considered to have moderate heritage significance and fulfils the criteria for local listing.

T2E H33 – Weatherboard Cottage

The cottage has unknown connections with historically important activities and people or events, due to its modified elements has lost its design and technical integrity, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the cottage has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H34 – Site of Former Dairy

The site has only incidental connections with historically important activities and people or events, has lost its design and technical integrity, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H35 - Family Memorial

This site consists of a private family memorial including a brick cairn and tree plantings established in the mid 1990s. Although this memorial has considerable personal and family value to the current residents, the age of the installation and the limited scope of its commemoration means that this site does not reach the threshold for heritage listing at either the State or local level.

T2E H36 – Modern property entrance feature

The site has only incidental connections with historically important activities and people or events, has little technical integrity (due to the relocation of the wrought iron elements), has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H37 – Car Remnants

These car remnants have no known connections with historically important activities and people or events, have lost their design and technical integrity, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H38 – Tree Plantings

This site comprises of a group of tree plantings and ground surface features which are probably indicative of a former twentieth century residential farm house. This site has no known connections with historically important activities and people or events. It no longer contains design or technical integrity, or visual, sensory, landmark and scenic qualities. Any potentially associated archaeological deposits have little archaeological or research potential and may only contain information that is

readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H39 – Scatter of Glass and Ceramic Fragments

This site comprises a sparse scatter of late nineteenth and early to mid twentieth century glass and ceramic fragments located in a macadamia plantation. The site has no known connections with historically important activities and people or events, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

T2E H40 – Concrete Floor and Footings

This site comprises the concrete footings and floor of a two compartment structure, which was probably a dairy. The site has no known connections with historically important activities and people or events, has lost its design and technical integrity, has little archaeological or research potential and only contains information that is readily available from other archaeological sites. As such, it is considered that the site has little heritage value and does not meet the threshold for heritage listing at either the State or local level.

Table 4.5 Summary of heritage significance for European historical recordings

Site ID	Site Type	Assessed Heritage significance	Context of Significance Values
T2E H9	Cricket pitch and ground	Little	
T2E H13	*Arundel* farm complex and plantings	Moderate	Local
T2E H18	Former Knockrow School site and teachers residence	Moderate	Local
T2E H21	*Corn-Brae* Lodge	Little	
T2E H23	Weatherboard house	Moderate	Local
T2E H28	Fig tree	Little	
T2E H29	Forestry stump	Little	
T2E H30	Derelict farm building	Moderate	Local
T2E H31	Remnant yards and fencing	Little	
T2E H32	Weatherboard cottage	Moderate	Local
T2E H33	Weatherboard cottage	Little	
T2E H34	Site of former dairy	Little	
T2E H35	Family memorial	Moderate	Local
T2E H36	Property entrance	Little	
T2E H37	Car remnants	Little	

Site ID	Site Type	Assessed Heritage significance	Context of Significance Values
T2E H38	Tree plantings	Little	
T2E H39	Scatter of glass and ceramic fragments	Little	
T2E H40	Concrete floor and footings	Little	

5. KEY ISSUES AND MANAGEMENT STRATEGIES

This section identifies the potential impacts of the proposed upgrade on cultural heritage recordings and their assessed values (Section 5.1), outlines the main issues associated with these impacts, and proposes strategies for managing these impacts (Section 5.2). The specific issues of impact to Aboriginal cultural values and cumulative impacts are presented in separate subsections (Sections 5.1.2 and 5.1.3 respectively).

5.1 Potential Impacts on Cultural Heritage Values

5.1.1 Direct Impact to Sites and PADs

For the purposes of this analysis, direct impact is defined as the removal or destruction of a site, place or feature, which was required for, or caused by, the construction of a new landsurface or structure in that location.

Of the fifty seven cultural heritage recordings made during this investigation, fifty would be wholly or partially subject to direct impact by the proposed upgrade, a further two occur in close proximity and may be subject to direct impact from construction activities (H29 & 39), one would not be directly impacted but would be subject to property acquisition and incorporated into the highway easement (H30), and four would not be directly impacted or subject to property acquisition (A8, H18, 32 &38). All of the identified PADs would be wholly or partly impacted. A summary of the potential development impact to all cultural heritage recordings is provided in Table 5.1.

The known extent of the two Aboriginal sites subject to direct impact (A9 & 10) would be completely destroyed by construction works. Site A9 consists of an isolated find, a stone hatchet which has previously been collected and forms part of the private collection of the current owner. The find has moderate significance within a local context. However, the location of the find has been disturbed by agriculture and building construction and has a lesser degree of significance to the hatchet. Site A10 consists of two surface artefacts within a macadamia plantation and has low to moderate significance within a local context.

Site A8 consists of an isolated find exposed on the batter of a section of the existing Pacific Highway. This area falls outside of the proposed construction area and will not be subject to impact or change.

Of the thirty six PADs, twenty four would be wholly destroyed by construction works and the remaining twelve (PAD1, 2, 7, 8, 12, 23, 35, 29, 31, 32, 33 & 34) would be subject to direct impact to a varying proportion of their recorded extents.

Eight non-Aboriginal sites would be wholly destroyed by construction works. These are H13, 23, 31, 33, 34, 36, 37 and 40. Two of these (H13 & 23) are of moderate significance within a local context and consist of a weatherboard farmhouse and complex, and a weatherboard house. The remaining sites fall below the threshold of the Heritage Office significance criteria. Similarly, the two sites which are in close proximity and may be subject to direct impact (H29 & 39) also fall below the threshold of the Heritage Office significance criteria. All of the four sites which would partially impacted fall below significance thresholds (H9, 21, 28 & 35).

Site H30, a derelict dairy is not subject to direct impact but would be incorporated into the highway easement. This site is of moderate significance within a local context. Three sites will not be directly impacted and also fall outside of the proposed property acquisition boundary. These are H18, 32 and 38, two of which are of moderate, local significance and the latter falls below significance thresholds.

Table 5.1 Summary of potential development impact to all Cultural Heritage Recordings

Site ID	Site Type	Heritage Significance	Development Impact
T2E A8	isolated find	low to moderate, local	not directly impacted, occurs within existing highway easement
T2E A9	isolated find	moderate, local	direct impact
T2E A10	artefact scatter	low to moderate, local	direct impact
PAD1	Aboriginal PAD	undetermined	direct impact to a portion of the PAD from sediment basin
PAD2	Aboriginal PAD	undetermined	direct impact to a portion of the PAD from sediment basin
PAD3	Aboriginal PAD	undetermined	direct impact
PAD4	Aboriginal PAD	undetermined	direct impact from service road
PAD5	Aboriginal PAD	undetermined	direct impact from sediment basin and fill
PAD6	Aboriginal PAD	undetermined	direct impact
PAD7	Aboriginal PAD	undetermined	direct impact to a portion of the PAD from sediment basin
PAD8	Aboriginal PAD	undetermined	direct impact to majority of PAD, and whole area affected by property acquisition
PAD9	Aboriginal PAD	undetermined	direct impact
PAD10	Aboriginal PAD	undetermined	direct impact
PAD11	Aboriginal PAD	undetermined	direct impact from sedimentary basin and service road
PAD12	Aboriginal PAD	undetermined	direct impact to a portion of PAD from fill and sedimentary basin
PAD13	Aboriginal PAD	undetermined	direct impact
PAD14	Aboriginal PAD	undetermined	direct impact
PAD15	Aboriginal PAD	undetermined	direct impact from carriageway and sedimentary basins
PAD16	Aboriginal PAD	undetermined	direct impact
PAD17	Aboriginal PAD	undetermined	direct impact
PAD18	Aboriginal PAD	undetermined	direct impact
PAD19	Aboriginal PAD	undetermined	direct impact by sedimentary basin
PAD20	Aboriginal PAD	undetermined	direct impact
PAD21	Aboriginal PAD	undetermined	direct impact
PAD22	Aboriginal PAD	undetermined	direct impact by carriageway and sedimentary basin
PAD23	Aboriginal PAD	undetermined	direct impact to the upper portion (approximately half) of the PAD
PAD24	Aboriginal PAD	undetermined	direct impact by carriageway and sedimentary basin
PAD25	Aboriginal PAD	undetermined	direct impact to most of PAD by carriageway and service road
PAD26	Aboriginal PAD	undetermined	direct impact

Site ID	Site Type	Heritage Significance	Development Impact
PAD27	Aboriginal PAD	undetermined	direct impact
PAD28	Aboriginal PAD	undetermined	direct impact
PAD29	Aboriginal PAD	undetermined	direct impact to a portion of the PAD
PAD30	Aboriginal PAD	undetermined	direct impact by carriageway and sedimentary basin
PAD31	Aboriginal PAD	undetermined	direct impact to a portion of the PAD
PAD32	Aboriginal PAD	undetermined	direct impact to a portion of the PAD
PAD33	Aboriginal PAD	undetermined	direct impact to the upper slopes of the PAD
PAD34	Aboriginal PAD	undetermined	direct impact to the upper slopes of the PAD
PAD35	Aboriginal PAD	undetermined	direct impact by carriageway and sedimentary basin
PAD36	Aboriginal PAD	undetermined	direct impact
T2E H9	cricket pitch and ground	below threshold	direct impact to the pitch and roller location, the fig tree is located 40 west of an area of fill and there is potential for the retention of the fig tree, alive and in situ within the highway easement
T2E H13	*Arundel* farm complex and plantings	moderate, local	direct impact to whole complex
T2E H18	Former Knockrow School site and teachers residence	moderate, local	not directly impacted or affected by property acquisition
T2E H21	*Corn-Brae* Lodge	below threshold	the western cottage will be directly impacted, the eastern and older cottage will not be directly impacted or subject to property acquisition
T2E H23	weatherboard house	moderate, local	direct impact
T2E H28	fig tree and reported location of milk bottlery	below threshold	direct impact to most of reported site area, there is potential for fig tree to be retained, live and *in situ* within highway easement
T2E H29	forestry stump	below threshold	cut and fill occurs in close proximity to tree, there may be potential for tree to be retained, live and *in situ* within highway easement
T2E H30	Derelict farm building	moderate, local	structure occurs 18 m west of a proposed service road, and will be affected by property acquisition, there is potential to retain structure within highway easement
T2E H31	Remnant yards and fencing	below threshold	direct impact
T2E H32	weatherboard house	moderate, local	not directly impacted or subject to property acquisition
T2E H33	weatherboard cottage	below threshold	direct impact
T2E H34	site of former dairy	below threshold	direct impact
T2E H35	family memorial	below threshold	direct impact to memorial and all but the far western end of tree plantings
T2E H36	property entrance	below threshold	direct impact

Site ID	Site Type	Heritage Significance	Development Impact
T2E H37	car remnants	below threshold	direct impact
T2E H38	tree plantings	below threshold	not directly impacted or subject to property acquisition
T2E H39	Scatter of glass and ceramic fragments	below threshold	not directly impacted, but in close proximity to construction zone, and subject to property acquisition
T2E H40	concrete floor and footings	below threshold	direct impact

5.1.2 Impact to Aboriginal Cultural Values

Based on consultation conducted to date, there have been no references to or identifications of specific places or sites with Aboriginal cultural values, except for those values also generally associated with the archaeological sites and potential archaeological deposits identified during this investigation.

A number of Aboriginal interviewees have commented on the close association of the existing highway and proposed upgrade corridors and stated that this would be beneficial in minimizing damage to the landscape and potentially occurring sites by concentrating development impact in and near areas of existing disturbance. The considerable European history of forest clearance, dairying, cropping and plantations across the proposed development area has also been noted in this regard.

Most of the Aboriginal interviewees entertained the view that all Aboriginal archaeological remains (excepting burials) should be fully investigated and subject to an appropriate form of recovery (salvage) so that artefacts would not be destroyed during construction works and could be managed according to community wishes.

Consistent with broadly held views across Aboriginal Australia, Aboriginal burial sites are considered to have special cultural value. Where known, burial locations should be avoided wherever possible. If and when encountered in the context of construction and other development related activities, burials must be managed according to a protocol which meets both statutory requirements and addresses cultural sensitivities within a collaborative framework. A protocol for the management of human remains is provided in Appendix 3 of this report.

5.1.3 Cumulative Impacts

Cumulative impact can be defined as the combined effect(s) of impacts that occur concurrently or incrementally as a result of multiple activities and developments with similar impacts, interacting with the environment of a particular local area and region. Cumulative impacts can be measured both through time, and within a particular period of time. For the purposes of this study the local area is defined as the Alstonville Plateau, and the region as the NSW North Coast.

There is no standard methodology for the assessment of cumulative impact and a range of approaches have been used in the past. The scope and complexity of these assessments have generally related to the scale of the proposal, its likely interactions and the nature of the available comparative and baseline data.

With regard to an assessment of cumulative impacts on cultural heritage values, it is pertinent to note that most values are likely to be associated with a finite and limited number of surviving places, objects and places. Except for those cultural traditions which revive or reinterpret past belief within new material forms, cultural heritage is mainly invested in the material evidence of the past. As such there is little ability to revive or reestablish the material past, in the same way as habitats and ecological communities may be. It follows that each incremental loss of the material record of the past is irreversible, and itself a factor in changing perceptions of rarity and value.

Ideally an assessment of cumulative impacts can be measured against a baseline of data which characterises the existing environment to be impacted, and the cumulative loss already realised. Unfortunately in the case of the local and regional contexts of the proposed upgrade, effective data sets of such information do not exist. The DECC Aboriginal Heritage Information Management System (AHIMS) provides a register of known Aboriginal sites across the state, but is limited in its application due to the multiple and selective factors which affect the registration of recordings. Only a very small proportion of the state has been the subject of comprehensive archaeological survey, and as a consequence, most patterning or trends evident within AHIMS site distributions reflect variables in data collection rather than the actual surviving resource. The general absence of archaeological survey conducted across the Alstonville Plateau means that the AHIMS provides no useable baseline for a cumulative assessment.

The NSW Heritage Inventory provides a compilation of places on State and local government heritage registers and schedules. Most of these consist of non-Aboriginal heritage items, with a small minority relating to Aboriginal and natural heritage. There are 330 inventory items within the combined North Coast local government areas, 45 of these occur within the Byron and Ballina local government areas. A quick review of these inventory items reveals a bias towards the identification of public and civic architecture, with private, smaller holding, and rural residential architectural items being substantially under represented. This is evident to a lesser extent in the Lismore LGA listings. Similarly, private, non-residential, agricultural and industrial items are also under represented. The NSW Heritage Inventory is limited in the same way as the DECC AHIMS, by the multiple and selective factors which affect the recognition and listing of items. It therefore would also be ineffective as a baseline for a cumulative assessment.

In the absence of an effective baseline for a quantitative evaluation, an assessment must be based on a qualitative review of the main determining factors. These can be defined as the extent and effect of previous impacts on the current resource, the degree to which the current development proposal may impact upon a resource which is rare or notable, and the effect of other current or planned similar developments. Given that the Aboriginal and non-Aboriginal heritage items recorded for this investigation are a consequence of the occupation and exploitation of the landscape, it can be proposed that variation in the archaeological record will to a certain degree reflect the variation of the landscape on which it is situated. This presumption provides an opportunity to gauge the scope and representativeness of the total archaeological resource by measuring landscape variation. Soil-landscape classifications provide an effective measure of landscape variation for archaeological applications, given the focus on soil formation and topographic context. Soil-landscape classifications of the Lismore-Ballina region have been published by Morand (1994). An extract of the mapped soil-landscape categories for the study area, together with some physiographic features are shown in Figure 5.1.

Previous Impacts

All of the soil-landscapes traversed by the upgrade, with the exception of the higher gradient slopes of the escarpment (Coolamon), have been subject to extensive clearance of native vegetation for agricultural development. All of the study area soil-landscapes originally supported subtropical rainforest with a closed tall forest structure (Morand 1994). This was known locally from the nineteenth century onward as the Big Scrub. Although this original forest would have secured and stabilized the soils, the zone of biological activity within the upper soil profile would have ensured that any remains of Aboriginal occupation discarded in open soil profile contexts would have been gradually transported and mixed via bioturbation throughout the upper soil zone.

No remnants of the Big Scrub forest remain within the proposed upgrade corridor. Following clearance, agricultural grasslands were developed, first with native species and then with improved pasture techniques, for the grazing of stock animals. Extensive horticulture also occurred with the varied introduction and development of sugar cane, pineapple, banana, and other tropical fruit crops. More recently, the extensive development of plantations has occurred, notably of macadamia nuts.

All of the production methodologies associated with these agricultural industries, starting with vegetation clearance and continuing with repeated soil tillage, and associated downslope movement (erosion) can be expected to have had a significant impact on archaeological deposits. Areas of local artefact concentration are likely to have become more scattered. Larger artefacts will have been

damaged by tilling and ploughing and the vertical distribution of all artefacts will have been re-distributed within the plough and ripping zones. Original land surfaces on aggrading landforms are likely to have become overlain by later sediments and conversely degrading landforms may have lost archaeological material through both gradual and rapid downslope erosional transport processes.

Following the change from forest to grasslands, changes in the fluvial regime and sediment loads of the areas drainage lines may have promoted higher sediment loads, more rapid and extreme flooding, and greater erosion and instability in creek banks. All of these processes have adverse implications for the survival and visibility of archaeological deposits in valley floor contexts.

There were no areas observed within the upgrade study area in which these landuse impacts could not have been expected to have operated in the past and/or to continue to be associated with current agricultural production. The study area did not present any peculiarity in this regard when compared to the surrounding land surfaces which have been similarly affected.

More focused and higher levels of disturbance within the upgrade study area are associated with the construction of buildings, vehicle paths, and service easements. The construction of building and road platforms has often involved extensive excavation and leveling of the original ground surface, mostly on locally elevated level ground, and particularly on spur and ridgeline crests. The existing Pacific Highway and other arterial roads across the plateau are frequently positioned along the continuous spur and ridge crests of watershed landforms. As a consequence, these natural through-travel routes (which may also have been favoured by Aboriginal people) have been subject to a disproportionate degree of landsurface disturbance. The preferential placement of residential and farm buildings, together with service easements, in proximity to arterial roads, increases this effect.

The proposed upgrade is notable for the previous impacts associated with the construction of the current Pacific Highway. This means that a significant proportion of the elevated crests traversed by the upgrade alignment have been substantially disturbed either directly or indirectly by the construction of the highway or developments focused around the transport corridor represented by the highway.

By way of contrast some of the valley floor landforms traversed by the upgrade may contain deposits with the least degree of past disturbance. Despite the greater instability of creek banks following forest clearance, the potential for net sedimentation from higher sediment loads, and from downslope transport of cultivated soils, provides for the potential of buried land surfaces with archaeological deposits, some of which may be below the plough zone. This is reflected in the large number of identified potential archaeological deposits within valley floor contexts.

With regard to past impact to European heritage items, the area of the proposed upgrade appears not to have notably different processes of attrition or deterioration relative to surrounding lands. One notable exception however is the economic effect of the highway itself which has probably acted to increase the rate of demolition and renewal of structures through higher property values and commercial potential. This could be expected to lead to fewer surviving heritage items than in more peripheral or marginal areas. Another potential effect of the highway, the promotion and development of towns is substantially sidelined by the deliberate placement of the upgrade so that these areas are avoided. The potential heritage items, values and cumulative impacts associated with townships are also effectively avoided.

The proposed construction of the highway upgrade would result in the removal and obliteration of most heritage items within the proposed highway easement. This level of impact however does not represent a substantially increased cumulative impact because the upgrade area remains largely typical of disturbance levels found elsewhere in the surrounding lands. Any notable differences such as the presence of the existing highway provides a basis for estimating a higher level of disturbance and corresponding loss of heritage value, rather than less.

Rarity and Notability

A review of the soil-landscapes present within the upgrade study area shows that the proposed alignment traverses six categories: Bangalow; Ewingsdale; Wollongbar; Wollongbar variant; Coolamon; and Rosebank (in decreasing order of area subject to impact). All of these categories are

well represented elsewhere across the Lismore – Ballina map sheet: Bangalow accounts for 151 km^2; Ewingsdale 53 km^2; Wollongbar 178 km^2; Wollongbar variant 18.5 km^2; Coolamon 27.5 km^2; and Rosebank 270 km^2 (Figure 5.1).

In terms of the Aboriginal archaeological resource, the soil landscapes on the plateau are likely to have a similar suite of likely site types, with differentiation provided by the presence of fluvial corridors, watershed ridge and spurlines, exploitable rock exposures, and aggrading landforms with potential for buried deposits. The former presence of closed subtropical rainforest across the whole landform range is likely to have had a stronger determining effect than the more subtle variations of slope, relief and soil type which differentiate the soil-landscape units across the plateau.

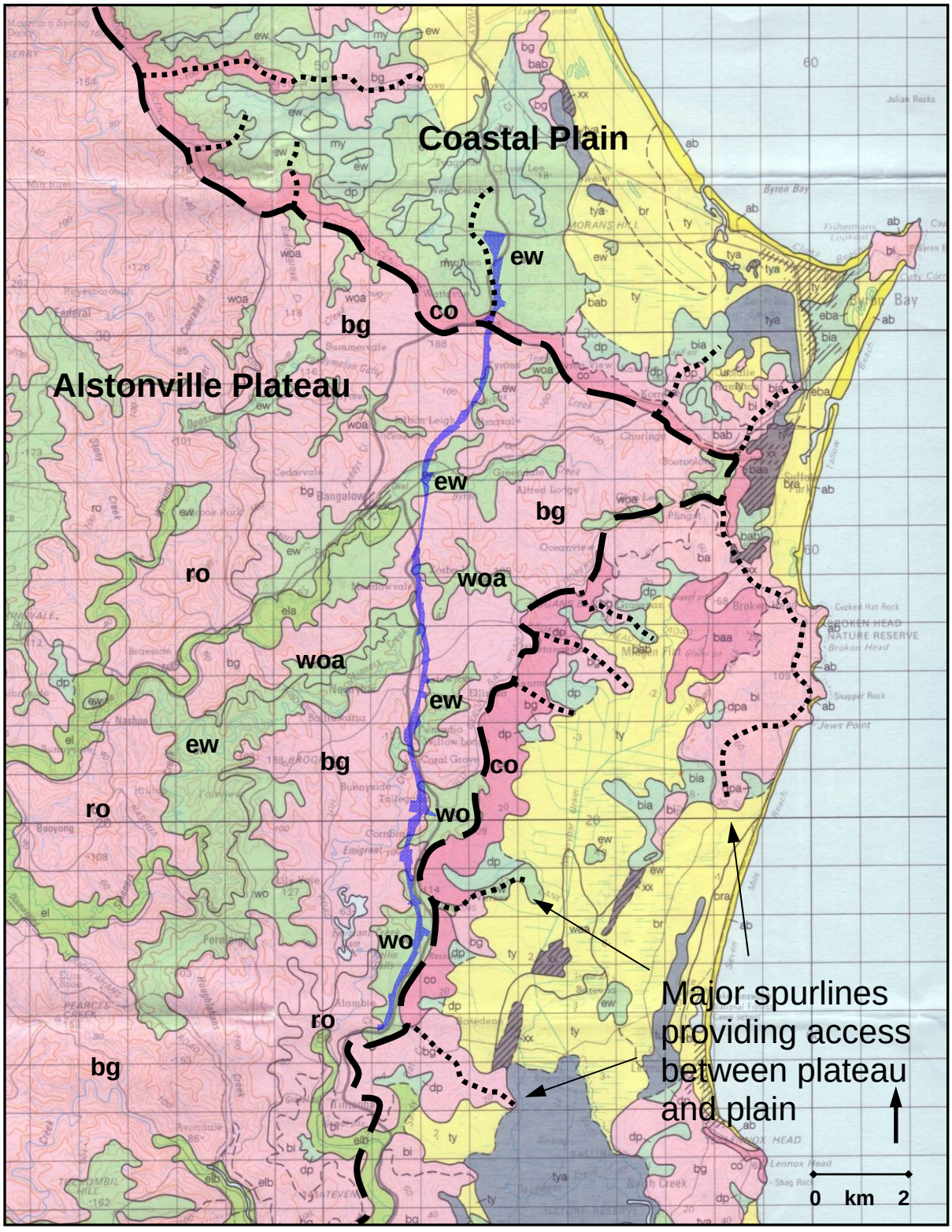


Figure 5.1 The location of the proposed upgrade (blue), and other features (black), superimposed over soil-landscapes (base map is an extract from Lismore-Ballina 1:100,000 Soil Landscape map series sheet 9540-9640, prepared by D. Morand, Soil Conservation Service, Department of Conservation and Land Management 1994, (relevant soil-landscape codes also highlighted in black).

Soil – Landscapes in study area:	bg - Bangalow	ew - Ewingsdale
	ro - Rosebank	wo - Wollongbar
	co - Coolamon	woa - Wollongbar variant

The Coolamon soil-landscape is situated on the higher gradient slopes of the escarpment which fringes the plateau and which descends to the coastal plain. Lower and surrounding slopes in this part of the proposed upgrade consist of the Ewingsdale soil-landscape. These landforms are probably characterised by a distinct suite of archaeological sites due to the probable role of the major ridgelines which traverse the plateau margin (Figure 5.1). These are likely to have served as through-access corridors for Aboriginal people moving between the plateau and the coastal plain. The major watershed which defines much of the eastern margin of the plateau may have served a similar function. Aboriginal sites which may be expected on the crests of these spurs and can be postulated to consist of discontinuous low density distributions of stone artefacts reflective of the repeated and cumulative waste from transient camps by small groups of people.

The number of such ridgelines between the plateau and plain is quite limited (12 are identified within the area of Figure 5.1), and those providing lesser gradients are even rarer. The Ewingsdale spurline, which forms part of the upgrade alignment, is one of five such spurs in the Figure 5.1 area. This presents a degree of rarity within the upgrade corridor and poses a *prima facie* case for increased and notable cumulative impacts if construction were to proceed. This argument is however effectively negated by an assessment of the existing disturbance along this spurline which resulted from construction of the existing Pacific highway. Virtually none of the original crest landform survives along the lesser spurline grades. A small remnant knoll appears to have survived and this is identified as PAD 36. Given this allowance for extensive past landuse disturbance, the potential cumulative impacts are considered to be negligible. The placement of the upgrade along this already disturbed spurline, is in fact a positive strategy which may lesson development pressure on the other spurlines.

With regard to European heritage items, the agricultural lands traversed by the upgrade alignment do not display any degree of rarity or representativeness which are of higher value than the majority of the adjacent plateau lands. The surviving resource is typified by early twentieth century pastoral and horticultural site types and dominated by dairying residential infrastructure. All of these site profiles can be expected to be well represented elsewhere across the plateau lands.

As previously mentioned, the presence of the existing highway has probably influenced an increase in the rate of demolition and property redevelopment within sections of the upgrade corridor.

Similar developments

There are currently no similar linear developments which impact the same or equivalent landforms of the Alstonville plateau. There are some long term horticultural trends, such as the establishment of fruit and nut tree plantations across the plateau, which easily eclipse the aerial extent of the proposed upgrade. The potential cumulative impact of these plantations on the surviving archaeological resource however remains to be evaluated and cannot be further assessed without greater survey and subsurface investigation of the plateau. Despite this, it can be reasonably concluded that the impact of plantation establishment poses a substantially lesser impact to the soil profile than the transformation effected by the cutting, filling and platform establishment required for highway construction.

Within a broader regional context, a review of contemporary developments with a comparable impact and scope must inevitably identify the other sections of the Pacific Highway upgrade (Figure 5.2). The planned and partly realised upgrade of the Pacific Highway aims to construct a continuous four lane divided dual carriageway, between Hexham and the NSW-QLD border, a distance of approximately 680 kilometres. The highway traverses a variety of coastal rangelands and coastal plain topographies of which the current Tintenbar to Ewingsdale section across the Alstonville Plateau forms approximately 3% of the eventual whole.

A cumulative assessment of the cultural heritage impacts of those portions of the Pacific highway upgrade completed to date is beyond the scope of the present investigation. It can be noted however that the cumulative impacts of the whole project are likely, at a broad scale, to be small compared to the surrounding regions. This likelihood is based on the narrow and linear nature of the development, and the small proportion of each landform type which will be subject to impact in the context of local and regional variability. Such a statement has less surety when smaller scales and contexts are evaluated. At local levels of analysis, there is greater scope for the identification of rare or notable

landform or resource types which may be subject to impact. The present investigation has shown that there are no such landform categories within the local context of the Tintenbar to Ewingsdale upgrade section.

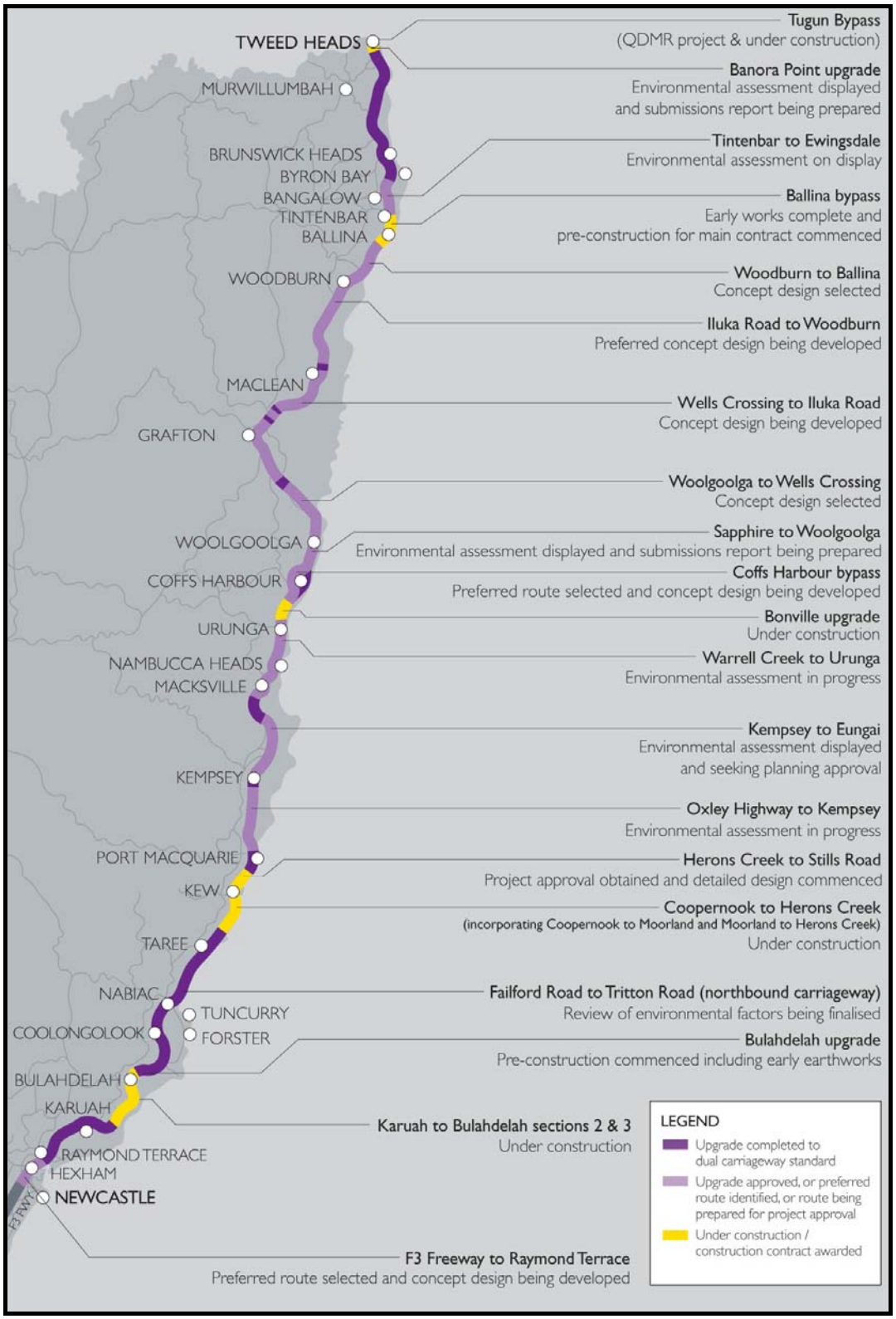


Figure 5.2 Pacific Highway project status (from RTA website)

5.2 Management Strategies

5.2.1 Aboriginal Heritage

Known Sites

The two Aboriginal sites subject to direct impact display a very low surface incidence of artefacts. Site A9 includes one previously collected stone hatchet and site A10 includes two surface artefacts. Both occur in disturbed locations. The low artefact incidence and disturbance levels at these locations reduce their scientific and representative values. The assessed significance of each site (moderate, local, and low to moderate local respectively), however is relatively high for sites of this type and content, and this reflects the paucity of knowledge and low numbers of previous recordings for the Alstonville Plateau. In line with these assessments, an appropriate management strategy would be the conduct of a salvage collection of any evident surface artefacts, and a limited program of subsurface archaeological salvage at each location. The collection of surface artefacts could include inspections both prior to and during the construction phases. Despite the disturbed nature and probable low density of potentially occurring subsurface archaeological material, the conduct of subsurface investigations is considered to be warranted based on the general lack of information about Aboriginal occupation on the Plateau, and the advantage of having a comparative baseline to review results of any PAD investigations.

The aims of the limited subsurface salvage program would be to characterise the subsurface incidence and type of artefactual material present, within the constraints and limitations posed by a low density and disturbed deposit.

The remaining Aboriginal site A8 is situated within the corridor of the existing Pacific highway and will not be affected by the proposed construction works. The location of the site and a requirement not to disturb this area, should be identified on mapping and environmental management plans relevant to any construction activities conducted within adjacent areas. If, due to unforeseen circumstances, a risk of disturbance is anticipated for this area, then the site should be temporarily fenced during the period of the risk, and/or the surface artefacts should be to temporarily collected and subsequently re-positioned after the completion of works.

Potential Archaeological Deposits

Thirty six potential archaeological deposits (PADs) have been identified within the proposed upgrade easement. All of these deposits will be subject to whole or partial direct impact. These identifications have been based on a generalised site location model and it is unclear how accurate the model is when applied to the environment of the Alstonville Plateau and its fringing slopes. Due to the lack of baseline and comparable archaeological data for the Plateau, fine scale assessment of the archaeological potential of each PAD has not been attempted.

Given the generalised nature of the predictive model, the consequential inclusive nature of the PAD identifications, and the relatively large number PAD recordings, it is considered that an initial commitment to test all of the PADs is not warranted. A more effective strategy would be the conduct of an initial program of archaeological subsurface testing across a representative sample of the PAD locations. This could be followed by a review of the test results and an assessment of whether additional excavation is required, either in additional PADs or as a salvage program within previously tested locations. A recommendation for further excavation may be prompted in the following circumstances:

- Archaeological deposits of a rare nature and/or of high significance were encountered;
- Aboriginal burial remains were encountered;
- Archaeological or other traces were encountered with specific scientific and/or Aboriginal cultural values which warranted further salvage; and

- Excavation results provided a strong basis for the conduct of excavations within one or more untested PADs (this may result where a PAD selected for testing is found to be unrepresentative or largely destroyed).

The aims of the initial archaeological subsurface testing program across a representative sample of PADs would be to:

- Establish the nature of any Aboriginal archaeological deposits present;
- Determine the significance of any archaeological deposits found;
- Extrapolate the test results from the representative sample to the whole project area;
- Determine the extent to which archaeological deposits may pose constraints on the Upgrade proposal; and
- Draft appropriate management strategies to prevent or mitigate impact to significance values.

These aims would be achieved according to, and within the limitations of the excavation methodology. A copy of a proposed test excavation methodology is provided in Appendix 2. This methodology was presented to and approved by an Aboriginal Focus Group held on the 11 December 2007. The RTA have determined that the timing requirements for the conduct of such a program of test excavation (ie prior to any Ministerial decision regarding approval of the upgrade under Part 3A of the *Environmental Planning and Assessment Act 1979*), would necessitate the receipt of a Heritage Impact Permit from the DECC under section 87 of the *National Parks and Wildlife Act 1974*.

Table 5.2 presents a list of 13 PADs which have been identified as representative of the variation presented by the total 36 recordings. These recordings have been selected based on the following priorities:

- Achieving a spread of PADs across as much of the length of the upgrade as possible;
- Including at least one PAD from each drainage catchment including PADs;
- Including at least one example of each broad and/or fine-scale topographic form represented;
- Including outstanding or highly representative PADs; and
- Excluding any PADs where property access is unavailable.

Table 5.2 A selection of PADs and their traits, considered to form a representative subset of the total PAD recordings, and which could form a representative sample for the conduct of a subsurface testing program.

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	Representative traits
6	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	valley floor flats and basal slopes	1 of 2 selected from 7 PADs in this catchment, representative of upper catchment valley floor context
7	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spurline crest	1 of 2 selected from 7 PADs in this catchment, representative of upper catchment spurline context
10	Between Knockrow and	upper valley slopes in upper portion of Emigrant Creek	elevated spurline crest adjoining main watershed	1 of 2 PADs on this spurline and the only PAD selected in proximity to the Main Coast Range

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	Representative traits
	Newrybar	catchment,	range	
12	Newrybar	valley floor of upper portion of Emigrant Creek catchment	bank and adjacent slopes of creek	1 of 3 PADs in this catchment
15	Newrybar (Skinners Creek)	valley floor of upper portion of Skinners Creek catchment	valley floor flats and basal slopes	1 of 2 PADs in this catchment
16	Bangalow *Arundel*	main watershed ridgeline between Skinners and Byron Creek	elevated crest and upper slope of main watershed ridgeline	the only PAD in an elevated context, not in the proximity of the Main Coastal Range
20	Bangalow (tributary of Byron Creek)	eastern valley slopes of upper to middle portion of greater Byron Creek catchment	spur crest, slopes and adjacent creek flats	1 of 2 PADs in this catchment
22	Bangalow (Byron Creek)	valley floor of upper to middle portion of Byron Creek catchment	alluvial terrace	1 of 2 selected from a total of 2 PADs in this catchment, the only PAD on a major fluvial corridor terrace
23	Bangalow (Byron Creek)	western basal slopes and valley floor of upper to middle portion of Byron Creek catchment	low watershed spurline crest and upper slopes	1 of 2 selected from a total of 2 PADs in this catchment, an outstanding ridge context at the intersection of two major fluvial corridors
24	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	spur crest, adjacent slopes and flats south of, and adjacent to lower reaches of an unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, selected as alternative to PADs in Jarret property
25	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	basal slopes and flats north of, and adjacent to lower reaches of an unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, selected as alternative to PADs in Jarret property
35	Bangalow (Tinderbox Creek)	south facing mid slopes of the upper reaches of the Tinderbox Creek catchment	basal slopes and flats adjacent to unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, an upper catchment context in relative proximity to major watershed ridgeline
36	Ewingsdale	elevated major spurline crest adjacent to main coast range	low knoll on prominent ridgeline crest, at end of spurline shoulder	The only PAD on an (access) spurline leading up to the Plateau from the coastal plane

Given that the topographic contexts and conditions of all the PADs are well represented elsewhere in the adjacent lands, it is not expected that test results will encounter archaeological material which would warrant, according to rarity or representative value, *in situ* conservation of the deposits and thus changes to the design and alignment of the upgrade. This statement however must be moderated by a recognition that other values, such as those vested in Aboriginal cultural tradition, may be relevant to the tested PADs and may result in assessments of high or exceptional significance. Examples of sites which could potentially have such value are a burial ground with multiple burials, a ceremonial site, a large archaeological deposit with extensive stratigraphic complexity and integrity, or a site with major time depth (such as greater than 5000 years).

Analysis of Recovered Materials

All recovered artefactual material from the surface collections and subsurface investigations should be the subject of standard archaeological description and analysis. In the event that materials suitable for the conduct of age determinations are encountered then an adequate level of funding should be made available to conduct such tests, in consultation with local Aboriginal community stakeholders. Examples of datable materials include *in situ* carbon, shell, and bone for radiocarbon dating, and various sediment types suitable for thermoluminescence (TL) or optical spectrum luminosity (OSL) analysis.

Continued Aboriginal Participation

Representatives of the registered Aboriginal community stakeholders should be involved in the discussion of the results and direction of the archaeological subsurface testing program, and have an integral role in determining the significance of any finds and drafting appropriate management strategies.

An appropriate means for realising this participation would be through the continued use of an Aboriginal focus group.. An Aboriginal focus group, consisting of invited representatives of Aboriginal community groups and stakeholders, should be regularly convened and its members involved and informed regarding the management of Aboriginal cultural heritage

Representatives of registered Aboriginal stakeholders should be offered the oppoprtunity to apply to participate in Aboriginal cultural heritage fieldwork. The scope and role of this participation is to be consistent with current RTA policy.

Management of Recovered Materials

Following the completion of archaeological analysis, all recovered artefactual material (except materials required for age determinations) shall be returned to the local Aboriginal community, to be managed according to community and legislative requirements. It should be noted that the DECC remains the statutory authority with regard to the management of salvaged Aboriginal objects. Initial discussions with Aboriginal community members suggest that the re-positioning of artefacts (which may include their burial), in locations close to their original find locations is a favoured option. This would occur following the completion of any construction works which may continue to pose a risk of disturbance. Consistent with this position, protocols for the discovery of previously unrecorded Aboriginal objects have been drafted inclusive of a repositioning methodology. The management of recovered artefactual material would be subject to change by the Aboriginal focus group.

Salvaged artefactual material which is not transported for archaeological analysis, or which is returned after analysis, may need to be placed in a temporary storage facility pending discussions with the RTA, Aboriginal stakeholders and the DECC regarding the permanent management of the material. Such a facility should be secure (such as a lockable steel cabinet) and could be situated in on-site construction or administrative offices.

In the event that artefactual material is repositioned, the location of each repositioning must be notified in writing to the DECC (via the completion of a DECC site card), as soon as practicable pursuant to section 91 of the *National Parks and Wildlife Act* 1974. If Aboriginal stakeholders decide that some or all of the artefactual material should be stored or managed as an accessible collection,

then this strategy is dependent upon the application for and receipt of a Care Agreement for Aboriginal Objects from the DECC.

In the event that a consensus management strategy for salvaged Aboriginal objects cannot be determined by Aboriginal stakeholders, then the RTA or its representative should request in writing that the DECC identify a suitable storage location or reburial area.

Protocols During Construction

Protocols which specify the required actions in the event of the discovery of previously unrecorded Aboriginal objects (including human remains) should be established and followed for the period of construction works. Draft protocols to this effect have been drafted and are included in Appendices 2 and 3 of this report.

Cultural Values

The Aboriginal cultural values expressed by stakeholders regarding the proposed upgrade are in the form of generalised statements and relate to broad landscapes, issues and concepts. An appropriate way of recognising these values, and of addressing potential impacts would be the establishment of nomenclature and the use of public signage within the upgrade easement which promotes local Aboriginal language names and presents Aboriginal interpretations and stories about the landscape and its Aboriginal occupation.

Aboriginal landscape values may also be recognised and accommodated through landscape design, treatments and rehabilitation across the upgrade easement. To this end, consultation with the Aboriginal Focus Group during the drafting of landscape treatments would be beneficial.

Concerns raised by one stakeholder group regarding the loss of cultural landscape values due to the removal Aboriginal artefacts, can be addressed by the re-positioning of salvaged artefacts. This could be done following the completion of construction and in locations near to their original find-locations. This is one of several options which can be reviewed by the local Aboriginal community (such as via the Aboriginal Focus Group), when addressing the issue of curation of salvaged artefacts.

5.2.2 Non-Aboriginal Heritage

Appropriate levels of management of the European heritage items within the proposed upgrade easement can be drafted with reference to:

- the level and type of assessed significance;
- the degree of impact; and
- the scope for avoiding or minimising impact.

Two sites of moderate significance within a local context will be subject to direct impact. These are H13 the *Arundel* farm complex, and H23 a weatherboard cottage. The moderate-local assessment of these sites does not exclude a record and demolish management option (unlike a high-local assessment), and the degree of structural modification, renovation, and recent additions to these structures makes their conservation, through disassembly and reconstruction in a new location, difficult to justify. In both cases an archival recording consistent with the standards and guidelines published by the NSW Heritage Office should be completed prior to the commencement of any demolition and construction works.

Provision should be made for the potential salvage of timbers and other architectural elements for adaptive reuse. This could be done as a commercial exercise and preference should be given to the reuse of materials within the local region. This provision would be subject to health and safety standards and legal liability considerations.

The remaining European heritage sites subject to whole or partial direct impact are all assessed as falling below the NSW Heritage Office criteria for local or State listing (H9, 21, 28, 31, 33, 34, 35, 36, 37 and 40). As such, the conservation management of these items is not warranted. However in some cases the conduct of an archival record of limited scope would be beneficial in providing an end-record for future historical and research reference purposes. Such a record may consist of annotated photographs and descriptive notes where necessary. Sites where this is a recommended strategy are H9, 21, 31, 33 & 40.

No further action is required at sites H34 and H37.

Two heritage sites are situated in close proximity to proposed construction works and it may be necessary to remove or destroy them in order to facilitate construction or to comply with occupational health and safety or highway operational standards. These sites are H29 a forestry stump which now supports a living tree, and H39 a scatter of glass and ceramic fragments. Both fall below the significance threshold. No further action is required for site H39. In the case of the H29 tree, and a large fig tree present at site H28, there may be enough distance between the tree and proposed carriageway to enable *in situ* conservation of the live tree within the highway easement. Where feasible, consideration should be given to retaining these trees with the objective of preventing unnecessary impact to heritage items and their associated aesthetic values.

Four sites subject to direct impact and rated below the significance threshold contain elements or movable items which could be recovered, moved and re-positioned, and some returned to the current or new owners of the adjoining properties. The concrete grass roller at the former Newrybar cricket ground (H9) should be recovered and placed with an appropriate local institution, historical society, or in an appropriate local public space. Remnants of old agricultural machinery occur around the western *Corn Brae* cottage (H21) and should be recovered and re-positioned nearby, outside of the construction zone, and (where consented to by the owner) within the remaining private holding of the *Corn Brae* property. The private family memorial (H35) and iron fencing within the property entrance at H36 are of direct significance to the family of the current property owners. If still present at the time of acquisition, these features should be carefully recovered and returned to the current owners.

A derelict dairy, site H30 is located outside of the zone of direct construction impact but within the area affected by property acquisition and required as highway easement. This site is of moderate significance within a local context. The potential management options for this site range from *in situ* conservation management, to the conduct of an archival recording prior to demolition. A decision regarding the most appropriate strategy is dependent on:

- the assessed condition and stability of the structure;
- the acceptability or otherwise of retaining and maintaining such a structure within the highway easement; and
- developing a viable adaptive reuse for the structure

An assessment of the above three issues with reference to site H30 should be conducted in consultation with the RTA, and a decision made and followed regarding an appropriate management strategy for this site. In the event that the structure is found to be in a poor or unstable condition, its retention incompatible with the operation of the surrounding area as highway easement, or a viable adaptive reuse cannot be proposed, then an archival record of the structure consistent with the standards and guidelines of the NSW Heritage Office should be completed prior to its demolition.

Provision should be made for the potential salvage of timbers and other architectural elements for adaptive reuse. This could be done as a commercial exercise and preference should be given to the reuse of materials within the local region.

If the conservation management of H30 is found to be a viable option, then an archival recording should similarly be conducted prior to the conduct of any renovation or conservation works. A temporary fence should be erected around the structure for the course of construction works in order to define a no-go area for heavy machinery and materials storage.

Three sites occur outside of the zone of construction impact and also outside of the property acquisition boundary. Two of these sites are of moderate significance within a local context (H18 and 32) and one falls below the significance thresholds (H38). In the event that there is an assessed risk of accidental damage from construction works occurring in relative proximity to these locations, then a temporary fence should be erected between the area of construction and the site, for the course of the construction period, with the aim of defining a no-go area for heavy machinery and materials storage.

Protocols which specify the required actions in the event of the discovery of previously unrecorded non-Aboriginal relics should be established and followed for the period of construction works. Draft protocols to this effect have been drafted and are included in Appendices 2 and 4 of this report.

5.2.3 General Requirements

Comprehensive archaeological survey should be conducted, when access is available and where considered appropriate, on those properties which were excluded from or unavailable for field survey during the time of the present investigation. The identification of PADs has already been conducted across these areas based on the available mapping. Where necessary, appropriate management strategies should be formulated with regard to any additional heritage items detected during the additional survey.

The locations of all heritage items and their associated management strategies and constraints should be included in the Construction Environmental Management Plan (CEMP), and appropriate reference to the presence of heritage items, their cultural value, and related management strategies to be included within construction site induction courses..

During the public display of this document, the relevant sections on Aboriginal cultural heritage should be provided to Aboriginal stakeholders for their information and with an invitation to comment within the prescribed period.

5.2.4 Summary of Management Strategies

Aboriginal Heritage

1. Conduct a salvage collection of surface artefacts at sites A9 & 10.

2. Conduct a limited program of subsurface archaeological salvage at sites A9 & 10.

3. The location of site A8, and a requirement not to disturb the area, should be identified on mapping and environmental management plans relevant to any construction activities conducted within adjacent areas. If, due to unforeseen circumstances, there is an assessed risk of disturbance to site A8, then the site should be temporarily fenced and/or the surface artefacts temporarily collected and subsequently re-positioned after the completion of works.

4. Conduct an initial program of archaeological subsurface testing across a representative sample of the 36 PAD locations (PAD1-36), and following a review of the test results, conduct an assessment of whether additional excavation is required, either in additional PADs or as a salvage program within previously tested locations. Table 5.2 presents a list of 13 PADs which are considered to be representative of the variation present across the 36 recordings. The RTA have determined that the conduct of this testing program will require the application for and receipt of a Heritage Impact Permit from the DECC under section 87 of the *National Parks and Wildlife Act 1974.*

5. Conduct further PAD investigations if and as considered necessary according to a review of the initial testing program.

6. All recovered artefactual material from the surface collections and subsurface investigations should be the subject of standard archaeological description and analysis.

7. In the event that suitable archaeological materials are recovered, an adequate level of funding should be made available to conduct age determinations in consultation with local Aboriginal community stakeholders.

8. The Aboriginal focus group convened for the upgrade should continue to be consulted regarding the ongoing management of Aboriginal cultural heritage.

9. Representatives of registered Aboriginal stakeholders should be offered the oppoprtunity to apply to participate in Aboriginal cultural heritage fieldwork. The scope and role of this participation is to be consistent with current RTA policy.

10. Following the completion of archaeological analysis, all recovered artefactual material (except materials required for age determinations) shall be returned to the local Aboriginal community, to be managed according to community and legislative requirements. A secure and local temporary storage location may be required prior to conducting a permanent management strategy. All locations in which salvaged Aboriginal objects are repositioned must be recorded on DECC site cards and provided to the DECC as soon as practicable. Any proposal to permanently retain Aboriginal objects is subject to the application and approval by the DECC of a Care Agreement for Aboriginal Objects.

11. In order to address Aboriginal cultural values which may be impacted by the upgrade, the RTA should, where feasible, and in consultation with the local Aboriginal community, establish nomenclature and the use of public signage within the upgrade easement which promotes local Aboriginal language names and presents Aboriginal interpretations and stories about the landscape and its Aboriginal occupation. In addition, the development of landscape treatments and land rehabilitation within the upgrade easement should, where feasible, incorporate components which address Aboriginal cultural landscape values. The Aboriginal Focus Group should be consulted during the development of landscape design and treatments.

12. Protocols which specify the required actions in the event of the discovery of previously unrecorded Aboriginal objects (including human remains) should be established and followed for the period of construction works (refer Appendices 2 and 3 of this report).

European Heritage

13. Conduct an archival recording of sites H13, 23 and 30 consistent with the standards and guidelines published by the NSW Heritage Office prior to the commencement of any demolition and construction works.

14. An assessment of the viability of a conservation management strategy for site H30 to be conducted in consultation with the RTA, and a decision made and followed regarding an appropriate management strategy.

15. Provision to be made for the potential salvage of timbers and other architectural elements for adaptive reuse, during and following the demolition of sites H13 & 23, (and from H30 in the event that conservation is considered to be unviable). This provision would be subject to health and safety standards and legal liability considerations.

16. Conduct an archival record of limited scope at sites H9, 21, 31, 33 & 40 prior to the commencement of any demolition and construction works. (Such a record may consist of annotated photographs and descriptive notes where necessary).

17. No further action is required at sites H34, 37 and 39.

18. Where feasible, and consistent with OH&S, construction and operational requirements, consideration be given to retaining the trees alive and *in situ* at sites H28 and 29.

19. If feasible, recover the concrete grass roller at the former Newrybar cricket ground (H9) and, in consultation with the local Council and historical society, place with an appropriate local institution, historical society, or reposition in an appropriate local public space.

20. If feasible recover and reposition remnants of old agricultural machinery from around the western *Corn Brae* cottage (H21), in consultation with the owner of the remaining Corn Brae property.

21. If still present at the time of acquisition, the private family memorial (H35) and iron fencing within the property entrance at H36 to be carefully recovered and returned to the current property owners.

22. In the event that there is an assessed risk of accidental damage from construction works to sites H18 and 32, then a temporary fence to be erected between the site and area of construction for the course of the construction period.

23. Protocols which specify the required actions in the event of the discovery of previously unrecorded non-Aboriginal relics (including human remains) should be established and followed for the period of construction works (refer to Appendices 2 and 4 of this report).

General

24. Comprehensive archaeological survey to be conducted, when access is available and where considered appropriate, on those properties which were excluded from or unavailable for field survey during the time of the environmental assessment.

25. The location of all heritage items and their associated constraints and management strategies to be included in the Construction Environmental Management Plan (CEMP), and appropriate reference to the presence of heritage items, their cultural value, and related management strategies to be included within construction site induction courses.

26. During the public display of this document, the relevant sections pertaining to Aboriginal cultural heritage should be provided to Aboriginal stakeholders for their information and with an invitation to comment within the prescribed period.

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APPENDIX 1

RECORD OF ABORIGINAL FIELD PARTICIPATION

Record of Aboriginal Representative Participation*

Name(s) of Aboriginal Representative(s): Marcus Ferguson

Name of Aboriginal Organisation: **Jali Local Aboriginal Land Council**

Archaeologist(s): name & address: Kelvin Officer
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street, Kingston, ACT 2604

phone: (02) 62829415

Project Name: **Tintenbar to Ewingsdale Pacific Highway Upgrade**

Client: name & address: **Arup**
(please send your **c/o Mr Tim Ward**
invoice *to this address)* **PO Box 76**
MILLERS POINT NSW 2000

phone: **9320 9320** **fax: 9320 9321**

Type of participation:
- ☐ Guided inspection of study area and sites
- ☑ Accompanied/participated in archaeological survey/salvage
- ☐ Accompanied/participated in excavation program
- ☐ Other (please specify)

Period of participation:

Participant	Date(s)	Start	Lunch	Finish
Marcus Ferguson	10/4/07	8.00	0.20	17.30
"	11/4/07	8.00	0.20	17.30
"	12/4/07	8.00	0.20	17.30
"	17/4/07	8.00	0.20	17.30

Comments:

Signed *(archaeologist)*:

Signed *(Aboriginal representative(s))*: M Ferguson

* *Please note, this form is a record of participation only and not intended to be a formal report on Aboriginal views. It is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

APPENDIX 2

METHODOLOGY FOR ARCHAEOLOGICAL TEST PROGRAM OF ABORIGINAL POTENTIAL ARCHAEOLOGICAL DEPOSITS

Proposed Methodology

Archaeological Subsurface Testing of Aboriginal Potential Archaeological Deposits

Tintenbar to Ewingsdale Pacific Highway Upgrade

Navin Officer Heritage Consultants *December 2007*

The Purpose of this Document

The purpose of this document is to inform client, government and indigenous stakeholders about the proposed methodologies for conducting an archaeological test pitting program within potential archaeological deposits recorded along the preferred route alignment for the Tintenbar to Ewingsdale Pacific Highway upgrade.

Indigenous stakeholders are invited to read the methodology and then provide comments and suggestions back to the RTA. All comments will be considered when drafting a final version of the methodology.

More information about sites and PADs in the study area can be gained by accessing the November 2007 Cultural Heritage Assessment report for the Tintenbar to Ewingsdale Pacific Highway Upgrade. A plain English summary of this report is also available and was circulated to invited attendees of an Aboriginal Focus Group held at Ballina on 11th December 2007. This report provides background information regarding the project and the recordings which will be further investigated.

Background

Thirty six Aboriginal potential archaeological deposits (PADs) have been identified along the proposed Tintenbar to Ewingsdale (T2E) Pacific Highway Upgrade.

The identification of the PADs was based on predictive modelling and the limited results from previous archaeological work. The nature and distribution of subsurface archaeological deposits across the Alstonville Plateau has not yet been established. It is theorised that the former presence of dense rainforest, the 'Big Scrub' across the plateau may have acted against the formation of large and dense sites, and limited the spatial distribution of sites to spurlines and other access corridors.

It is proposed to conduct a program of archaeological test pitting within a representative sample of the 36 PADs. The test results from this sample will then be applied to the remaining PADs and where necessary, elsewhere across the upgrade.

Statutory Requirements

The archaeological investigation of these PADs will require a heritage impact permit under section 87 of the National Parks and Wildlife Act 1974.

The Proposal

It is proposed to conduct a limited program of archaeological subsurface testing within thirteen selected PADs. The aims of the program are to:

- Establish the nature of any Aboriginal archaeological deposits present;
- Determine the significance of any archaeological deposits found;
- Extrapolate the test results from the representative sample to the whole project area;

- Determine the extent to which archaeological deposits may pose constraints on the Upgrade proposal; and
- Draft appropriate management strategies to prevent or mitigate impact to significance values.

These aims will be achieved according to, and within the limitations imposed by the methodology. (This means that the ability to find artefacts and describe the nature of the deposit is limited by the number, size and arrangement of the test pits conducted).

Stakeholder Participation in Fieldwork

According to the policies and requirements of the RTA, a number of representatives from selected registered stakeholder organisations will be invited to participate in the fieldwork described in this methodology. This work will be funded by the RTA. The stakeholders to be represented and the number of field representatives is a matter to be determined by the RTA in consultation with the Aboriginal Focus Group.

Methodology

PADs to be Tested

In order to select a representative sample of the 36 PADs for test pitting, the landscape characteristics and relative location of each PAD was reviewed. PADs were then selected if they were a good or unique example of a landform type or context, or contributed to an even spread of test locations across the length of the upgrade. This resulted in a preliminary selection of fourteen PADs. Access to four of these (PAD8, 26, 29 & 33), is currently unavailable, so a further three (PADs 24, 25 & 35) where substituted. The resulting selection of 13 PADs are listed in Table 1 and depicted in Figures 1-3).

Table 1 Table of Potential Archaeological Deposits (PADs) selected for test pitting.

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	Notes on reasons for selection
6	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	valley floor flats and basal slopes	1 of 2 selected from 7 PADs in this catchment, representative of upper catchment valley floor context
7	Knockrow	upper reaches of unnamed tributary to Emigrant Creek	spurline crest	1 of 2 selected from 7 PADs in this catchment, representative of upper catchment spurline context
10	Between Knockrow and Newrybar	upper valley slopes in upper portion of Emigrant Creek catchment,	elevated spurline crest adjoining main watershed range	1 of 2 PADs on this spurline and the only PAD selected in proximity to the Main Coast Range
12	Newrybar	valley floor of upper portion of Emigrant Creek catchment	bank and adjacent slopes of creek	1 of 3 PADs in this catchment
15	Newrybar (Skinners Creek)	valley floor of upper portion of Skinners Creek catchment	valley floor flats and basal slopes	1 of 2 PADs in this catchment
16	Bangalow *Arundel*	main watershed ridgeline between Skinners and Byron Creek	elevated crest and upper slope of main watershed ridgeline	the only PAD in an elevated context, not in the proximity of the Main Coastal Range
20	Bangalow (tributary of Byron Creek)	eastern valley slopes of upper to middle portion of greater Byron Creek	spur crest, slopes and adjacent creek flats	1 of 2 PADs in this catchment

PAD #	Locality	Large Scale Landscape Context	Small Scale Landform Context	Notes on reasons for selection
		catchment		
22	Bangalow (Byron Creek)	valley floor of upper to middle portion of Byron Creek catchment	alluvial terrace	1 of 2 selected from a total of 2 PADs in this catchment, the only PAD on a major fluvial corridor terrace
23	Bangalow (Byron Creek)	western basal slopes and valley floor of upper to middle portion of Byron Creek catchment	low watershed spurline crest and upper slopes	1 of 2 selected from a total of 2 PADs in this catchment, an outstanding ridge context at the intersection of two major fluvial corridors
24	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	spur crest, adjacent slopes and flats south of, and adjacent to lower reaches of an unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, selected as alternative to PADs in Jarret property
25	Bangalow (Tinderbox Creek)	valley floor of lower portion of Tinderbox Creek catchment	basal slopes and flats north of, and adjacent to lower reaches of an unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, selected as alternative to PADs in Jarret property
35	Bangalow (Tinderbox Creek)	south facing mid slopes of the upper reaches of the Tinderbox Creek catchment	basal slopes and flats adjacent to unnamed tributary of Tinderbox Creek	1of 3 selected from a total of 13 PADs in this catchment, an upper catchment context in relative proximity to major watershed ridgeline
36	Ewingsdale	elevated major spurline crest adjacent to main coast range	low knoll on prominent ridgeline crest, at end of spurline shoulder	The only PAD on an (access) spurline leading up to the Plateau from the coastal plane

Use of mechanical excavation

The most accurate and most comprehensive way of testing a potential archaeological deposit would be to excavate the whole deposit by hand. However, this approach would take far too long to complete, would be extremely expensive, and may in the end provide no better information than a quicker and more cost effective methodology. High accuracy and 100% coverage is not necessary to reliably test a PAD. Instead, excavation of a sample of each selected deposit from representative test locations, using fast excavation techniques with reasonable accuracy is a more practical choice. All test excavation programs must reach a 'happy medium' so that a reasonable sample of a deposit can be tested, using limited resources to satisfy the aims of the program.

The use of an auger is a compromise between the greater accuracy provided by the use of by-hand or excavator/backhoe techniques and the time required to conduct test pits and achieve adequate coverage. The use of an excavator or backhoe can provide reasonable accuracy, good profile access, depth, and large sample sizes, but is time consuming. The use of a mechanical auger combines a time-efficient method with acceptable accuracy, limited sample size, and reasonable depth capability. Given the large number of PADs involved, and the limited data supporting the predictive assessments, the use of an auger provides a balanced compromise across project aims, project resources and the scope of the investigation. Navin Officer Heritage Consultants has conducted test pitting programs using a mechanical auger methodology on a wide range of assessments including the Currarong and Conjola Sewerage Schemes, the Illawarra Waste Water Scheme, and the Coopernook to Herons Creek Pacific Highway Upgrade.

It is proposed to use a mechanical auger (mounted on a bob-cat, excavator or backhoe) to excavate test pits across each PAD using, where possible, a systematic arrangement of straight line transects.

Number and arrangement of test pits

It is proposed to spend, on average, one working day at each PAD, thus allowing for the conduct of between 5 and 12 test pits at each PAD. The actual number will vary depending on the depth required, site characteristics, and access and set-up logistics. Assuming an average of 7 test pits per PAD, the total number of test pits may be 91.

Test pit locations will be arranged across each selected PAD in such a way that small variations in landform (micro-topographic variation) will be tested together with the dominant landform. The pits will be arranged, where possible, in straight line transects, and may include intersecting transects and grid patterns. The distance between test pits will vary according to the size and characteristics of the PAD and the number of pits conducted. It is expected that most pits will be between 10 m and 50 m apart. The alignment of transects will generally be parallel to the long axis of the PAD area. In some cases the location of test pits will be varied so that an obstacle or hazard (such as a tree, rabbit warren or rock outcrop) can be avoided.

Mechanical Auger Methodology

A mechanically driven auger will be used, mounted either on a backhoe, excavator or bobcat. The anticipated diameter of the auger will be 45 cm (but this may vary according to availability). Auger holes will be dug incrementally in depth intervals (called spits) ranging between 10 cm and 50 cm, depending on sediment conditions and testing requirements. The preferred spit interval will be between 15 cm and 20 cm.

Each auger pit will normally be terminated when one or more of the following occur:

- dense clay is encountered (this is normally the case)
- the water table is encountered (further excavation would make the pit unsafe)
- the auger is prevented from further excavation by rock or some other obstacle
- further excavation in the pit would be hazardous or unsafe
- (when applicable) the maximum depth of proposed construction impact is reached
- the maximum depth of the auger is reached

Except in potentially rare cases where a spit contains fill or hazardous materials, all sediment from each spit will be collected separately and sieved. A modified tarpaulin will be used to aid in the recovery of excavated spoil. Sieving will preferably be conducted with the aid of pressurised water from a water truck. If necessary, the spoil will be sieved dry and without the aid of water. All sediment will be sieved through a 4 x 4 mm mesh sieve, and where appropriate, a larger mesh sieve above the fine mesh will also be used.

All identified or suspected archaeological material will be retained, bagged and labelled. Samples of natural and non-artefactual material may also be collected for reference purposes. Artefactual shell material will be described and if too fragmentary or poorly preserved, may be returned to the appropriate pit.

During excavation, characteristics of the soil profile will be described. pH measurements may be taken from representative pits at various locations in the profile.

All pits will be backfilled, using both the remaining excavated and sieved spoil, and where necessary with imported clean fill material.

Excavating a mechanical auger test pit

Transferring deposit from auger blade to buckets

Bucketing excavated deposit from the tarpaulin

Wet sieving excavated deposit

Environmental Safeguards

Apart from the removal of turf, and the possible removal of small shrubs, weeds and woody weeds, no other vegetation will be removed as part of the testing program.

Any vegetation proposed for removal will be checked against an inventory of any listed plant species recognised for the study area.

Sediment barriers will be set up around sieve stations with the aim of containing the spread and deposition of water-borne sediment. Sieve stations will be established in locations and managed so that surface run-off water cannot reach the open water of creeks, rivers, lakes or swamps.

A kit suitable for the containment of spillage of fuel for the water pump will be kept on site during the operations.

All pits will be backfilled prior to leaving each PAD. In the event that a pit must remain open, safety fencing will be constructed around the pit.

Analysis of Retained Material

All sieved and retained material will be transported to the Navin Officer Heritage Consultants laboratory (Canberra) for detailed examination and processing. All artefactual material will be

appropriately described and bagged. This information will be used in an analysis so that the scientific significance of the site can be assessed.

The description and analysis of stone or bone material may need to be done by specialists and material may be transported to a different location for this purpose.

Radiocarbon dating or other dating techniques, where appropriate, may be conducted on samples of charcoal or other materials retained from the excavation pits.

What happens to the artefactual material after analysis?

After the analysis of the excavation finds, all of the recovered artefactual material (except for any samples used for dating), will be managed according to the requirements of the Aboriginal stakeholders as represented by the Aboriginal Focus Group, and the requirements of the Department of Environment and Climate Change (DECC).

One or more of the following options may be considered:

- Following the completion of construction works which may pose a danger to repositioned artefacts; the artefacts may be repositioned or buried outside the construction area, but as close as possible to their original location. The new location would be recorded and the recording submitted to the DECC;

- The Local Aboriginal Land Council or another stakeholder organisation may opt to retain and store all or some of the artefacts, subject to the agreement of the DECC;

- The artefacts may be lodged with the Australian Museum, Sydney (when the Museum accepts such material again); or

- Some other option agreed to by the RTA and the Aboriginal Focus Group, and which is legally possible.

Report

The results of the investigation will be documented in a report, consistent with DECC and RTA report writing standards and guidelines. Appropriate management recommendations will be provided for any sites located.

A copy of the report will be provided to Aboriginal stakeholders with an opportunity to review and comment upon its findings.

Program Timing

The total time required for the above program, from engagement to final report is in the order of 18 to 20 weeks, excluding the time period required for processing and approval of an application to the DECC for a section 87 heritage impact permit.

Maps

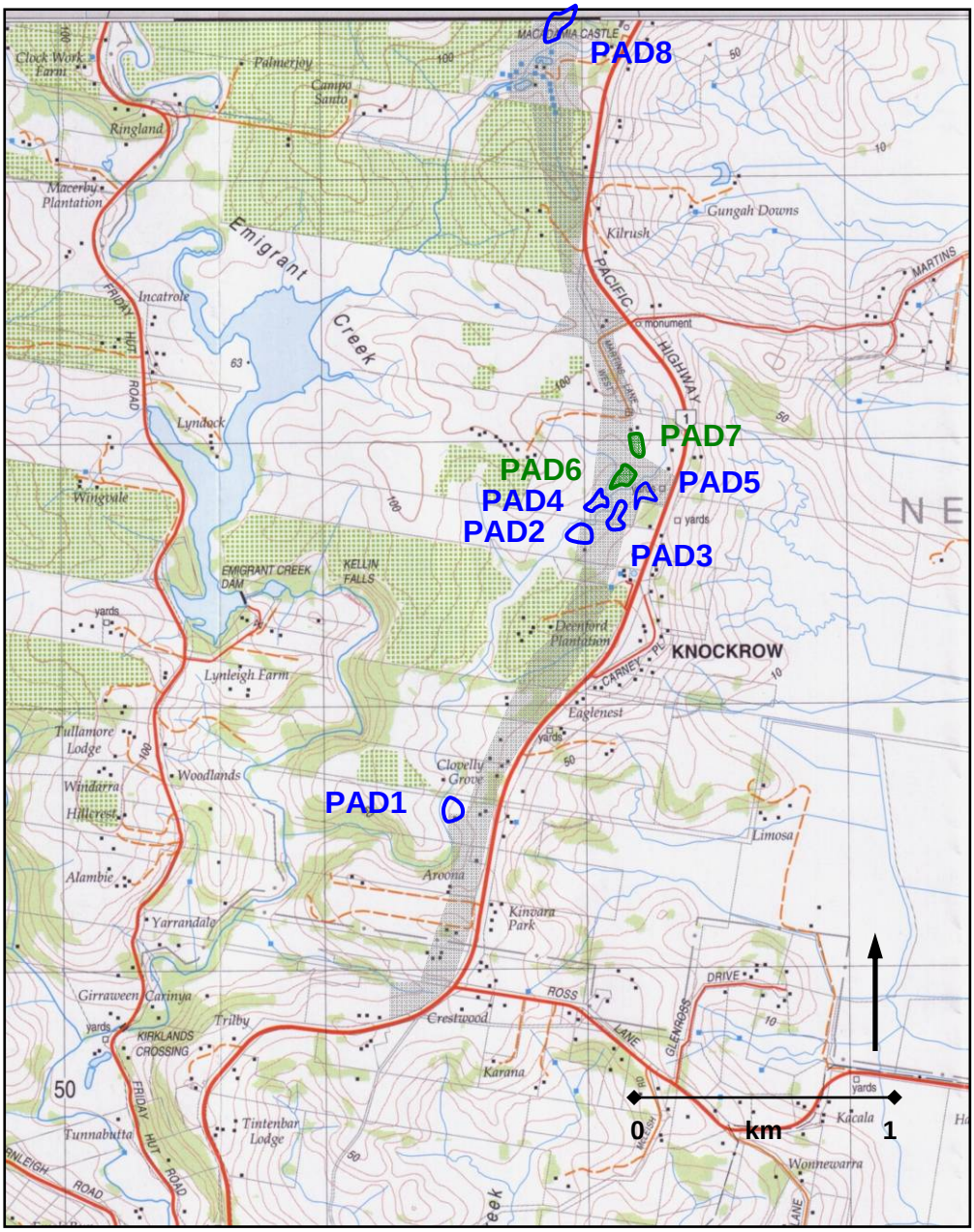


Figure 1 Aboriginal Cultural Heritage Recordings. PADs selected for test pitting are shown in dark green. (Ballina 1:25,000 topographic map, 3rd ed Dept of Lands 2002).

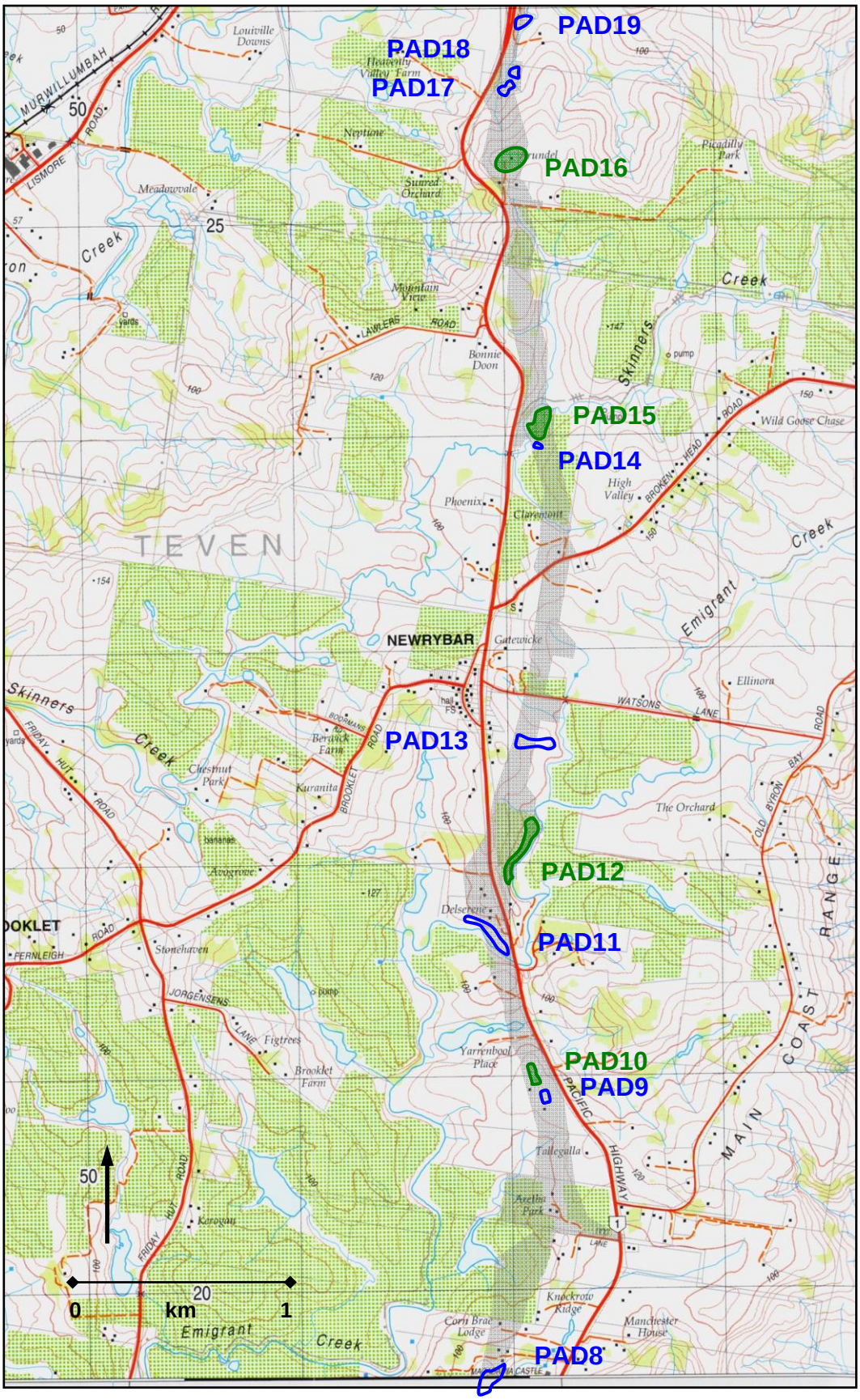


Figure 2 Aboriginal cultural heritage recordings. PADs selected for test pitting are shown in dark green. (Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002).

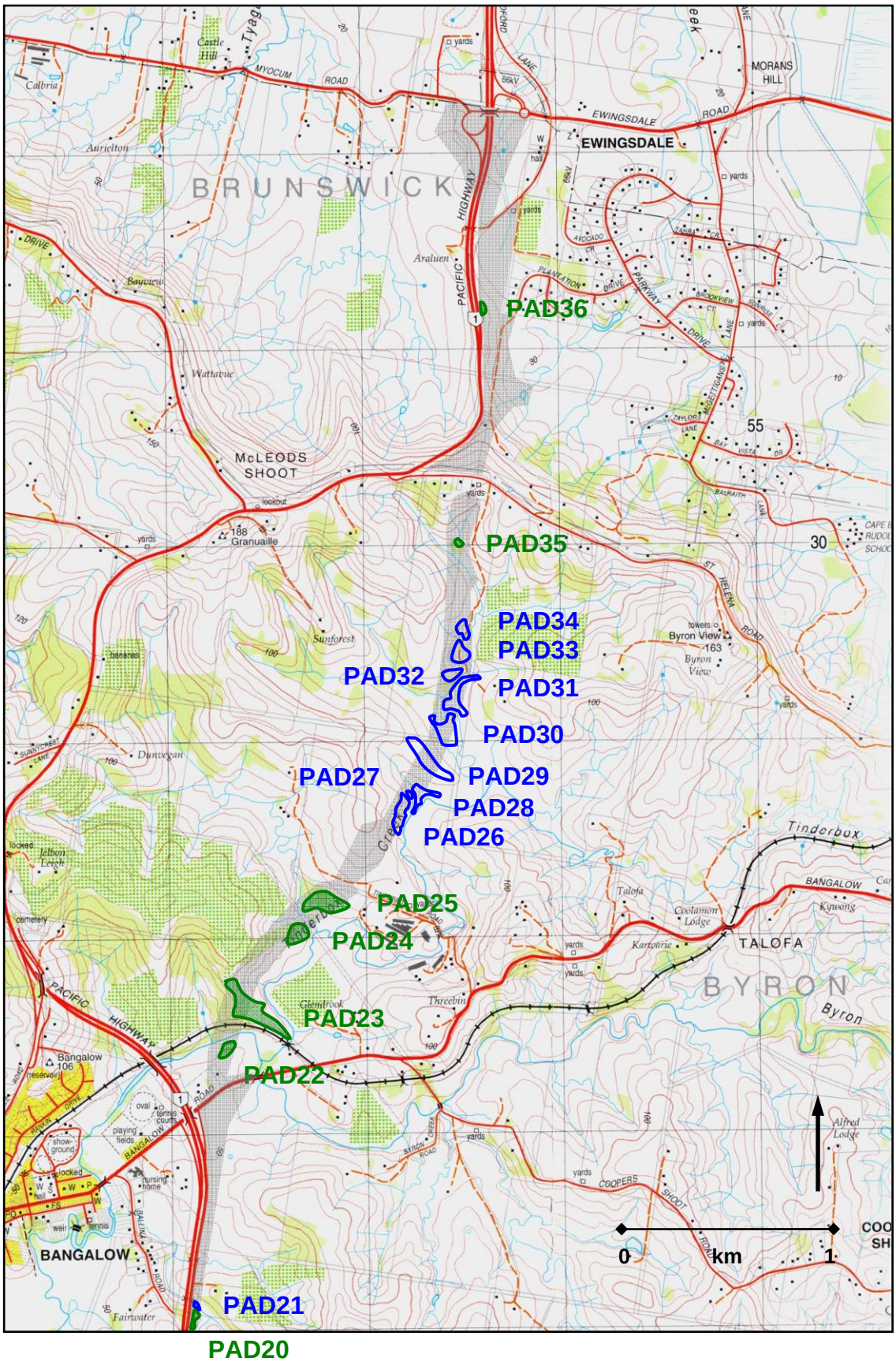


Figure 3 Aboriginal cultural heritage recordings. PADs selected for test pitting are shown in dark green. (Byron Bay 1:25,000 topographic map, 3rd ed Land and Property Information 2002).

APPENDIX 3

PROTOCOLS AND FLOWCHARTS

- Aboriginal Objects Revealed during Construction Works
- Non-Aboriginal (European) Objects Revealed during Construction Works
- Human Remains Revealed During Construction Works

Please note that all Protocols and Procedures are drafted with reference to a development which has been approved under Part 3A of the EP&A Act.

A3.1 Protocol to be followed in the event that (previously unrecorded) Aboriginal objects are revealed during construction works

In the event that one or more Aboriginal objects are revealed during construction works, the following protocol will be actioned (refer also to the flowchart):

1. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the Aboriginal object so that work can be temporarily halted, and advise the site supervisor;

2. For new finds located outside of the area or provisions specified in a development approval under Part 3A of the EP&A Act:

    a. Note that a section 87(1) or section 90 consent under the National Parks and Wildlife Act 1974 will be required in order to remove, collect or otherwise disturb the finds (Aboriginal object(s)

    b. Record the Aboriginal object(s) (without further disturbance to them) and advise the DECC and project archaeologist.

    c. Conduct an initial assessment of the nature and cultural heritage significance of the Aboriginal object(s) and determine an appropriate course of management action in consultation with a LALC representative.

    d. Apply for the necessary permits and/or consents under the National Parks and Wildlife Act 1974.

    e. Conduct appropriate management action following receipt of necessary permits /consents. Such actions will address issues relating to artefact collection, analysis, storage and curation.

    f. Recommence construction work in area of find following completion of management action and/or in accordance with permit/consent conditions.

3. For previously recorded sites and/or finds located within the area or provisions of a Part 3A development approval, continue with steps 4 through to 11.

4. The approximate extent and nature of the Aboriginal object(s) will be determined. That is:

    a. Is it an isolated find? or

    b. Is it an artefact scatter of less than 10* visible artefacts? or

    c. If it is a scatter of more than 10* artefacts, then approximately how many?; and

    d. Are there additional types of find, such as concentrations of shell, bone or charcoal?

5. Determine if the finds belong to a previously recorded site or potential archaeological deposit. If the location of the finds is consistent with a previous recording, construction work can proceed provided that mitigative actions which may or may not have been required at that site (as defined in a Construction Environmental or Cultural Heritage Management Plan (CEMP or CHMP) or other equivalent document) have been completed.

6. Where there are <u>less</u> than 10* artefacts discovered in the find area, then:

    a. The artefacts will be recorded and collected using the form shown in Appendix 4, and the DECC advised. Construction works may then recommence in that area

        – The location of the recovered artefacts will be recorded using a hand-held GPS, (if available and where necessary), or alternatively, by noting chainage intervals;

b. If an unusual artefact, such as an axe head or a grinding stone, is discovered, then the same procedure as for the discovery of more than 10* artefacts should be followed (Steps 7 and following).

c. The collected artefacts will be placed in a clear-plastic bag and placed in temporary secure storage at the site office

- Each bag should have the following information marked on it using a broad nib permanent spirit pen:
  - The site location;
  - The date (day/month/year);
  - The collector's name; and
  - Any other relevant information (such as a GPS reference or description of contents);
- Where necessary, the Principal is responsible for the temporary and secure storage of recovered Aboriginal objects prior to their repositioning away from the construction area (except where, by agreement, the Local Aboriginal Land Council has this responsibility)

d. Following the completion of construction works which may pose a danger to repositioned artefacts; the collected artefacts will be repositioned outside the construction area, but as close as possible to their original location. The new location will be recorded using the form shown in Appendix 4. (The act of repositioning artefacts may, according to negotiations with the Local Aboriginal Land Council and the DECC, require the presence of an archaeologist and/or Local Aboriginal Land Council representative). A new DECC site card must be completed for each repositioned artefact location and provided to the DECC as soon as practicable.

- As an alternative to repositioning, the Local Aboriginal Land Council may opt to retain and store all or some of the collected or salvaged material, subject to the agreement of the DECC. A Care Agreement for Aboriginal Objects is required from the DECC to retain and store salvaged material.

7. If the find is a new site and there are more than 10* artefacts discovered in the find area, or there are concentrations of shell, bone or charcoal, or unusual artefacts types present, then the project archaeologist, accompanied by a representative(s) of the LALC will record the finds and assess the value of the deposit and advise the DECC.

8. If the archaeologist considers the deposit to be of high archaeological value, then the Principal's Authorised Person will be informed of the assessment and the requirement to conduct a salvage archaeological excavation prior to the recommencement of construction work in the area.

   a. The project archaeologist, assisted by a representative(s) of the LALC will conduct an archaeological salvage excavation with the aim of recovering a sufficient sample of the deposit to allow an analysis which is commensurate with the assessed potential of the deposit.

   b. The recovered Aboriginal objects will be temporarily stored by the project archaeologist pending the completion of analysis.

9. If the archaeologist considers the deposit not to be of high archaeological value, then the artefacts (Aboriginal objects) will be collected, and any required samples taken, prior to construction works then recommencing in the area of the find(s).

   a. Artefacts will be temporarily stored as for Step 6c

10. Following the completion of those construction works in which Aboriginal objects may potentially be revealed, the project archaeologist will analyse the data from collected artefacts, together with any data and finds from salvage excavations, (conduct any radiocarbon dating determinations, where appropriate) and prepare a report as per standard DECC reporting guidelines.

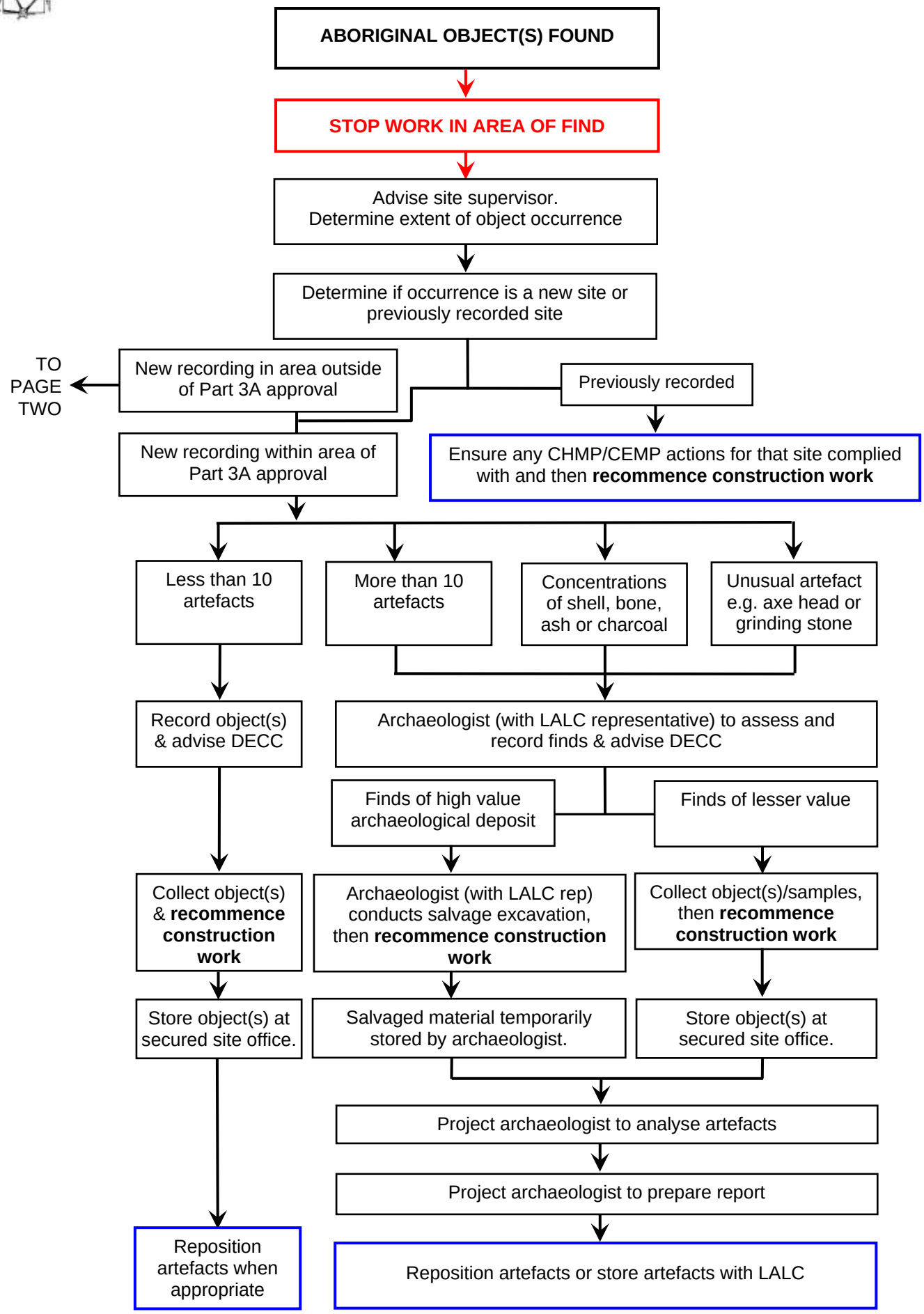
11. Following the completion of construction works which may pose a danger to repositioned artefacts; the collected and salvaged Aboriginal objects (artefacts) will be repositioned outside the construction area, but as close as possible to their original location. The new location will be recorded using the form shown in Appendix 4. (The act of repositioning artefacts may, according to negotiations with the Local Aboriginal Land Council and the DECC, require the presence of an archaeologist and/or Local Aboriginal Land Council representative). A new DECC site card must be completed for each repositioned artefact location and provided to the DECC as soon as practicable.

   – As an alternative to repositioning, the Local Aboriginal Land Council may opt to retain and store all or some of the collected or salvaged material, subject to the agreement of the DECC. A Care Agreement for Aboriginal Objects is required from the DECC to retain and store salvaged material.

* IMPORTANT NOTE

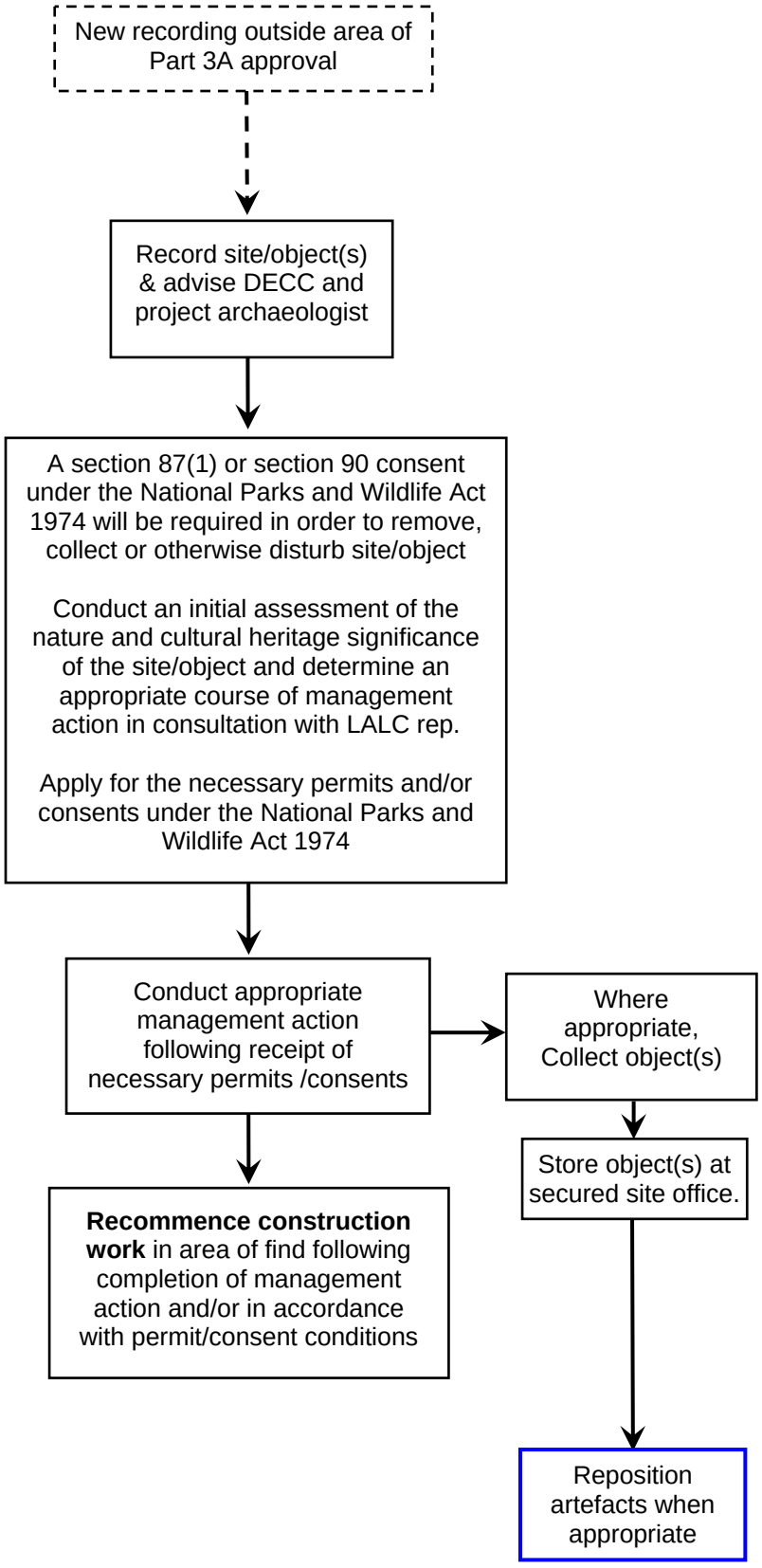
The threshold of 10 artefacts applied in this protocol is subject to amendment according to the results of any archaeological test excavation program, and associated Aboriginal community consultation. For example, based on the alternative scenarios of low or high numbers of subsurface artefacts being detected within potential archaeological deposits (PADs), this threshold may be correspondingly lowered or raised.

Flowchart – Protocol for Discovery of Aboriginal Objects During Construction Works (p1 of 2)



Flowchart – Protocol for Discovery of Aboriginal Objects During Construction Works (p2 of 2)

FROM PAGE 1



A3.2 Protocol to be followed in the event that previously unrecorded non-Aboriginal objects are revealed during construction works

In the event that one or more Non-Aboriginal objects are revealed during construction works, the following protocol will be actioned (refer also to the flowchart):

1. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the non-Aboriginal object so that work can be temporarily halted, and advise the site supervisor;

2. The approximate extent and nature of the non-Aboriginal object(s) will be determined.

3. Determine if the finds belong to a previously recorded site. If the location of the finds is consistent with a previous recording, construction work can proceed provided that mitigative actions which may or may not have been required at that site (as defined in a CHMP or CEMP) have been completed.

4. If the find is a new site:

    a. For finds located outside of the area or provisions of a Part 3A development approval under the EP&A Act, the relic provisions of the Heritage Act 1977 may apply. Advise the NSW Heritage Office, and seek and follow advice as to whether an excavation permit is required, or if intended actions conform to a section 57 exemption, or a section 139 exception applies. Removal and/or collection of the find cannot occur until any statutory requirements are satisfied.

    b. For finds located within the area and provisions of a Part 3A approval, continue with steps 5 through to 7.

5. The site and artefact(s) will be recorded and, if practicable, the artefacts will be collected using the form shown in Appendix 5, and the NSW Heritage Office advised. Construction works may then recommence in that area

    – The location of the site and any recovered artefacts will be recorded using a hand-held GPS, (if available and where necessary), or alternatively, by noting chainage intervals;

6. Any collected artefacts will be placed in a clear-plastic bag and placed in temporary secure storage at the site office

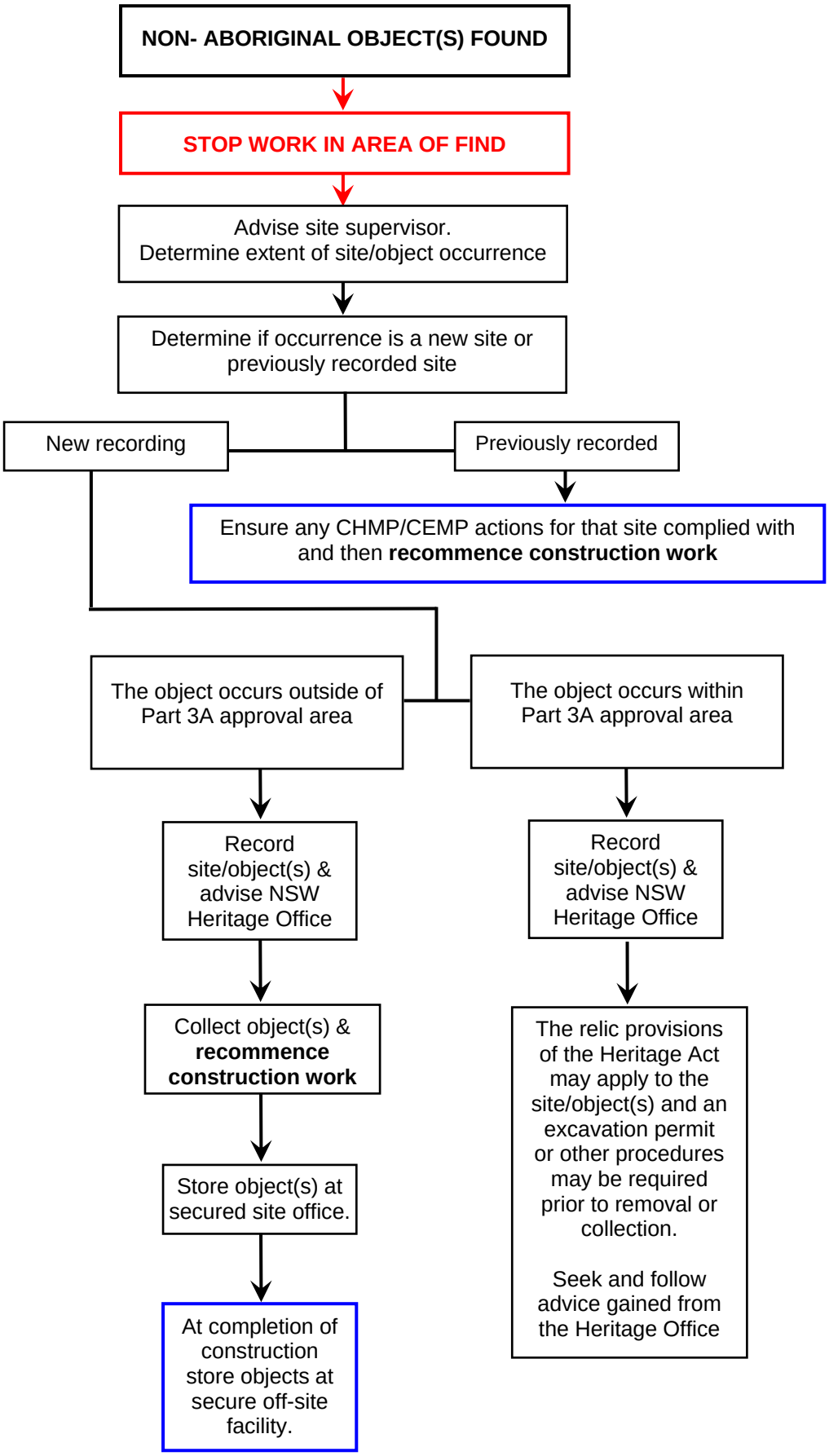
    – Each bag should have the following information marked on it using a broad nib permanent spirit pen:

        - The site location;
        - The date (day/month/year);
        - The collector's name; and
        - Any other relevant information (such as a GPS reference or description of contents);

    – Where necessary, the Principal is responsible for the temporary and secure storage of recovered objects prior to their final relocation to a secure storage facility away from the construction area.

7. Following the completion of those construction works, the project archaeologist will analyse the data from collected artefacts, together with any data from the recorded sites and prepare a report as per standard NSW Heritage Office reporting guidelines.

Flowchart – Protocol for Discovery of Non-Aboriginal Objects



A3.3 Protocol to be followed in the event that human remains are revealed within the development area

The potential for human skeletal remains to be uncovered when excavating in alluvial deposits or locally elevated sand bodies cannot be discounted.

The following protocol will be actioned if suspected human skeletal material is revealed during development activities (refer also to the flowchart):

1. If the remains are detected within or during an archaeological excavation, then no further excavation that involves the removal of *in situ* bones is to occur until the following are completed:

    a. The find is reported to the local Police;

    b. Local Aboriginal community and DECC representatives have been contacted;

    c. It is reliably determined that the remains are of an Aboriginal person who died more than 100 years ago;

    d. The remains are not consistent with the triggers specified in Step 5a; and

    e. Consensus is reached regarding the continuation of the excavation.

    If there is doubt that the remains are of an Aboriginal person who died more than 100 years ago, or if the remains are consistent with any of the triggers listed in Step 5a, then proceed with Step 5.

2. If the remains are detected within the context of development or construction-related activities, then all ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. The RTA and/ or its representative Environmental Manager on site is to be immediately notified to allow assessment and management.

    c. The RTA and/ or its representative Environmental Manager on site to notify Environmental Representative, and the General Manager, Pacific Highway (RTA).

3. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context as possible (Be aware that the site may be considered a crime scene containing forensic evidence if the remains are found to be human and not of an Aboriginal person who died more than 100 years ago. If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

4. Immediately notify the following people of the discovery:

    a. The local Police (this is required by law);

    b. A DECC archaeologist or Aboriginal Heritage Officer from the North East Branch EPRD, Coffs Harbour (02 6659 8288), or contact the DECC's Environment Line (131555);

    c. The NSW Heritage Office (02 9873 8500) where and if there is a possibility that the remains are of a non-Aboriginal person;

    d. A representative from the relevant local Aboriginal Land Council(s); and

e. The project archaeologist (if not already present).

5. Facilitate, in co-operation with the appropriate authorities and Aboriginal representatives, the definitive identification of the skeletal material by a qualified person (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

   a. If the remains are consistent with one or more of the following triggers, then a specialist in the identification of Aboriginal skeletal remains must be consulted to determine if the remains are of an Aboriginal person who died more than 100 years ago:

      i. The skeletal remains are those of a child;

      ii. Signs of recent disturbance or excavation at the burial site are found;

      iii. No cultural evidence of Aboriginal burial is evident;

      iv. Evidence of possibly fatal trauma such as a spear or bullet hole or fractures skull is noted;

      v. All of the hand, and foot bones as well as teeth (excluding Aboriginal tooth evulsion) have been removed or are absent;

      vi. If the skull is visible but does not appear to have clear Aboriginal characteristics;

      vii. If the skeleton is headless or the skull is present but smashed.

      A list of specialists is available in the DECC Aboriginal Skeleton Remains Manual (Donlan et al. 2002).

   b. If the remains are identified as human, but not of an Aboriginal person who died more than 100 years ago, then further decisions and responsibilities regarding the remains rest with the NSW Police and Coroner.

      i. If the remains are more than 50 years old, then the NSW Heritage Office should be advised of this determination and an assessment may be required to determine if the remains have cultural heritage significance.

      ii. If the remains occur outside of the area or provisions of a Part 3A development approval, then the relic provisions of the NSW Heritage Act are likely to apply. In this event, seek advice as to whether an excavation permit is required, or if intended actions conform to a section 57 exemption, or a section 139 exception applies.

      iii. Removal and/or collection of the find cannot occur until any statutory requirements are satisfied.

6. If the skeletal remains are reliably identified as that of an Aboriginal person who died more than 100 years ago, (and this identification has been made by a specialist where the remains are consistent with one or more of the triggers listed in step 5a), then:

   a. Ascertain the requirements of the local Aboriginal organisations, the DEC, and the project archaeologist.

   b. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      i. Avoiding further disturbance to the find and conserving the burial *in situ*, (this option may require relocating the development and this may not be possible in some contexts);

      ii. Conducting (or continuing) archaeological salvage of the finds;

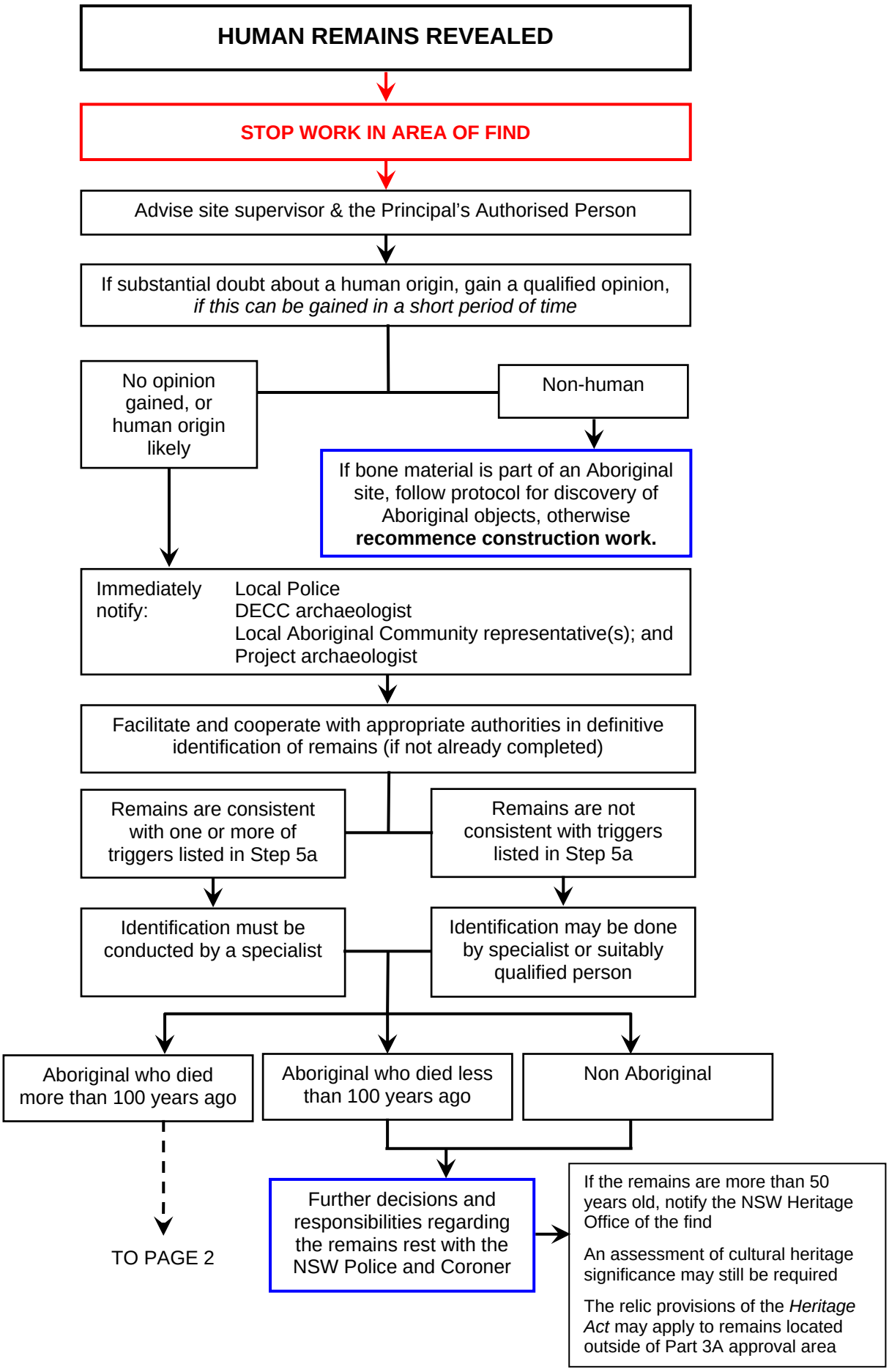
iii. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

iv. Recovering samples for dating and other analyses; and/or

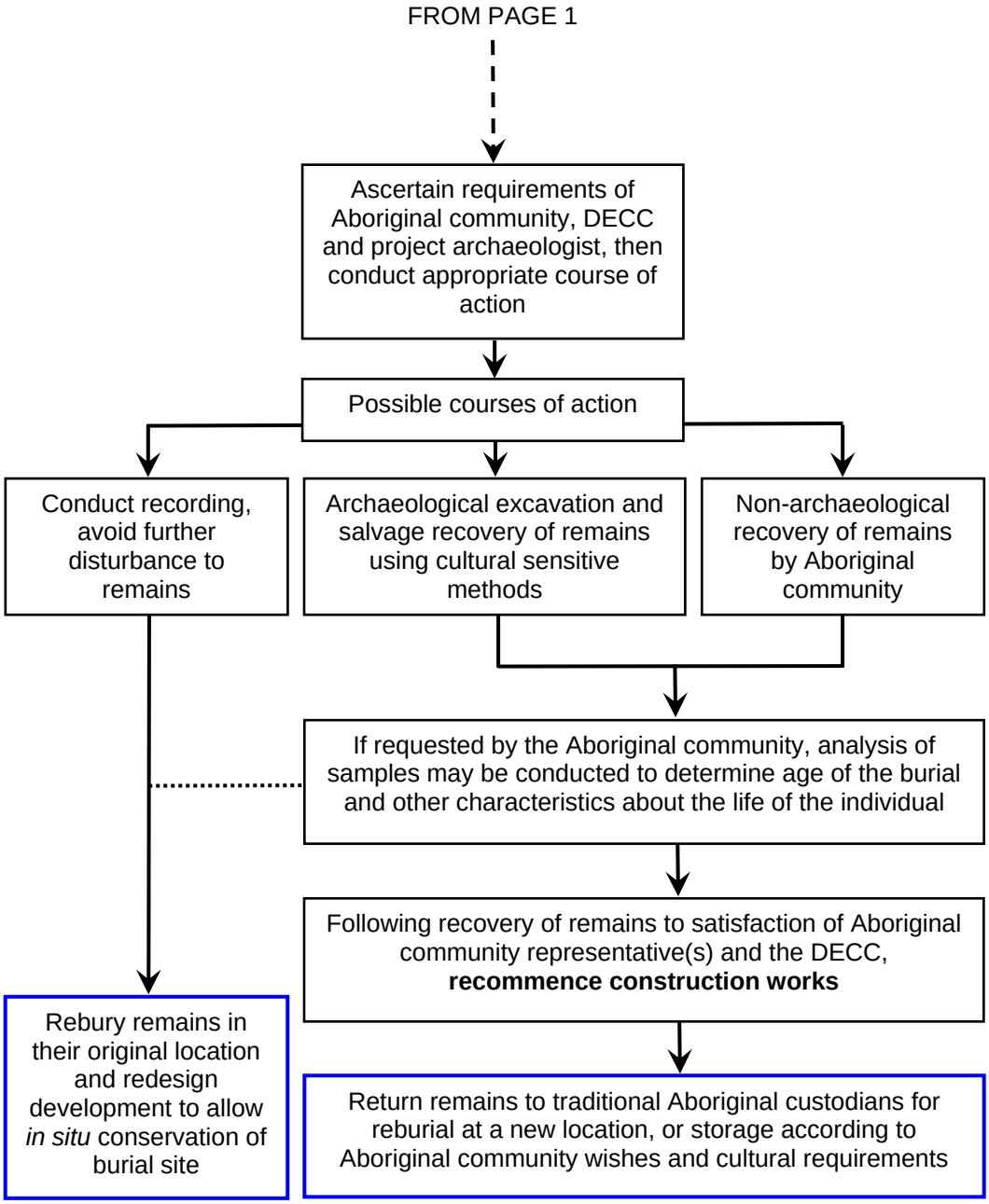
v. Subsequent reburial at another place and in an appropriate manner determined by local Aboriginal organisations.

7. Following the removal of the skeletal and associated burial material to the satisfaction of the project archaeologist and local Aboriginal organisation representatives, recommence the previously suspended construction activities.

Flowchart – Protocol for Human Skeletal Remains Revealed during construction Works (p1 of 2)



Flowchart – Protocol for Human Skeletal Remains Revealed during construction Works (p2 of 2)



APPENDIX 4

FORMS FOR RECORDING RECOVERY

AND RE-POSITIONING OF ABORIGINAL OBJECTS

Record of Discovery of Aboriginal Objects

Tintenbar to Ewingsdale Pacific Highway Upgrade

Who and When?

Name of Recorder		**Date**	
Site name or number			

What has been recovered, and from Where?

GPS Datum: ☐ AGD66 ☐ WGS84

Chainage (m) or GPS reference	**Description of object(s)**		**No. of bags**
	No. of items	**Type of object(s)** (e.g., stone, shell, bone, charcoal, burnt clay)	

Sketch Map (Show north, location of finds, concentrations or points of interest – use other side of form for more space).

Record of Repositioning of collected Aboriginal Objects

Tintenbar to Ewingsdale Pacific Highway Upgrade

Who and When?

Site name or number		**Date**	
Name of Aboriginal Community Representative			
Name of Archaeologist			

What has been repositioned, and to Where?

GPS Datum: ☐ AGD66 ☐ WGS84

GPS reference for new locations	**Inventory numbers for items**	**Describe location and nature of repositioning** (e.g., by large tree, scattered on surface, buried (how deep?, in or out of plastic bag)

Sketch Map (Show north, location of repositioned finds, distance and compass bearings from fixed objects – use other side of form for more space).

APPENDIX 5

FORMS FOR RECORDING/RECOVERY OF

NON-ABORIGINAL SITES/OBJECTS

Record of Discovery of Non-Aboriginal Sites/Objects

Tintenbar to Ewingsdale Pacific Highway Upgrade

Who and When?

Name of Recorder		**Date**	
Site name or number			

What has been discovered, and Where?

GPS Datum: ☐ AGD66 ☐ WGS84

Chainage (m) or GPS reference	**Description of site/object(s)**		**No. of bags**
	No. of items	**Site Type and Type of object(s)**	

Sketch Map (Show north, location of finds, concentrations or points of interest – use other side of form for more space).

APPENDIX 6

RESTRICTED ABORIGINAL CULTURAL HERITAGE INFORMATION

- **ABORIGINAL CULTURAL HERITAGE RECORDINGS**

- **SUMMARY MATRIX OF ABORIGINAL COMMUNITY CONSULTATION**

NOTE: Access to this Information is restricted to authorised stakeholders and is not for general public release