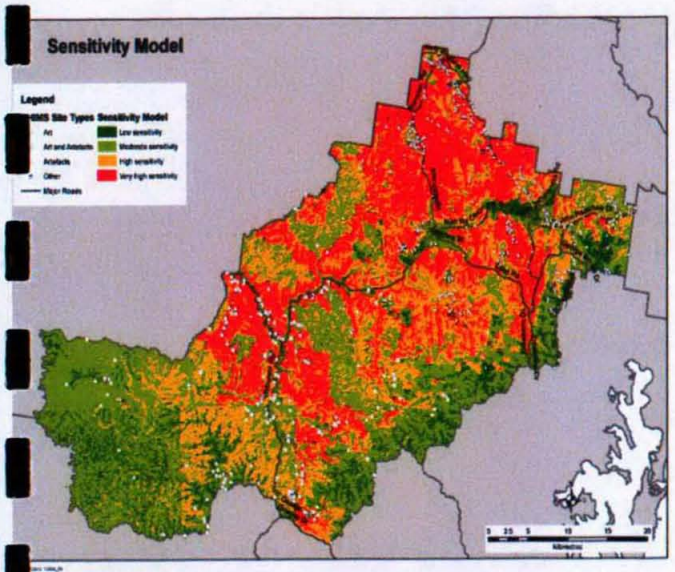

Cessnock Local Government Area

Aboriginal Heritage Study

Cessnock City Council

12 June 2013

CESSNOCK CITY COUNCIL

NSW GOVERNMENT Office of Environment & Heritage

AHMS
ARCHAEOLOGICAL & HERITAGE MANAGEMENT SOLUTIONS

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACKNOWLEDGMENTS

- Scott Christie and Peter Mann, Cessnock City Council.
- Diane Crosdale, Office of Environment & Heritage.
- Paul Morris, Metropolitan Local Aboriginal Land Council
- Noel Downs and Suzie Worth, Wanaruah Local Aboriginal Land Council.
- Richard McGuinness, Awabakal Local Aboriginal Land Council.
- Ken Riddiford, Mindaribba Local Aboriginal Land Council.

EXECUTIVE SUMMARY

Archaeological & Heritage Management Solutions Pty Ltd (AHMS) were commissioned by Cessnock City Council (CCC) in April 2012 to undertake an Aboriginal Heritage Study (Phase 1) of the Cessnock Local Government Area (LGA). The aim of the study was to provide CCC with greater spatial information and certainty of the Aboriginal heritage resource within the LGA. While extensive analysis was undertaken of the pre-contact archaeological record, a focus of the study was on any contact and post-contact Aboriginal sites or places within the LGA.

The study was developed in consultation with the four Local Aboriginal Land Councils (LALCs) that encompass the LGA, namely the Metropolitan, Awabakal, Darkingjung, and Wanaruah. The Koompathoo LALC also managed parts of the LGA, but has been dissolved in recent years, and a replacement organisation was unavailable at the time of this study. The Office of Environment and Heritage (OEH) were also liaised with in relation to this report.

Environmentally, the LGA could be divided into two broad areas: 1) the Hunter-Wyong sub-bioregion located in the northern half of the LGA and characterised by rolling hills, wide valleys, and meandering river systems on a wide flood plain; and 2) the Yengo sub-bioregion in the southern half of the LGA and characterised by benched sandstone plateaux with steep slopes and narrow valleys and low cliff lines on Narrabeen sandstone. Drainage patterns are typically quite structured and angular following the incised nature of the under-lying sandstone geology. High energy river systems frequently form levees, terraces and other fluvial features, including freshwater swamps and lakes.

The study identified 1,097 previously documented Aboriginal objects/sites within the LGA. These could be largely divided into two main site types and spatially divided between the two sub-bioregions, specifically: 1) open sites dominated by artefactual material were primarily located on the Hunter/Wyong sub-bioregion, especially along the Hunter River and associated tributaries; and 2) rock shelters, grinding grooves and art sites located throughout the Yengo sub-bioregion, and especially along the Wollombi Brook and Congewai Creek areas. The majority of previously documented sites were situated on the Hunter/Wyong sub-region, but this may have been a reflection of the greater level of development in this area.

The environmental and archaeological data, in combination with a review of a range of previous archaeological studies, were used to develop a predictive archaeological model of the LGA. The model used a range of statistical and GIS techniques to mathematically predict the likelihood of archaeological material occurring in a given area. The model was tested using a sub-set of the archaeological sites, and other modelling data from OEH, and provide robust.

A thematic history of the LGA was undertaken by Dr Christine Cheater and identified a number of contact, post-contact and culturally important sites to Aboriginal people in the general region. However, none of these sites were within the LGA. Themes included:

- 'People of the Woods and Mountains' - traditional society and culture and how it was transmitted across communities and from generation to generation.
- 'Invasion' - first contact experiences, exploration, Aboriginal reactions to British settlements and frontier violence.
- 'Surviving between two worlds' - the impact of British settlement on Aboriginal communities and how Aboriginal people coped with attempts to assimilate them to European lifestyles.

The results of the current Phase 1 of the Aboriginal Heritage Study can be summarised in terms of the heritage values to manage, management principles and recommended actions. These are detailed below.

The heritage values to manage

A number of maps have been produce during the Phase 1 study which identify the location of presently known Aboriginal archaeological sites and also graded areas of archaeological potential where unrecorded archaeological sites are most likely to occur. The maps of 'Aboriginal Archaeological Sensitivity' identify certain areas of the local landscape that are more likely than others to contain surface and/or buried evidence of prior Aboriginal occupation and use.

The maps, have not yet been informed by land disturbance (post contact land use) overlays, detailed research, consultation or field survey. Their use and application, therefore, is limited and the maps cannot be considered sufficiently rigorous to inform statutory considerations.

The Phase 1 study has not resulted in maps that indicate known or potential places of contact or post contact Aboriginal heritage significance apart from the traditional Aboriginal walking tracks that were in use at the time that the first colonial settlers arrived in the area and which have previously been mapped Historical research indicates that Aboriginal missions and reserves were not established in Cessnock LGA and there are no records of places of conflict, protest or similar activities. Specific and detailed research, field work and community consultation would be needed to identify the location of any post contact places of Aboriginal heritage value. The lack of specific places reinforces that the themes of Dispossession and Protectionism are very relevant to Cessnock, not because there are specific places that demonstrate those themes, but because the dearth of typical post contact places across the whole of the Cessnock LGA demonstrates the net effect of those themes.

Given that there are Aboriginal people in the LGA today it is likely that there are places of contemporary significance to the community. Community consultation would be required to identify such places should they exist. A similar project which might provide a useful model for such a study was undertaken by the National Parks and Wildlife Service with the Gumbaingirr people (English 2000).

Principles

The following principles establish the values basis for managing the mostly archaeologically based Aboriginal heritage in CCLGA which was identified in this study. For regional consistency reasons they are, wherever possible, consistent with the principles established for the Newcastle Aboriginal Heritage Study, Newcastle City Council (AMBS, 2005).

General Principles

Cessnock City Council, on behalf of the people of the Cessnock City Council local government area, recognises that:

- The Aboriginal cultural heritage of Cessnock City is a finite and valuable resource that is important to the history and identity of Aboriginal people.
- The Aboriginal heritage of Cessnock City can include places of spiritual, traditional, historical or contemporary cultural significance. They need not contain material evidence of Aboriginal use or occupation.

- The Aboriginal cultural heritage of Cessnock City is an important part of the wider cultural heritage of Cessnock City.
- The Aboriginal cultural heritage of Cessnock City should be conserved and managed according to its heritage significance to Aboriginal people.
- The Aboriginal community has a primary right to identify how its cultural heritage is identified, assessed, recorded and managed and to determine its cultural significance.
- The community of Cessnock and Cessnock City Council as well Aboriginal people are jointly responsible for the proper care, conservation and management of the Aboriginal heritage of Cessnock City.
- Cessnock City Council will meet all its statutory obligations and will strive to meet all community expectations to manage and appropriately conserve the Aboriginal heritage of Cessnock City.
- Cessnock City Council will actively promote the importance of the Aboriginal cultural heritage of Cessnock City to the broader community.

Recommendations and Actions

The table below summarises some policies and actions that together may assist CCC to appropriately manage the Aboriginal heritage in CCLGA within the constraints of the outcomes of the Phase 1 study.

Element or Value	Policies	Actions for Council
Seek the adoption of The Phase 1 Cessnock Aboriginal Heritage Study Report	The Phase 1 Cessnock Aboriginal Heritage Study Report should be adopted as an interim background document about Aboriginal heritage in the LGA.	The Phase 1 Study Report should be forwarded to Aboriginal Stakeholders, the OEH and CCC for formal adoption (in whole or part) and for integration if applicable with applicable records, land information systems and planning.
The Phase 1 Report - Access	The Phase 1 Report should be a public document and available in public repositories.	Lodge copies of the Phase 1 Report CMP with the OEH, in appropriate CCC files and the CCC Library.
Using the Predictive Model Maps	Facilitate the use of the Predictive Model Maps of the Phase 1 Report to generally indicate where further detailed Aboriginal heritage assessment may be required	The Predictive model maps in the Phase 1 Report should be considered as a potential reference source in Council's land information system
Consultation Strategy	The Aboriginal community will continue to be central to determining how its cultural heritage is identified, assessed, recorded and managed in the LGA	CCC should consider establishing an Aboriginal Heritage Committee to assist it to implement the recommendations of the Phase 1 Study and advise on other matters as they arise.
Understanding places of contemporary significance to Aboriginal people in the CC LGA	The Aboriginal community will continue to be central to determining how its cultural heritage is identified, assessed, recorded and managed in the LGA	Undertake a study with Aboriginal community in the CCLGA which looks at places of contemporary use and significance.

1 INTRODUCTION

1.1 The Project

In April 2012, Cessnock City Council commissioned Archaeological and Heritage Management Solutions Pty Ltd (AHMS) to undertake Phase 1 of an Aboriginal Heritage Study of the Cessnock City Local Government Area (CCLGA). The Phase 1 desk-top study was to include the development of an Aboriginal thematic history and the identification of areas and places of known and potential Aboriginal heritage significance and sensitivity. The study was designed to emphasise the identification of post-contact places such as missions, reserves or conflict sites while Aboriginal archaeological sites and sensitive landscapes were to be identified and mapped at a broad landscape scale.

The study outcomes were to include:

- Maps to assist Council to more strategically identify and manage land with known or potential Aboriginal heritage value (archaeological sites, sensitive landscapes and post contact places);
- General recommendations about how to integrate Aboriginal heritage considerations and the outcomes of the study into land use planning, development planning and cultural planning;
- If warranted, recommendations for a Phase 2 Study that would include survey, land disturbance mapping, detailed consultation and heritage significance assessments; and
- A project report.

The Phase 1 study was developed in consultation with Aboriginal community representatives and it includes recommendations for further, focussed consultation during the implementation of the study's recommendations.

The Draft Phase 1 Cessnock Aboriginal Heritage Study Report is in the following format:

- Executive Summary.
- Section 1: Introduction.
- Section 2: Legislative Context.
- Section 3: Environmental Context.
- Section 4: Ethnographic and Thematic History.
- Section 5: Archaeological Context.
- Section 6: Archaeological Modelling and Sensitive Landscapes Maps.
- Section 7: Aboriginal Consultation.
- Section 8: Results and Outcomes.
- Section 9: Managing Aboriginal Heritage and Recommendations.
- Section 10: References.

1.2 The Study Area

The Cessnock City Local Government Area (CCLGA) covers approximately 1,950 square kilometres and is located within the Lower Hunter Valley, NSW, approximately 40 kilometres west of Newcastle and 120 kilometres north of Sydney (**Figure 1**). Cessnock is one of five local government areas to make up the Lower Hunter Region along with Newcastle, Lake Macquarie, Port Stephens and Maitland.

A significant proportion of CCLGA is dedicated state forest or national park and it includes parts of the World Heritage Listed Yengo National Park. The major watercourses are the Hunter River and Wollombi Brook.

Just over 49 per cent of Cessnock City's population of 46,208 (2010 Census) lives in the larger towns of Cessnock and Kurri Kurri. The remaining population resides in a number of small towns and villages or across rural areas where grazing, mixed farming and viticulture predominate. Heavy and light industries as well as coal mining are significant contributors to the local economy.

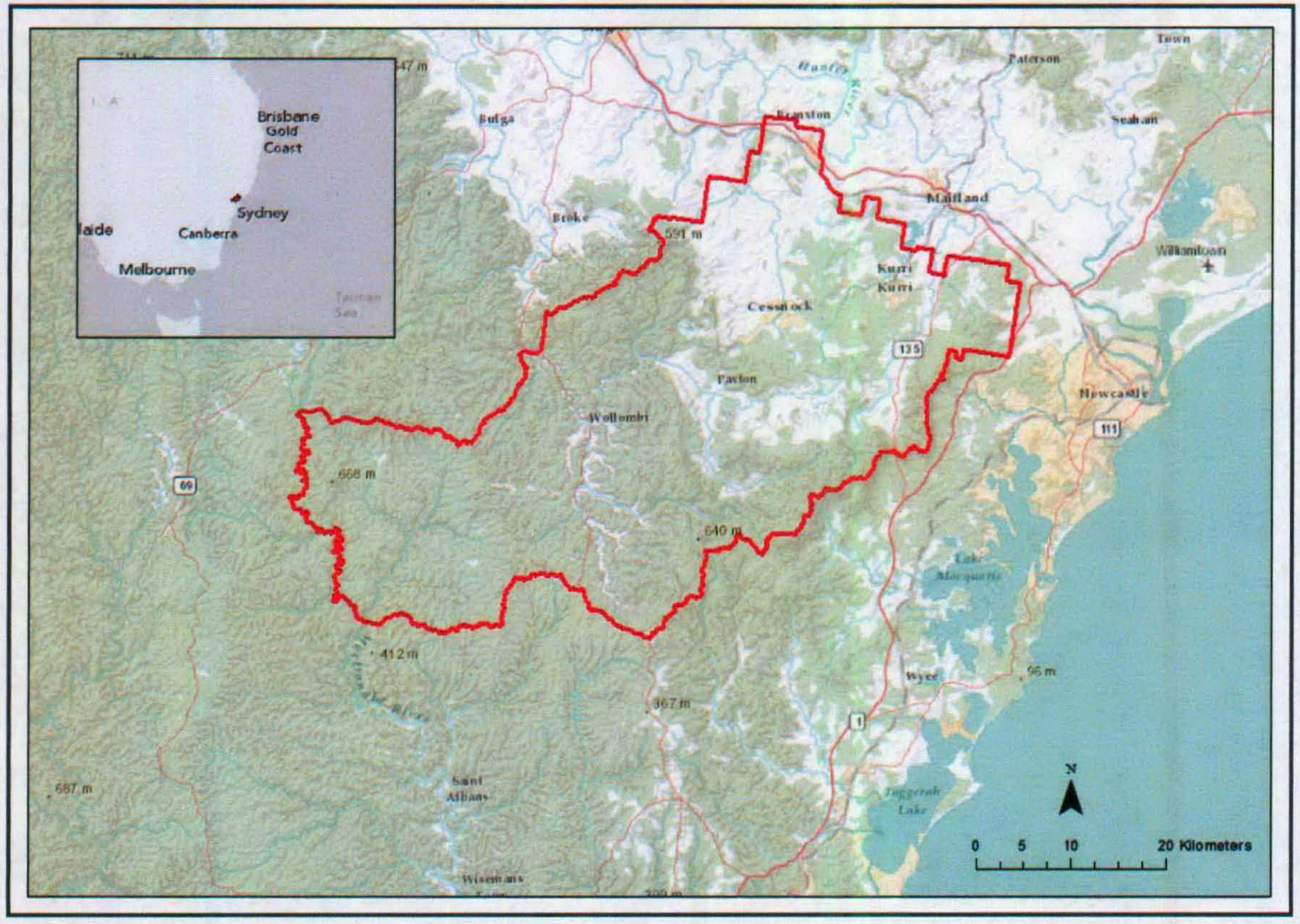

Figure 1 Cessnock City Local Government Area in Red Outline..

2 LEGISLATIVE CONTEXT

2.1 Preamble

A brief outline of the heritage legislation that applies or may apply to Aboriginal archaeological sites and historical sites of heritage significance in the CCLGA, is outlined below. It has been summarised because it establishes the context for several of the management recommendations in **Section 9**.

2.2 Commonwealth Registers and Legislation

2.2.1 The Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act, 1984* preserves and protects areas (particularly sacred sites) and objects of particular significance to Aboriginal Australians from damage or desecration. As well as providing protection to areas, it can also protect objects by Declaration, in particular, Aboriginal skeletal remains (Section 12). The Commonwealth can invoke the application of the Act on a State level if the State is unwilling or unable to provide protection for such sites or objects.

2.2.2 Environment Protection & Biodiversity Conservation Act 1999

The *Environment Protection & Biodiversity Conservation Act, 1999* provides for the protection of natural and cultural heritage places. The Act establishes (amongst other things) a National Heritage List (NHL) and a Commonwealth Heritage List (CHL). It also provides for and protects Australian places on the World Heritage List.

The Act requires that the Minister administering the EPBC Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values of a listed place.

The Old Great North Road and the Greater Blue Mountains, which include Yengo and Wollemi National Parks, are both partially within the CCLGA and both are included on the World and National Heritage Lists. The Old North Road is included on both these lists because of its convict heritage values, and the Greater Blue Mountains for its natural heritage values. There are various Commonwealth owned places within the CCLGA on the Commonwealth Heritage List. Most are Commonwealth owned buildings such as post offices.

2.2.3 The Register of the National Estate

While no longer a statutory register, and closed to new entries, the Register of the National Estate (RNE) includes 21 sites within the CCLGA. Only one of these relates to Aboriginal heritage, specifically the Finchley Aboriginal Area (ID #1223) which is located in Yengo National Park. The RNE listing description is as follows:

> This site is the most northerly known example of the Sydney style of Aboriginal rock engravings. It is likely that it indicates a tribal boundary area. It is a major site, containing 100 figures, which though badly vandalised, retain their archaeological significance in terms of form, character and geographic location, even if details of technique have been obliterated by modern interference.

2.2.4 Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act established the National Native Title Tribunal to administer native title claims to rights and interests over lands and waters by Aboriginal people. The Tribunal also administers the future act processes that attract the right to negotiate under the *Native Title Act 1993*.

The Act also provides for Indigenous Land Use Agreements (ILUA). An ILUA is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the Native Title Act in 1998. They allow people to negotiate flexible, pragmatic agreements to suit their particular circumstances.

An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a native title determination, or settled separately from a native title claim. An ILUA can be negotiated and registered whether there is a native title claim over the area or not.

A search of the National Native Title Tribunal Registers was undertaken on 15 November 2012, and identified one registered native title claim over country partially within the CCLGA. This claim is identified as NC2012/003 and was made by the Awabakal people over 1,025 hectares in Donaldson/Yancoal Mining area encompassing Mount Sugarloaf. Another claim NC2013/002 on behalf of the Awabakal and Guringai people was lodged 13/5/2013 and is currently due for a registration decision. It covers a much larger part of the North eastern part of CCLGA.

2.2.5 NSW Legislation

The Environmental Planning & Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) can establish mechanisms for managing and protecting places of Aboriginal heritage significance in land use and development planning. Part 3 of the Act is principally about preparing Local Environmental Plans (LEPS) and State Environmental Planning Policies (SEPPs). Part 4 of the Act establishes provisions for preparing, considering and approving development applications where Council or the State is the consent authority. Part 5 relates to activities proposed and determined by a public authority (State or local).

The Act (through its Regulations and policies) and planning practice notes requires that Local Environment Plans (LEPs) that affect an Aboriginal object or place must include provisions to facilitate conservation of that object or place. Places of Aboriginal heritage significance can also be included in LEP heritage schedules and so be subject to LEP heritage clauses that require council to consider the effect of a proposed development on their heritage significance before granting development consent.

Part 4.1 of the Act suspends the operation of key Aboriginal heritage provisions of the *National Parks & Wildlife Act 1974* for certain Major Developments.

The National Parks & Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is the principal legislation managing Aboriginal heritage in NSW. To a large extent, except where otherwise specifically suspended, other key statute defers to the NPW Act with respect to Aboriginal cultural heritage management. The NPW Act protects all Aboriginal objects and places, whether they are known and included in heritage registers of schedules or not, and defines an Aboriginal Object as:

> *.....any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being*

habitation both prior to and concurrent with the occupation of that area by persons of European extraction, and includes Aboriginal remains.(NPWSAct, NSW, 1974S5(1))

An Aboriginal Place is any place declared by the Minister for Environment & Heritage under Section 84 of the NPW Act to be an Aboriginal place. One declared Aboriginal place is located within the Cessnock LGA in Yengo National Park, and is described as follows:

> Mt Yengo is the place from which Baiame (Baayami or Baayama), a creational ancestral hero, jumped back up to the spirit world after he had created all of the mountains, lakes, rivers and caves in the area. Baiame flattened the top of Mt Yengo when he jumped skyward and the flat top is still visible today.
>
> Mt Yengo Aboriginal Place has special significance to Wonnarua, Awakabu, Worimi and Darkinung traditional owners and their descendants as well as to contemporary Aboriginal communities within the greater metropolitan, Central Coast and Hunter areas. Due to the sacredness of Mt.Yengo, local Aboriginal people can only speak publicly of some of its cultural associations.
>
> Mt. Yengo is significant as a spiritual and religious natural feature and forms the central point of connection for major rock art sites from northern Sydney to the north of Newcastle and the upper Hunter Valley. Mt. Yengo area contains important wild resource sites for obtaining plant foods and medicines and materials used to make tools and weapons.
> Mt. Yengo Aboriginal Place is home to several cultural teaching and educational sites. Aboriginal cultural practice at these places supports intergenerational learning and cultural skills transfer to younger Aboriginal people.

Under Section 90 of the NPW Act it is an offence to 'harm' an Aboriginal object or place unless an Aboriginal Heritage Impact Permit (AHIP) has been issued by the Director General of the Office of Environment and Heritage (OEH).

Heritage Act 1977

The *Heritage Act 1977* is administered by the NSW Department of Premier and Cabinet, and it predominantly protects places, buildings and landscapes and archaeological sites of historical heritage significance. Places of Aboriginal heritage significance, such as mission sites, may be listed on the State Heritage Register (SHR) or subject to an Interim Heritage Order (IHO) under the Act. Most places of Aboriginal heritage significance included on the SHR are missions or reserves or similar.

None of the places within CCLGA on the SHR have been included on the register for their Aboriginal heritage values.

Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* was established to provide land rights for Aboriginal people in NSW and to provide for representative land councils and to enable the vestment of land in these councils and also to provide funding and provide for community benefit schemes by and on behalf of Aboriginal Land Councils. Importantly it allows vacant Crown land not required for an essential purpose or for residential land, or subject to a native title determination or an application for determination, to be claimed and transferred to an Aboriginal Land Council. A search of existing and completed land rights claims under the Act in the CCLGA can be undertaken through the NSW

Office of Registrar Aboriginal Lands Right Act 1983. A search was not undertaken for this study as individual lot and DP numbers are required to initiate a search and this is beyond the scope of the Phase 1 Study.

Local Government Act 1993

Section 36D of The *Local Government Act 1993* applies to community land that Council considers may have Aboriginal, historical or cultural significance. Any Plan of Management (PoM) adopted for the land must state that the land, or the relevant part it, is of cultural significance. The POM must also identify objectives, performance targets and other matters that account for, protect and incorporate certain core objectives outlined elsewhere in Section 36 of the Act. Requirements for consultation with the OEH also apply in relation to the development and implementation of the PoM.

Cessnock Local Environment Plan 2011

Section 5.10 of the Cessnock Local Environment Plan 2011 (LEP) establishes procedures for considering and managing Aboriginal heritage in development contexts. Extracts from key clauses are summarised below.

The objectives of Clause 5.10 are:

(c) to conserve archaeological sites,
(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

Clause 5.10(2) requires that consent is required for any of the following:

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
(d) disturbing or excavating an Aboriginal place of heritage significance,
(e) erecting a building on land:
(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
(f) subdividing land:
(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

Clause 5.10 (8) requires that the consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

- consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
- notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

The Cessnock LEP identifies the Finchley Aboriginal Reserve as an item of heritage on its Schedule 5 Items of Environmental Heritage Part 3 –Aboriginal Places of Heritage Significance. There appear to be no other places included on Schedule 5 primarily for their Aboriginal heritage values.

2.2.6 Current Land and Development Pressures

Cessnock City is one of five local government areas (LGAs) that make up the Lower Hunter Region. The other LGAs are Newcastle, Lake Macquarie, Port Stephens and Maitland. The Lower Hunter Regional (Planning) Strategy of the NSW Department of Planning and Infrastructure (2006-2031) includes CCLGA. The strategy aims to ensure that adequate land is available and appropriately located to sustainably accommodate the projected housing, employment and environmental needs of the Region's population over the next 25 years.

The Region's population is increasing by an average of approximately 4,000 people each year. There are 203,500 existing dwellings in the Lower Hunter Region, comprised of 85% as single detached cottages, with 15% as units, flats and townhouses. Green field housing or 'new release' areas represents 75% of all new housing, with the remaining 25% of new housing located in existing zoned urban areas.

The Economic Profile of Cessnock City (Cessnock City Council, 2012) indicates that over 53,000 people live within the 1,970 square km area of Cessnock City, the majority concentrated in urban zones between the Central Business Districts of Cessnock, Branxton and Kurri Kurri. According to the Housing Industry Association's Population and Residential Building Hotspots report 2010/11, Cessnock local government area recorded an annual population growth of 1.9%, exceeding the national rate of 1.4%.

The nature of settlement across the Cessnock City Local Government Area is set to change in the long term with the development of the proposed Huntlee town development near Branxton (over 20,000 people) and other emerging greenfield developments. In terms of planning for future development, the Lower Hunter Regional Strategy identifies Cessnock as a major regional centre and projections are for 21,700 new dwellings by 2031, largely to be achieved through significant greenfield residential land rezoning.

The major release areas where planning is well advanced are Bellbird (3,500 new dwellings), Greta (1364 new dwellings) and Cliftleigh (977 new dwellings). This is in addition to the Branxton-Huntlee area (Cessnock and Singleton Councils), where a concept plan for a total 7,200 new residential dwellings and up to 300 rural residential lots has been approved by the Department of Planning and Infrastructure.

3 ENVIRONMENTAL CONTEXT

3.1 Environment and Landform

3.1.1 Preamble

Identifying environmental characteristics and contexts is an essential initial step in identifying how Aboriginal people used land in the past and so the Aboriginal archaeological potential of any given area. It also assists to explain why certain historical events may have occurred and why certain historical themes may apply or dominate in a particular area. The environmental context of Lower Hunter Region of NSW which includes the CCLGA, is discussed below.

3.1.2 Bioregions

The CSIRO Interim Bioregionalisation of Australia (IBRA) (Thackaway & Cresswell, 1995; Morgan & Terry, 2002), identifies that the CCLGA is located within the Sydney Basin Bioregion (**Figure 2**). Bioregions are relatively large land areas that are distinguished from one another by broad, landscape-scale natural features and characteristic environmental processes. Bioregions are often further subdivided into sub-bioregions which are distinguished by finer differences in geology, vegetation and biophysical attributes.

There are three sub-bioregions in the CCLGA-the Hunter, Wyong and Yengo. The Yengo sub-bioregion is characterised by steep sandstone terrain and is in the south of the CCLGA. It includes areas of the Yengo National Park. The Hunter sub-bioregion is characterised by relatively flat or undulating plains and it includes the more populated areas in the north. The Wyong sub-bioregion is a small part of the south and eastern edges of the CCLGA, and is similar in character to the Hunter sub-bioregion.

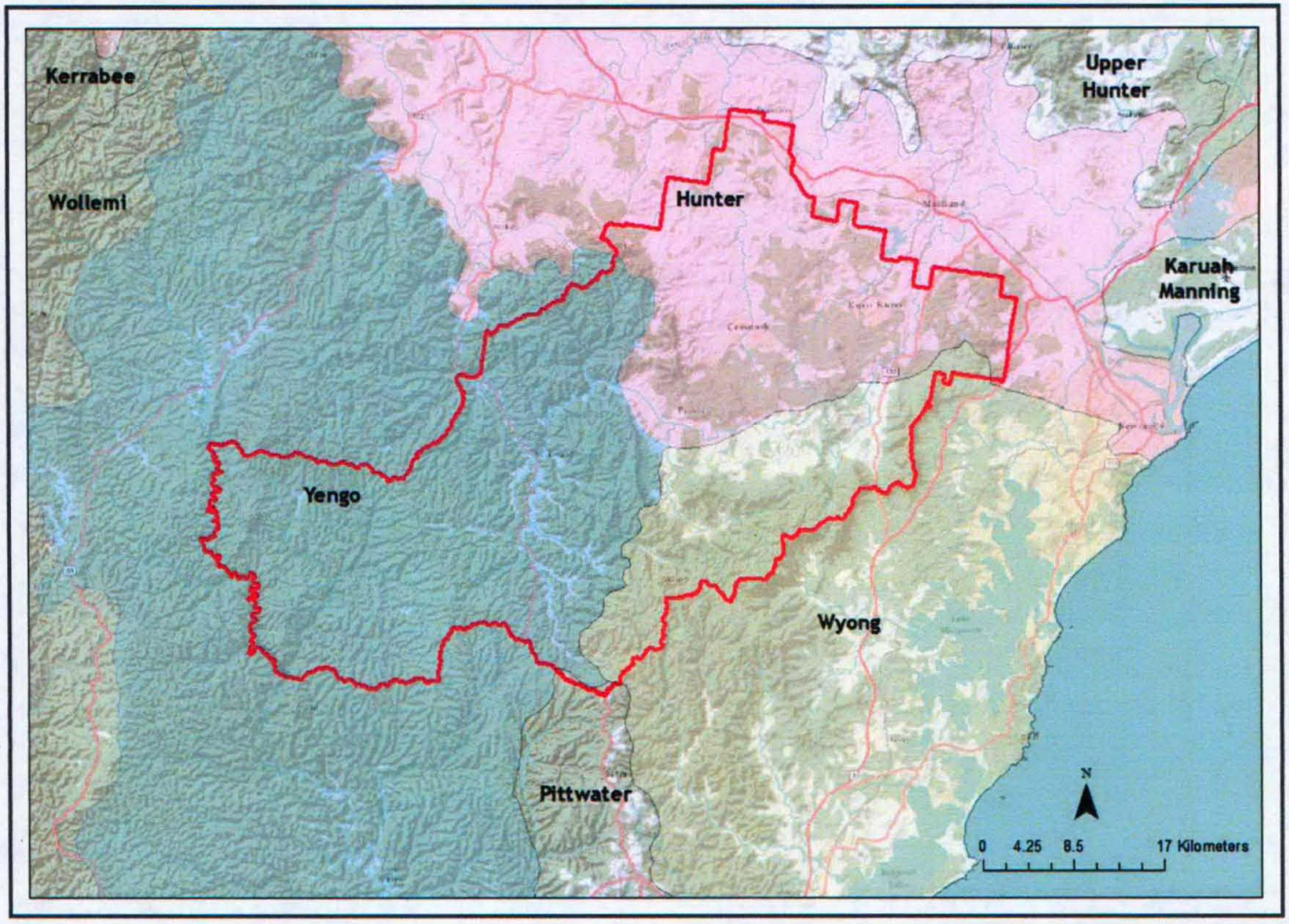

Figure 2 Sub-bioregions within the Cessnock City Local Government Area.

3.1.3 Landforms

The landforms in the Hunter Region that are important indicators of the type, distribution and survival of Aboriginal archaeological sites and places of value are:

- Flats - generally occurring adjacent to creeks and of less than 3% slope angle. Frequently these types of landforms retain significant depositional soil profiles that can retain undisturbed Aboriginal archaeological material;
- Slopes - a wide ranging landform that can be further delineated into lower, mid and upper slopes. Slopes are differentiated through slope angle, with lower depositional slopes being of key archaeological interest;
- Ridgelines - a flat or very gently sloping linear landform, which is distinguished by its elevation above the general surrounding landscape and its location at the top of a slopes. The delineation between slopes and ridgelines is not always clear. Hillcrests are similar to ridgelines, but will generally be circular, rather than linear in nature;
- Spurs - a landform that is defined by it elevation above surrounding slopes. Unlike ridgelines, spurs are characterised by a clear change of angle between the spur and surrounding slopes. Spurs are frequently associated with adjacent ridgelines and/or adjacent creeklines; and
- Creeklines/watercourses/rivers – a linear landform that retains water and facilitates it movement, generally found in low lying areas or in the base of valleys and within hill depressions.

The Wyong and Hunter sub-bioregions are generally characterised by gently undulating low hills while the Yengo sub-bioregion is predominantly dissected plateaux. The Hunter and Wyong sub-bioregions display higher proportions of flat land and lower slopes in association with creeklines than the Yengo sub-bioregion which contains steep incised valleys (Figure 4). A summary of the sub-regions is outlined below:

Hunter sub-bioregion

The Hunter sub-bioregion is characterised by rolling hills, wide valleys, and meandering river systems on a wide flood plain. River terraces are frequent. Streams can be brackish or saline at low flow. Numerous small swamps occur in upper Hunter catchment and extensive estuarine swamps occur behind the coastal barrier of beach and dunes in the vicinity of the Newcastle Bight.

Wyong sub-bioregion

The Wyong sub-bioregion is characterised by the coastal fall of the Sydney Basin, rolling hills and sandstone plateau outliers with beach, dune and lagoons of coastal barriers interspersed with coastal cliffs and rock platforms. The parts of the sub-bioregion within the CCLGA, however, have more in common with the Hunter sub-bioregion.

Yengo sub-bioregion

The Yengo sub-bioregion includes benched sandstone plateaux with steep slopes and narrow valleys and low cliff lines on Narrabeen sandstone. Drainage patterns are typically quite structured and angular following the incised nature of the under-lying sandstone geology. High energy river systems frequently form levees, terraces and other fluvial features, including freshwater swamps and lakes.

3.1.4 Geology/Soils

The CCLGA includes 54 soil landscapes (**Figure 3**). The distribution of the soil landscapes indicates that the complexity of the archaeological record is likely to be higher in the Hunter and Wyong sub-

bioregions than the Yengo sub-bioregion because of the higher frequency of flooding, erosion and re-working of sediments in the Hunter and Wyong sub-bioregion areas. In contrast, few areas in the Yengo sub-bioregion have such extensive flood zones and archaeological material (if present) is likely to be better preserved in original contexts in that area. The geological and soil characteristics of each sub-bioregion are summarised below.

Hunter sub-bioregion

The dominant geology across the Hunter sub bio-region consists of Permian shale, sandstones, conglomerates, volcanics and coal measures. Typical soils across this sub-bioregion include a mixture of contrast soils on slopes sandy loam alluvium on valley floors. There are a small number of source bordering dunes on the southern tributaries of the Hunter River, including some in the Black Hill area near Hexham Swamp. In the upper catchment of the Hunter River, soil salinity is common on some bedrock types.

Wyong sub-bioregion

The geology of the Wyong sub-bioregion consists of Triassic Narrabeen sandstones, Quaternery estuarine fills and coastal barrier dune complexes. Texture contrast soils exist on lithic sandstones and shales, whilst loamy sand alluvium is present along creeks. Organic soils and muds are present in lagoons and swamps. Rolling hills and sandstone plateau outliers are common landscape characteristics of this sub-bioregion.

Yengo sub-bioregion

The Yengo sub-bioregion consists of Triassic Hawkesbury Sandstone valleys deeply incised to Narrabeen sandstone. Quaternary sandy alluvium and high level sands are present on the Mellong Range with Quaternary muddy sands present in the upper Hawkesbury estuary. Shallow quartz sands are present on plateaux with some areas of deep podsol sand and yellow earth present on sandstone benches and Tertiary/Quaternary high level sands. Structured and clay loams are present on basalt geology, while sands are present on alluvium and texture contrast soils present on shales.

3.1.5 Vegetation

The native vegetation communities typical of the sub-bioregions in the CCLGA are (**Figure 5**) outlined below:

Hunter sub-bioregion

Patches of rainforest brush occur in the lower valley. Forest and open woodland of white box, forest red gum, narrow-leaved ironbark, grey box, grey gum spotted gum, rough-barked apple and extensive of stands of swamp oak are present in upper reaches and foothills. River oak and river red gum occur along the streams. Elsewhere in the sub- bioregion outside the CCLGA, coastal dune vegetation consists of Blackbutt, smooth-barked apple, coast banksias and swamp mahogany. Mangroves, salt marsh and freshwater reed swamps are present in the estuary.

Wyong sub-bioregion

Smooth-barked apple, red bloodwood, brown stringybark, Sydney peppermint, spotted gum, bastard mahogany, northern grey ironbark and grey gum are present on hills and slopes. Prickly-leaved tea-tree and other shrubs with swamp mahogany, swamp oak, sedges and common reed occur on swampy creek flats. Elsewhere in the sub-bioregion outside the CCLGA open heath with banksia, tea-

tree, coastal wattle, black she-oak and smooth-barked apple are found on barrier dunes. Limited areas of grey mangrove are present in entrances to coastal lakes.

Yengo sub-bioregion

Red bloodwood, yellow bloodwood, rough-barked apple, smooth-barked apple, hard-leaved scribbly gum, and grey gum with diverse shrubs and heaths all occur on plateaus. Smooth-barked apple, Sydney peppermint, blue-leaved stringybark, and turpentine with rainforest species are frequently present in gullies.

Hard-leaved scribbly gum, rough barked apple and Parramatta red gum with sedge swamps are found on Mellong Range sand. To the southeast outside the CCLGA river mangrove and grey mangrove occur along margins of upper Hawkesbury estuary, freshwater reed swamps with sedges and paperbarks.

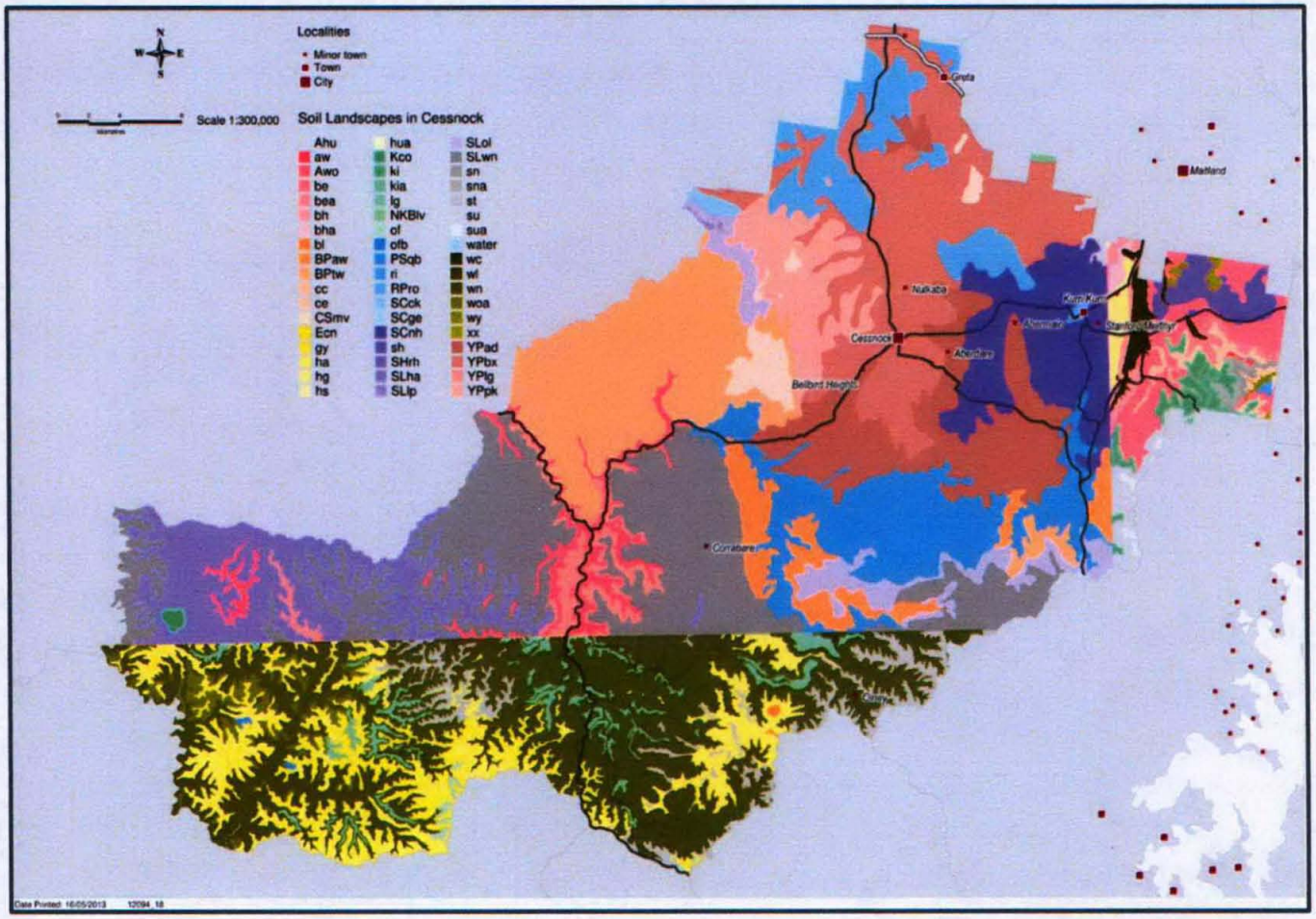

Figure 3. Soil landscapes in the Cessnock City Local Government Area.

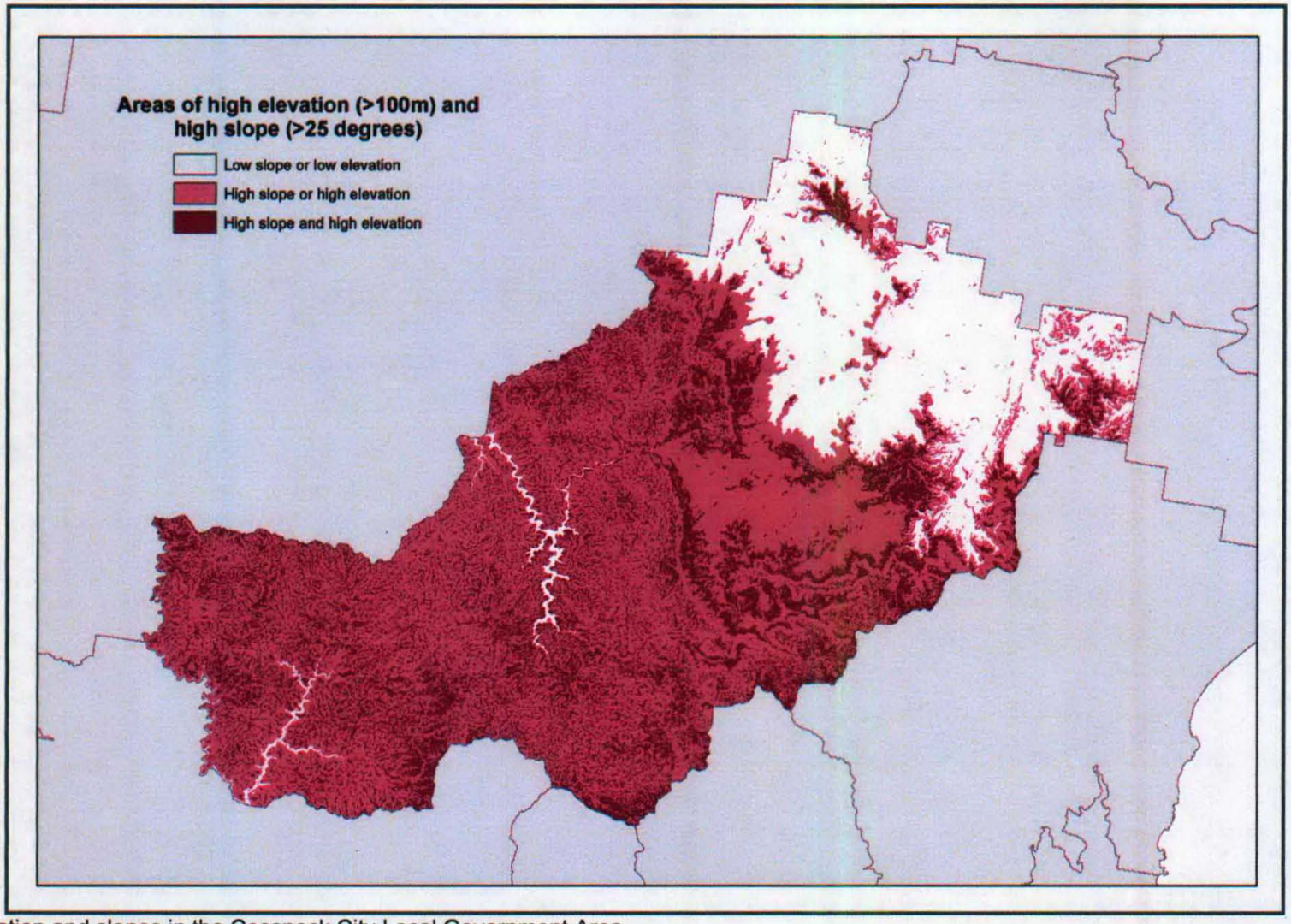

Figure 4. Elevation and slopes in the Cessnock City Local Government Area.

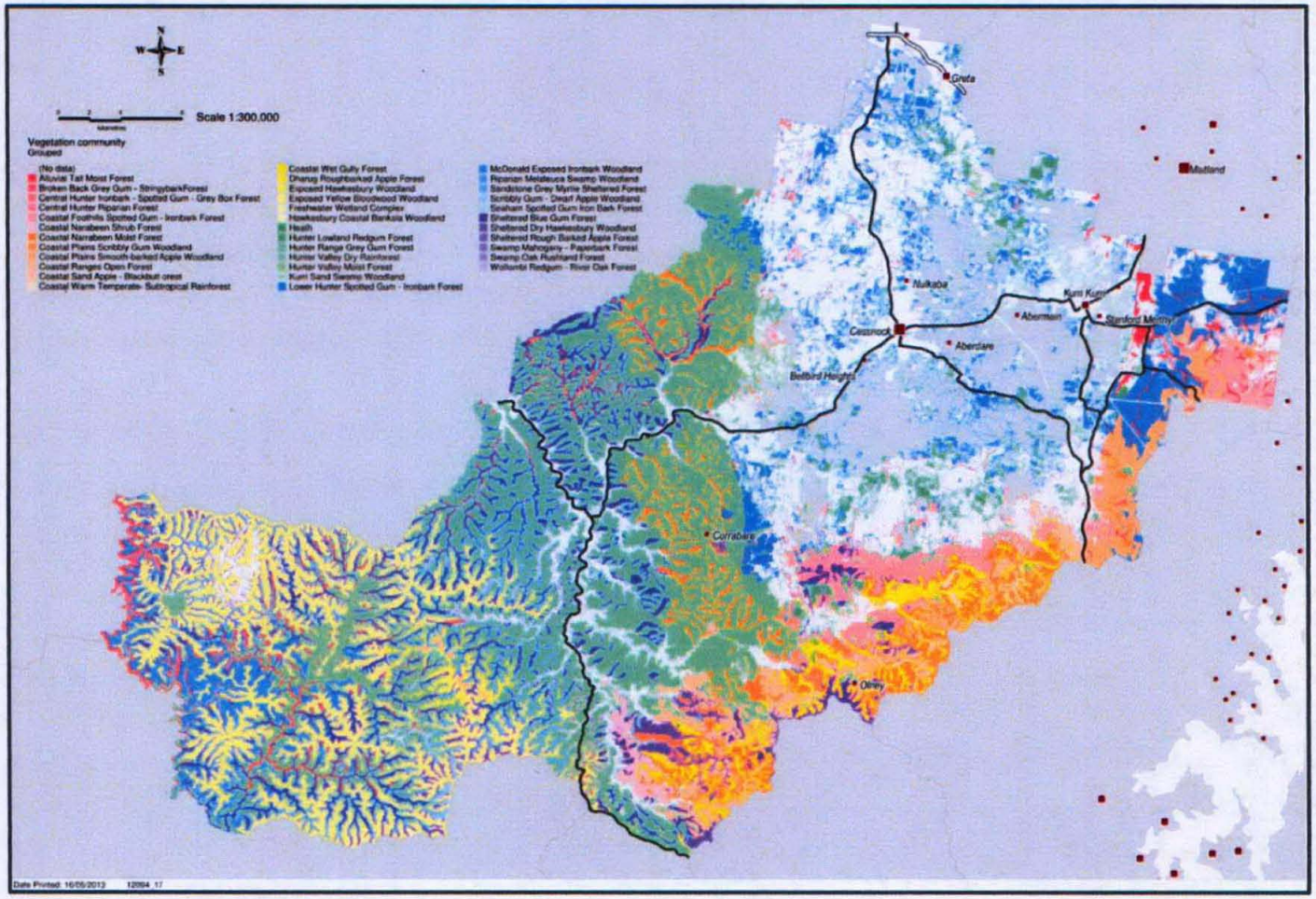

Figure 5. Vegetation types within the the Cessnock City Local Government Area.

4 ETHNOGRAPHIC AND THEMATIC HISTORY

4.1 Pre-contact Aboriginal Land Use History (Ethno-history)

The Cessnock City area is generally regarded as the territory of the Darkinjung people. Early European observers recorded that their lives were intensely religious and constrained by strictly enforced laws (Ridley 1864 in Brayshaw 1986). The traditional lives of the ancestral Aboriginal people focused on the lower Hunter Valley and were structured around a schedule of social interactions designed to take advantage of seasonal availability of resources. People travelled freely within the area of responsibility of their own group. People moved often, but not at random. Social responsibilities and obligations meant people travelled beyond their own territories to attend ceremonies with neighbours, to trade and to develop social networks that linked people across extensive areas, when they were invited. The Aboriginal people had such links from the coast to the western plains of NSW (Brayshaw 1986: 38-41).

Breton (1833) wrote:

> The tribes commonly...[have their]...own particular boundaries, which are seldom passed, except at "corrobbories"... The meeting at an end, they return to their respective hunting or fishing grounds, to pass which, at any other time, is considered an act of aggression, or signal of war... Their grounds usually include a square of twenty or thirty miles

Ancestral Aboriginal people often lived and travelled in small groups of less than 20 people, but regularly met relatives and neighbours for ceremonies where hundreds and sometimes thousands of people gathered for weeks at a time. Events like this were scheduled when and where seasonal resources were plentiful. Successive gatherings were rotated between a number of sites to allow the local environment to fully recover from periods of intensive exploitation. These gatherings were an opportunity to trade a wide range of goods from ceremonial songs and dances to stone axes, spears and native tobacco. Different groups sometimes specialised in producing high quality trade goods. The distribution of stone hatchets is one example that has allowed archaeologists to map the extent of one trade network (Binns & McBryde 1972). Binns & McBryde identified stone axes that had originated from an axe quarry at Moore Creek near Tamworth that had been distributed throughout northern, central and western NSW. Some of these axes had travelled in the order of 1,000 km from their source. The axe quarry is located near a bora ceremonial ground; one place where many people gathered from time to time.

Most of the evidence for Aboriginal occupation in the lower Hunter Valley comes from stone artefacts. Unfortunately, there is little ethnographic material concerning the production and use of stone artefacts and limited ethnographic accounts of all aspects of the lifestyle of Aboriginal people who lived in the Valley or how people used the land and its resources. The only known mention of stone artefacts in the area is in regard to the use of quartz as a barb on spears and of stone hatchets (Brayshaw 1986: 66, 68).

Most of the time, people lived in small groups moving regularly from campsite to campsite, living on local resources. There is little ethnographic evidence about where Aboriginal people camped, however, there is mention of the importance of fresh water. The Hunter Valley was subject to periodic and sometimes extensive drought and permanent water was always valuable as creeks and rivers supported a range of vegetable foods and attracted game.

There are several reports that describe the country as having extensive grasslands with few trees and extensive floodplains (Breton 1833, Cunningham 1827, Howe 1819). These grasslands are thought to have occurred because Aboriginal people were continually burning the countryside as part of their responsibility to look after the land and as a hunting strategy. Burning cleared the undergrowth and fresh growth produced green shoots for animals. Fawcett (1898) refers to the use of fire by the Aboriginal people and other early accounts (Cunningham 1827, Mitchell 1898) also report the use of fire in the area.

While camping at a particular site, people would travel each day through the surrounding country to collect food or other required resources (stone, bark, gum, etc) from preferred locations within a day's walk of camp (usually within about 5 km). The abundance of resources in the Hunter Valley is recorded. Kangaroos, emus, possums and fish were plentiful (Breton 1833, Cunningham 1827). There was an abundance of food on the flattened ridges and plains for kangaroos (Cunningham 1827) and trees were available to provide bark for shelters and wooden implements such as shields (Breton 1833).

There are various ethno-historic/ethnographic sources which refer to carved trees. These are trees which have been carved with various patterns and graphics. Accounts refer exclusively to carved trees being associated with a ceremonial place or burials (MacKenzie 1878: 255, Miller 1985: 6-7, Etheridge 1918: 84; McBryde 1974: 126). Historical records indicate that there may have been a traditional tribal boundary within close proximity to the current subject area.

The lifestyle of the Aborigines of the Hunter Valley was shattered with the arrival of Europeans who were attracted to the grassed plains of the Hunter Valley. The rapid settlement in the area disrupted the Aboriginal economy and, in a very short time, the Aboriginal population was decimated by a combination of starvation, introduced diseases and massacres.

4.1.1 Colonial History

The first permanent settlement in the lower Hunter Valley was a penal settlement, which was established in 1804 at the mouth of what was then known as the Coal River, later to be known as the Hunter River. Convicts were put to work at a newly opened coal mine, while others gathered and burned shells to produce lime for mortar to be used in the construction of Sydney's buildings. Near the port of the river, gangs of men cut the timber called Coal River Pine, while further upstream, gangs of cedar cutters worked their way up towards the rich flats. Newcastle was supplied with grain and salt meat from Sydney, while the returning ships' cargo comprised cedar, coal, pine and lime shell. At this time, the population of the settlement consisted of the military garrison, convicts and civilian officials. The lands in the region of the Hunter River were closed to free settlement and the resources therein were reserved for the use or the profit of the Government (Wood 1972).

From 1813 several people were permitted to occupy land at Pattersons Plains. In 1814, John Tucker, the first free settler to the Hunter Valley, settled with his family at Pattersons Plains and in 1818 the river flats of the Hunter above present day Morpeth were named Wallis Plains, and a number of people were permitted to occupy this area as 'tenants at will', with Governor Macquarie's promise of an eventual grant of that extent. Until 1820 government interest in the area resided solely in the exploitation of the cedar grounds. Upstream from the farms the surrounding tracts of land remained in isolation from European infiltration (Wood 1972:4-9).

In 1819, John Howe and his exploration party set out from Windsor to explore the country northward. Howe's journey traversed the central Hunter and the Comelroy (now Jerrys Plains), eventually

stopping at the Hunter River, however, at this point in time Howe did not realise he had reached the Hunter River. Howe (1819) described the country of Comelroy as:

> The finest sheep land I have seen since I left England. The grass on the low ground equals a meadow in England and will grow as good a swath and is like the native grass found where old stockyards have been.

In 1820, Governor Macquarie requested that Howe explore the river he recently discovered. The exploration party met the river at Neotsfield, and the surrounding plain was named St Patricks Plain, in honour of St Patrick's Day. The party followed the river for some distance and on the 20 March the party ran into a group of cedar cutters and the nearby settlement of Wallis Plains. It was here that Howe realised he had been following the Hunter River. Howe's exploratory journey had discovered a route from the Hawkesbury and the route of the river had now been traversed from Doyles Creek to the sea. In the course of this journey large tracts of land were discovered that were instantly ready for grazing and farming practices. Governor Macquarie gave Howe permission to graze his flocks on St Patricks Plains and granted him 700 acres of land as a reward for his discoveries. In 1822, this promised 700 acres of land was located on the eastern side of the present town of Singleton (Wood 1972).

Settlement in earnest began in the early 1820s when the region was opened for farming. The best agricultural land was granted in a period from 1823-1827 when approximately 25% of the land was converted to freehold title by grant. The initial pattern was for freehold estates to be established along the major tributaries of the Hunter and for the Crown Land in between to be grazed (legally or by squatting). These estates formed the base for squatting settlement of the Liverpool Plains and New England.

The distribution of land grants in this area promoted disparity with the loss of hunting grounds, burial sites, ceremonial sites, etc. Furthermore, wildlife dwindled as a result of logging and grazing. By 1840, the Aborigines began killing stock to supplement their food supply, and the settlers retaliated. Hostilities increased on both sides as Aborigines resisted being driven off the land and the settlers protected their properties and lives. The Aborigines attacked settlers and property, while the government troops and native police undertook a number of massacres, most notably the Mt Mackensie massacre, which saw hundreds of people thrown off a cliff. By 1860, legislation has led to official land grants throughout the area promoting urban growth and further ousting Aboriginals from the area. Timber became the main industry around the region. By the late 1870's the district had developed into a thriving population based on pastoralism, fishing, farming and timber.

Wheat, wine and tobacco growing were important produce of the district in the initial stages of settlement, while agricultural pursuits broadened to include sheep and cattle. The rapidly growing importance, and the spread of sheep over the country is illustrated by the fact from 1819 to 1835 the annual export of wool from New South Wales increased from 71,299 lbs to 3,778,847 lbs (Wood 1972:207). In 1862 George Loder established a meat preserving works and by 1869 meat and meat extracts were being exported to England. By the early 1900's the agricultural pursuits included dairying for butter and cheese and vegetable growing. Coal was mined from about 1870, and in the Rixs Creek area 16 separate coal mines were in operation. Also at Rixs Creek coke was manufactured for Cobar copper smelters until about 1919.

Major clearing in the region occurred after the land was subdivided in the late 1870s. The Great Northern Railway reached Muswellbrook in 1869 increasing the numbers of people moving through the Hunter Valley. The primary impact of clearing would have been erosion and changes in hydrology as more sediment was dumped into the system. It is likely that the impacts would build up with little

apparent evidence of change followed by a single catastrophic event during which there would be a period of rapid erosion and degradation. The erosion would continue unless the catchment reached equilibrium.

During the 1950s and 1960s, the districts economic activities were based on, dairying, beef cattle, vegetable and fodder farming. The post war demand for electric power and the development of open cut methods for mining coal resulted in the exploitation of the large deposits of steaming coal found close to the surface in the Singleton area. Construction of the Liddell Power Station commenced in 1969 and from the mid-seventies more than ten major open cut coal mines have commenced operation. Bayswater Power Station began construction in 1981 and was in full production by 1985.

4.2 Summary Thematic history

4.2.1 Preamble

An Aboriginal thematic history of the CCLGA has been developed to provide a useful context for documenting and identifying, and then interpreting and understanding, known and potential places of Aboriginal heritage value. The thematic history establishes the historic context within which key events and activities occurred and identifies the places where they happened.

The thematic history "A thematic history of the Aboriginal People of Cessnock Local Government Area" by Christine Cheater (2013) is presented in Appendix 1. This section of the Phase 1 study is a summary of the main historical events and themes identified in the full Thematic History. It provides a broad overview of the history of Aboriginal people of CCLGA and surrounding areas and includes a map of significant places mentioned in the thematic history in Figure 6. Some of the places are outside CCLGA.

4.2.2 Themes and Chronology

The Thematic History identifies that historic themes most relevant to the Aboriginal history of the Lower Hunter Valley and the CCLGA are:

- The relationship between the environment and human activities;
- Activities associated with teaching and transmission Aboriginal culture and identity; and
- The role of Aboriginal people in the exploration of the region.

In addition to establishing broad themes for identifying and evaluating places of potential heritage value, various Commonwealth and State Aboriginal heritage assessment guidelines identify the types of places that can hold great meaning and significance to Aboriginal people. They can include:

- Places associated with Dreaming stories;
- Places that are associated with spirituality and cultural activities;
- Places where other cultures came into contact with Indigenous people; and
- Places that are significant for more contemporary uses (DSEWPC Online).

The Aboriginal thematic history of Cessnock City identifies some of these place types and their locations. The themes have been ordered into a chronological narrative under the following headings:

- 'People of the Woods and Mountains' which discusses traditional society and culture and how it was transmitted across communities and from generation to generation;
- 'Invasion' which documents first contact experiences, exploration, Aboriginal reactions to British settlements and frontier violence;

- 'Surviving between two worlds' which discusses the impact of British settlement on Aboriginal communities and shows how Aboriginal people coped with attempts to assimilate them to European lifestyles.

A summary history has been extracted from the full Thematic History and it is outlined below.

4.2.3 People of the Woods and Mountains

Despite its rugged landscape, archaeological evidence suggests that people lived in what is generally now known as Darkiñung country for about 5,000 years before European settlement (**Figures 7** and **8**). Small local bands (usually extended family groups) of 10-20 people lived in camps scattered along the valleys and waterways, utilising resources such as game, fish and various plants. Darkiñung country was criss-crossed by walking tracks, which usually followed creeks or ridge tops and the longest of these tracks led groups from outlying areas past major rock art sites and possibly into ceremonial centres (**Figure 9**).

Family groups used these tracks to visit their neighbours and to get to large social gatherings which were called to discuss important events, hold sporting competitions, initiation ceremonies, increase ceremonies and corroborees, or to form raiding parties on neighbouring countries. These gatherings could range in size from two or three local groups to large ceremonial corroborees that involved the whole tribe. Trade also played an important role at these gatherings. Rock salt from quarries at Wallaby Gully near Cessnock (Needham 1981, p 38) and axes from a pink granite quarry on the western side of Mount View near Cessnock were known trade items (Needham 1981, p 39).

Mount Yengo was, and is, a major site for the Darkiñung people, possibly a creation site. W.J Needham's (1981) study Burragurra: where the spirit walked also noted seven possible ceremonial grounds – two at Quorrobolong, one at Laguna, two at Nulkaba near Cessnock, one at Dairy Arm and one near Payne's Crossing – and one confirmed Bora ground in the Watagan Valley.

There are a large number of rock carvings and cave paintings throughout CCLGA. They are particularly widespread in the Wollombi region and the Watagan Ranges. Major cave painting sites can be found in overhangs in the Congewai Valley, two shelters on Mt Manning, a small rock shelter at Murray's Run near Laguna, a cave at Stockyard Creek and caves in the Corabare State Forest.

Rock carvings are more common than cave paintings and can be found on ridge-top rock platforms, cliff faces and any exposed rock surfaces. The ridge-top platforms often have a line-of-sight to similar platforms on the next ridgeline.

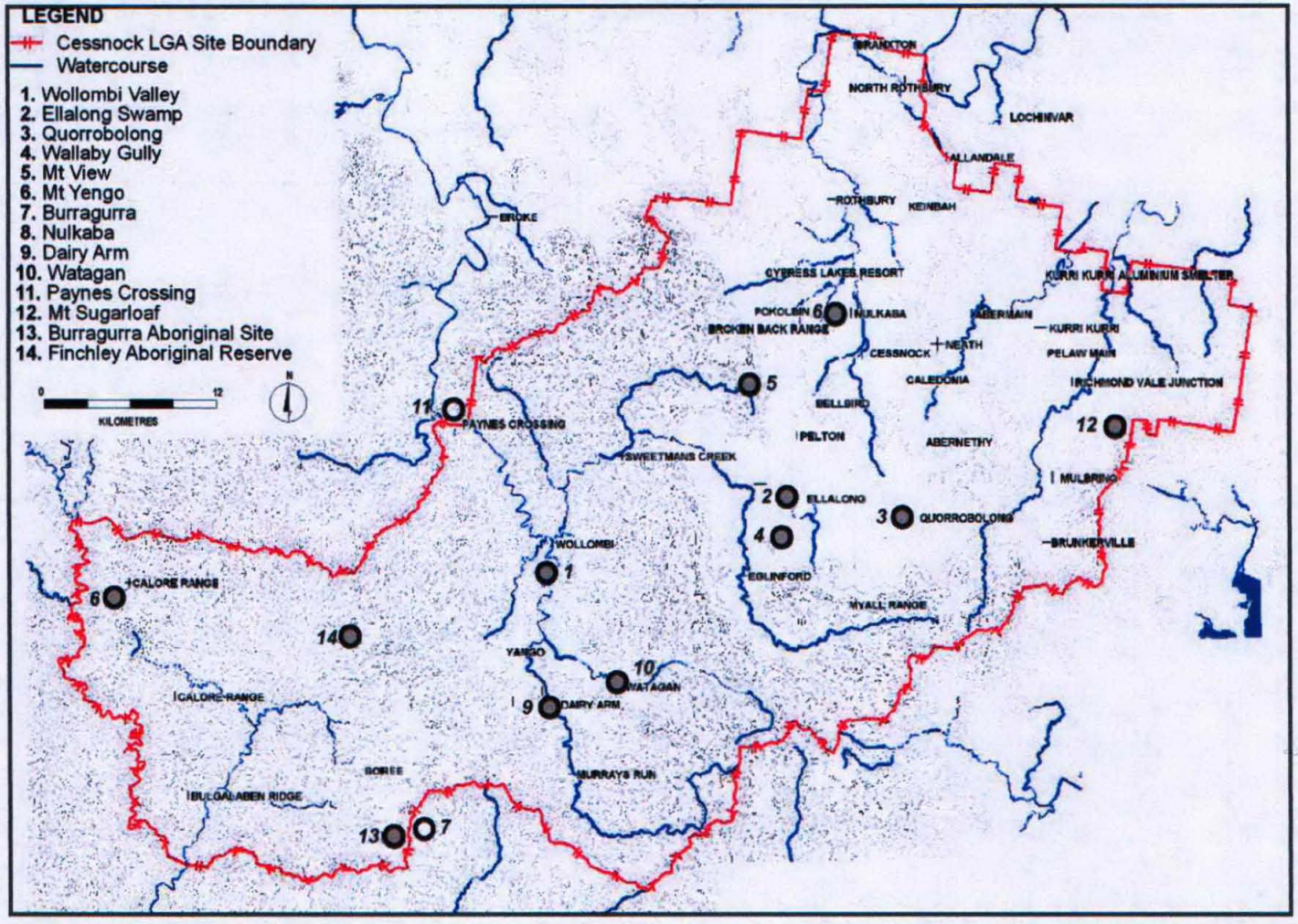

Figure 6. Places referred to in the Thematic History.

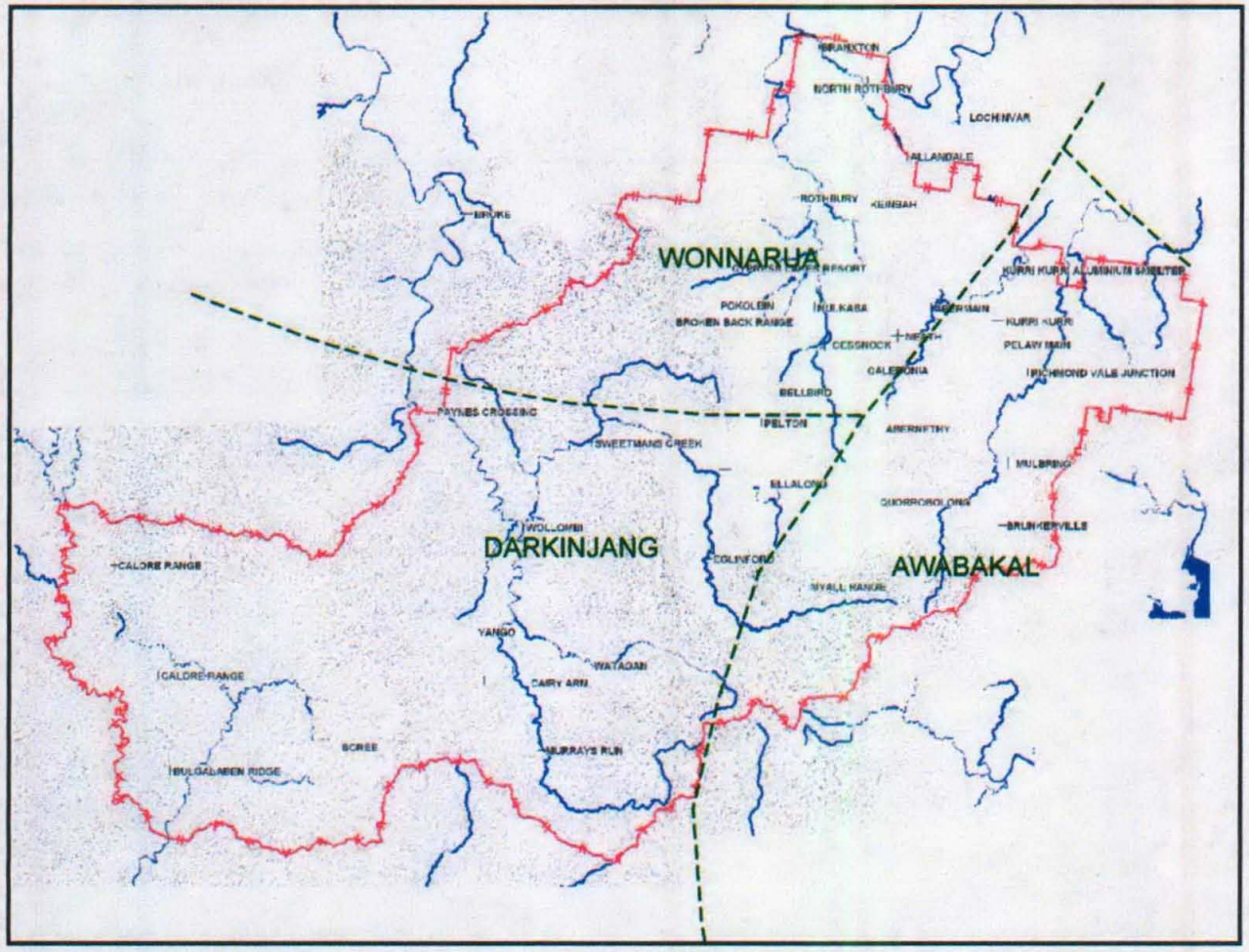

Figure 7. Tribal site boundaries after Tindale(1974).

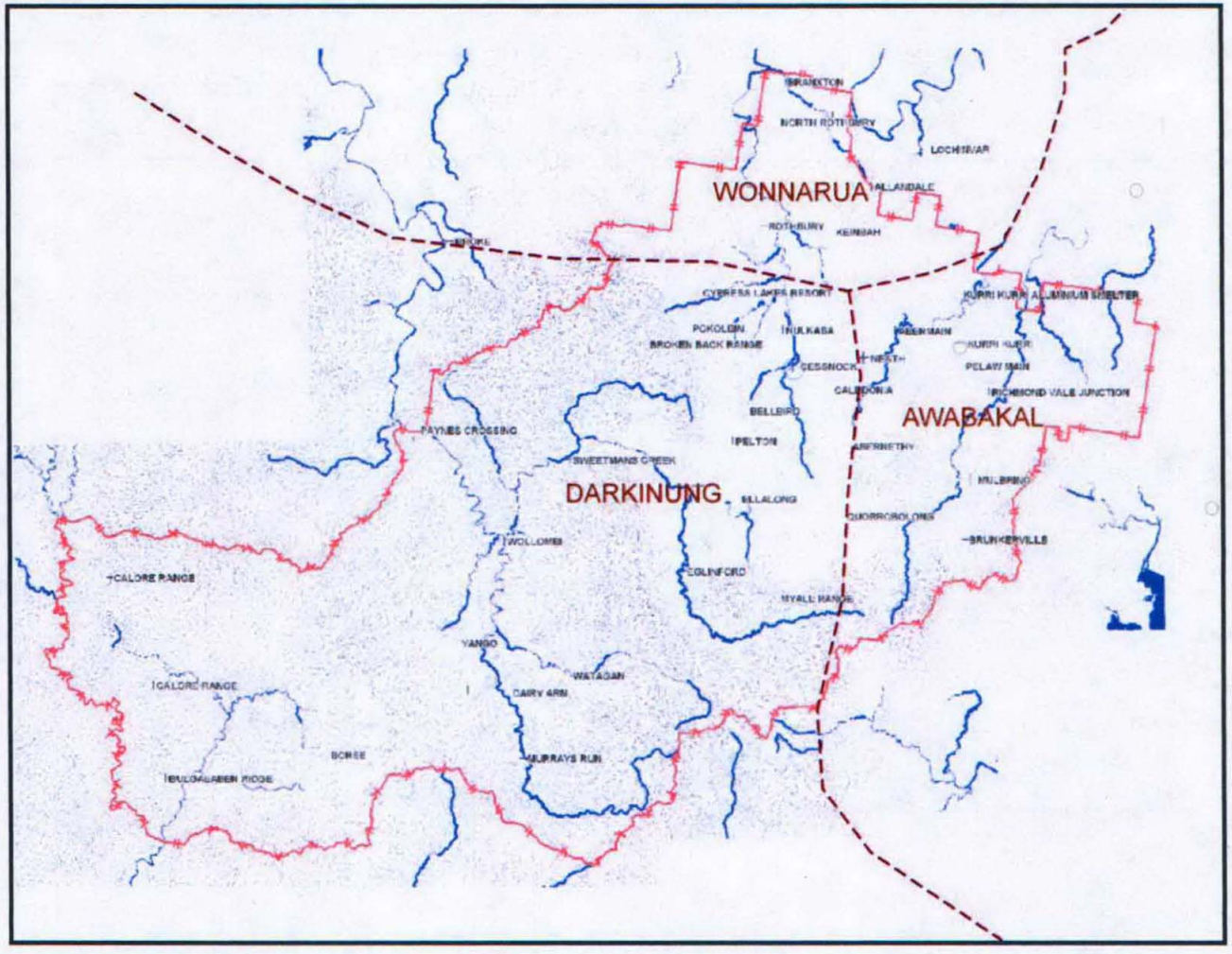

Figure 8. Tribal site boundaries after Horton (1994).

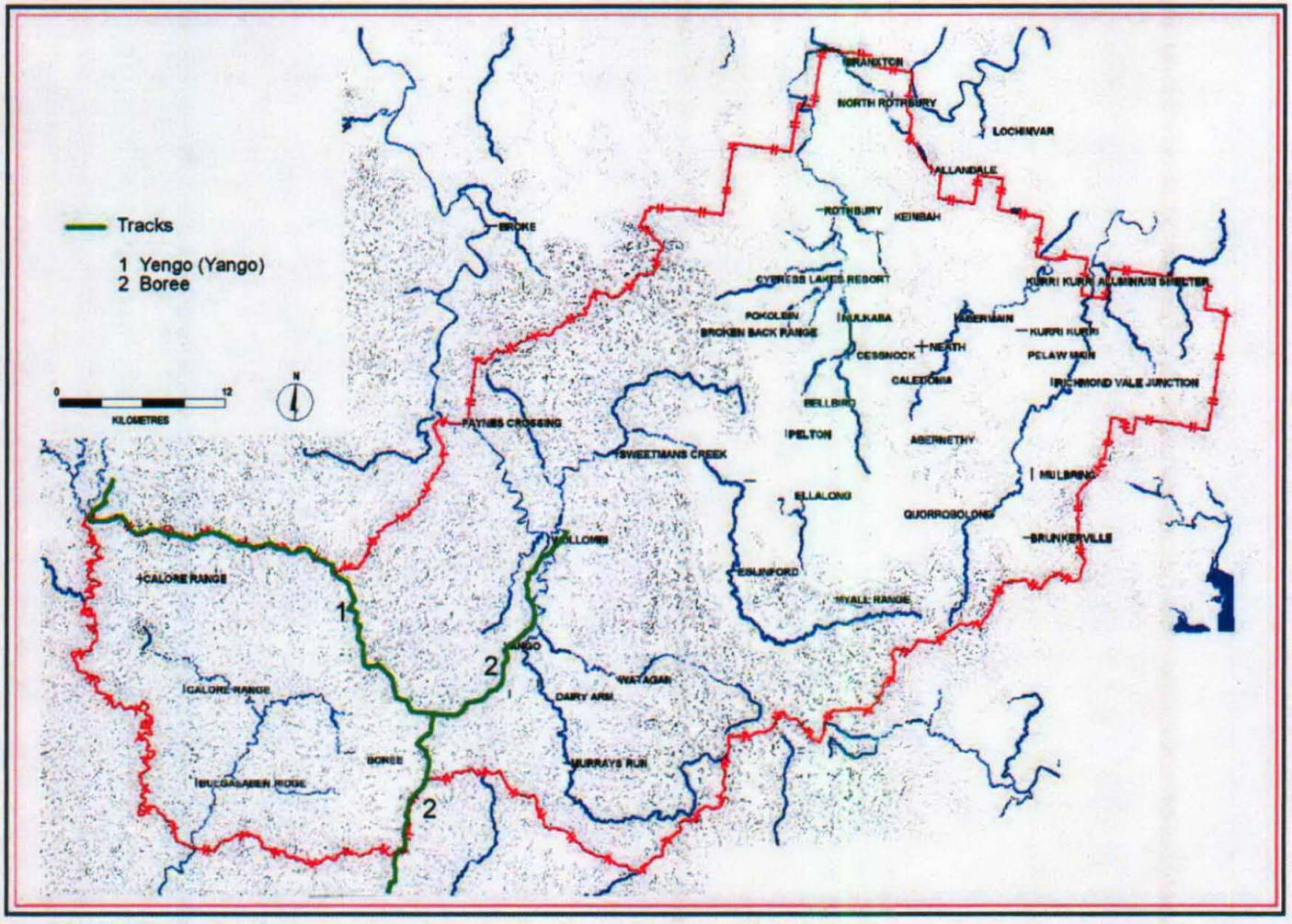

Figure 9. Aboriginal tracks through the subject area.

4.2.4 Invasion

Exploration and Early Settlement

In 1797 Lieutenant John Shortland visited the Hunter River and in 1801 the Hunter Valley was reserved from settlement expansion because of its coal and timber. That, in conjunction with the establishment of a convict settlement at Newcastle, effectively closed the district to rural settlement and pastoral expansion for almost twenty years. (Historical Records of Australia 1925)

A penal settlement at the mouth of the Hunter River was established in 1804. Governor King instructed the penal settlement to concentrate on the production of coal and cedar rather than on agriculture, as 'it would require a Guard to protect settlers up the River from the numerous natives' (King to Menzies, 30 April 1904, Historical Records of Australia, I, V, p 409). Cedar getting parties sent up river had been "severely beaten by a party of Natives up Paterson River (original name for the Lower Hunter)" (Menzies to King, 11 November 1804, Historical Records of Australia, I, V, p 432).

In 1819, the Chief Constable of Windsor, John Howe, undertook to explore and survey the stretch of country between the upper Hawkesbury and Hunter River. On entering the Hunter Valley near Jerry's Plains Howe wrote "It is the finest sheep land I have seen since leaving England ... a great part of it may be cultivated without felling a tree. Even the high land is well clothed with grass and lightly timbered. The grass on the low ground equals a meadow in England," (Campbell, p239). In 1820, Howe undertook a second expedition accompanied by two Darkiñung men, Myles and Mullaboy. The same year, Macquarie granted Howe permission to graze his flocks and herds on Patrick's Plains and granted him a land grant of 700 acres. Other members of Howe's party - Ben Singleton, George Loder, Philip Thorley and Thomas Dargin were also given land grants and permission to de-pasture their stock on Patrick's Plains.

In 1821 the Rev G.A Middleton drove 173 head of cattle into the valley and John Marquet Blaxland brought in 800 sheep and 200 head of cattle to the valley and settled at Wollombi. The same year the convict settlement at Newcastle closed and the Hunter Valley was formally opened to rural settlement. By 1825, most of the alluvial land in the Hunter Valley was occupied and much of the flat floored, wall-side valley of Wollombi Brook had been selected. Congewai Creek and the basin draining into Ellalong swamp were occupied by settlers, as was the headwater region of Ellalong, Black and Wallis Creeks, valleys along the Paterson and Williams Rivers and both sides of the lower Hunter River between Lake Macquarie and Ravensworth.

Over 65% of early settlers in Hunter Valley were newly arrived free settlers in possession of large parcels of land. By 1829 the Hunter Valley was the most populated and intensively grazed region in NSW (Perry 1963).

Aboriginal Resistance

By 1825 there was widespread settlement along the Hunter Valley. Early settlers used either Blaxland's or Howe's routes to traverse the country and move up the Hunter River. Settlement and expansion created tension and conflict occurred. One recorded conflict event elsewhere in the Hunter (Gunson 1974) is related to James Greig, a pastoralist who (according to reports) affronted local Aboriginal people by refusing them access to his farm. The body of murdered man was later found in a shepherd's hut on Greig's farm. It was assumed he was murdered by Aboriginal men from the Wollombi tribe who then retreated south towards Putty where they killed a second shepherd and wounded another.

In response to the killings and other events, a detachment of soldiers was sent from Windsor to the Hunter. The soldiers fired on a 'horde' they came across in a small valley, inflicting several casualties only to find they were from a 'friendly tribe' (Millis 1992 p 55). Soldiers arrested several navvies known or suspected of being involved in the murder but all escape (Australian 10 November 1825).

Dispossession

A series of events from the late 1820s to the 1840s diminished the Aboriginal population of the Hunter Valley, including land within the CCLGA. In 1829-31, a smallpox epidemic with a mortality rate of over 30%, devastated Aboriginal communities along the Lower Hunter River, the Wollombi Valley and Putty region. In 1831 after trip up the Hunter River, Major John Mitchell notes that -" the natives have almost disappeared from the valley of the Hunter" (Mitchell 1838 p 20).

The construction of Great North Road from 1832 further opened up the valley to new settlements and squatting and by 1837 squatters in the Hunter Valley were given licences to "depasture Crown lands beyond the limits of the colony". This pushed Aboriginal people out of the area and/or further decimated populations. The 1845 Legislative Council, Select Committee on the Aborigines, reported that there were 65 Aboriginal people in Windsor District (40 men, 9 women and 16 children), Scone (70-80 people – greatly diminished over the latter ten years by smallpox epidemic), Singleton (around 70), and Paterson (20-30 people).Dunlop (1845 pp 26-31) noted that there were 73 blacks left in the general area around the CCLGA, comprising three tribes – one on the Macdonald River (17 persons), one roving between Ellalong, Cessnock and Kurri Kurri (18 persons), one roaming from Wollombi to Patrick's Plains (27 people)

4.2.5 Surviving

Working for the Whiteman

By the 1830s most of the land along the lower Hunter Valley and arable land in the CCLGA and its surrounds had been settled. The consequent dispossession coupled with the ravages of the smallpox epidemic fragmented Darkiñung society and the consolidation and official recognition of the pastoral leases that took place in the 1840s, deprived Darkiñung people of all legal rights to hunt on their own lands.

The only way they could maintain contact with their country was to find work with the pastoralists or in the small rural towns established to service their needs. This trend intensified in the 1850s when white farm labourers and some pastoralists were lured to the goldfields. As pastoralists became more dependent on Aboriginal labour, a slight shift in attitude occurred. Some pastoralists noted that Aboriginal people offered long-term commitment to the land and tolerated a return to some of their traditions as long as they did not interfere with the running of the station.

The types of work Aboriginal people undertook included stockmen, shepherds, shearers, farm labourers and gardeners. Women worked as domestics or child carers, some men crewed on passenger and cargo vessels running along the Hunter and Hawkesbury Rivers and some worked guides and trackers, as well as gangers and linesmen for the railways.

Protectionism

In 1881 George Thornton was appointed as Protector of Aborigines in NSW. He recommended that reserves be set aside throughout the state, and that the estimated 9,000 Aboriginal people living in New South Wales at the time be encouraged to move onto these reserves for their own protection. In 1883 the Aborigines Protection Board was established to administer the reserves.

By 1939 there were over 180 reserves in New South Wales. In most cases they were small with housing consisting of humpies made from iron roofing. While a few revocations of reserves were made in the 1930s and 1940s, it was not until the 1954-64 period that there was another wave of revocations. This seems to relate to the policy of assimilation and involved the removal of Aboriginals from traditional reserves to 'new' reserves (aka fringe camps) set aside in nearby towns.

Living on the Reserves

There were no Aboriginal reserves established within what is now the boundary of the CCLGA, but Aboriginal people from the area were known to have been moved onto the following reserves:

- Sackville Reach on the Hawkesbury River, a 150 acre reserve now within the Hills Shire that operated from 1896 to 1946;
- Singleton Aboriginal Reserve (also referred to as St Clair), 24 acres near Bourke's Gully that operated from 1893;
- An unnamed Reserve 1.5 miles from Singleton of 320 acres which operated from 1889;
- Hunter River Aboriginal Reserve near Singleton which operated from 1896;
- Glennies Creek, also within Singleton, a 58 acre reserve which operated from 1890;
- East Maitland, a small 3 acres reserve that operated from 1896 to 1959; and
- Broughton Creek, also in East Maitland, an 84 acre reserve that operated from 1896 to 1959.

Jack Brook (1994) notes that some Aboriginal people from the Cessnock region also moved further afield to the reserves at La Perouse in southern Sydney and Cummeragunja on the Murray River.

Losing Children

The Aborigines Inland Mission founded by Retta Dixon Long established an Aboriginal girls' orphanage and a boys' home in Singleton in 1906. Some children at the orphanage were transferred to Parramatta Girls Home and Kinchela Boy's Home after it closed in the 1920s. (Vickers 2005).

4.2.6 Standing Strong

As no reserves were established, the documented history of Aboriginal people within the present day CCLGA boundary ends in the early 1900s. Links with the CCLGA are now mostly traced through family and oral histories.

In the 1920s the Aborigines Progressive Association was established to protest child removals and loss of land on St Clair reserve (in the neighbouring LGA). The chief spokesperson was Fred Maynard, a Hunter River Koori whose father farmed land on the reserve.

Since the 1960s civil movements, efforts have been made to revitalise the Darkinung, Wonnarua and Awabakal languages and an annual corroboree has been held in at Wollombi for the past 20 years.

4.3 Places and Historic Themes

There are no specific post-contact places of Aboriginal cultural significance such as missions and reserves within the current boundaries of the CCLGA. There are, however, many known sites of traditional or pre-contact associations and heritage value and these mostly embody and demonstrate the themes of:

- The relationship between the environment and human activities and

- Activities associated with teaching and transmission Aboriginal culture and identity.

Exceptions to this may be the Finchley Aboriginal Area (**Figure 10**) and the Burragurra Aboriginal Site, both of which primarily have heritage values associated with the pre-contact period, but have on-going significance for Aboriginal people. The special protection afforded to these two sites is an indication of the awareness, and importance, of an Aboriginal presence within the CCLGA during the final decades of the twentieth century.

A search of records for Aboriginal missions or dedicated Aboriginal Reserves within the CCLGA returned no results. Such reserves and missions were present in the LGAs that border the CCLGA, with the highest concentration being in the Singleton where a number of missions and reserves were clustered in the Singleton-St Clare and Mt Olive areas. It is possible that many Aboriginal people from within the current boundary of the CCLGA moved to reserves and missions outside the LGA during the late nineteenth and early twentieth centuries. Census data collected by the Aborigines Protection Board indicates the presence of a single Aboriginal person in Cessnock in 1910 (57 individuals were listed for Singleton). Similar low numbers are recorded for the preceding and following decades. It is also possible that Aboriginal people remaining close to their country within the LGA did so by 'passing' as 'white'. The way that Aboriginal people were forced to at least publicly deny their Aboriginality to escape the scrutiny of the authorities and try to carve out a life for them and their families is well documented in other areas around Australia and is likely to have been a reality in this region also. In such cases where people used this strategy successfully there is little documentary evidence of them and their families and the only source of information may have been through family stories that have been handed down.

Any post-contact sites that may be of significance to Aboriginal people within the CCLGA are more likely to be identified through community consultation and intensive site specific research. Knowledge of places that may be important to contemporary Aboriginal communities such as formal or informal residential sites, or pastoral properties on which Aboriginal people lived and worked, may not have been committed to any formal written record but might be able to be identified through oral histories or detailed site specific research.

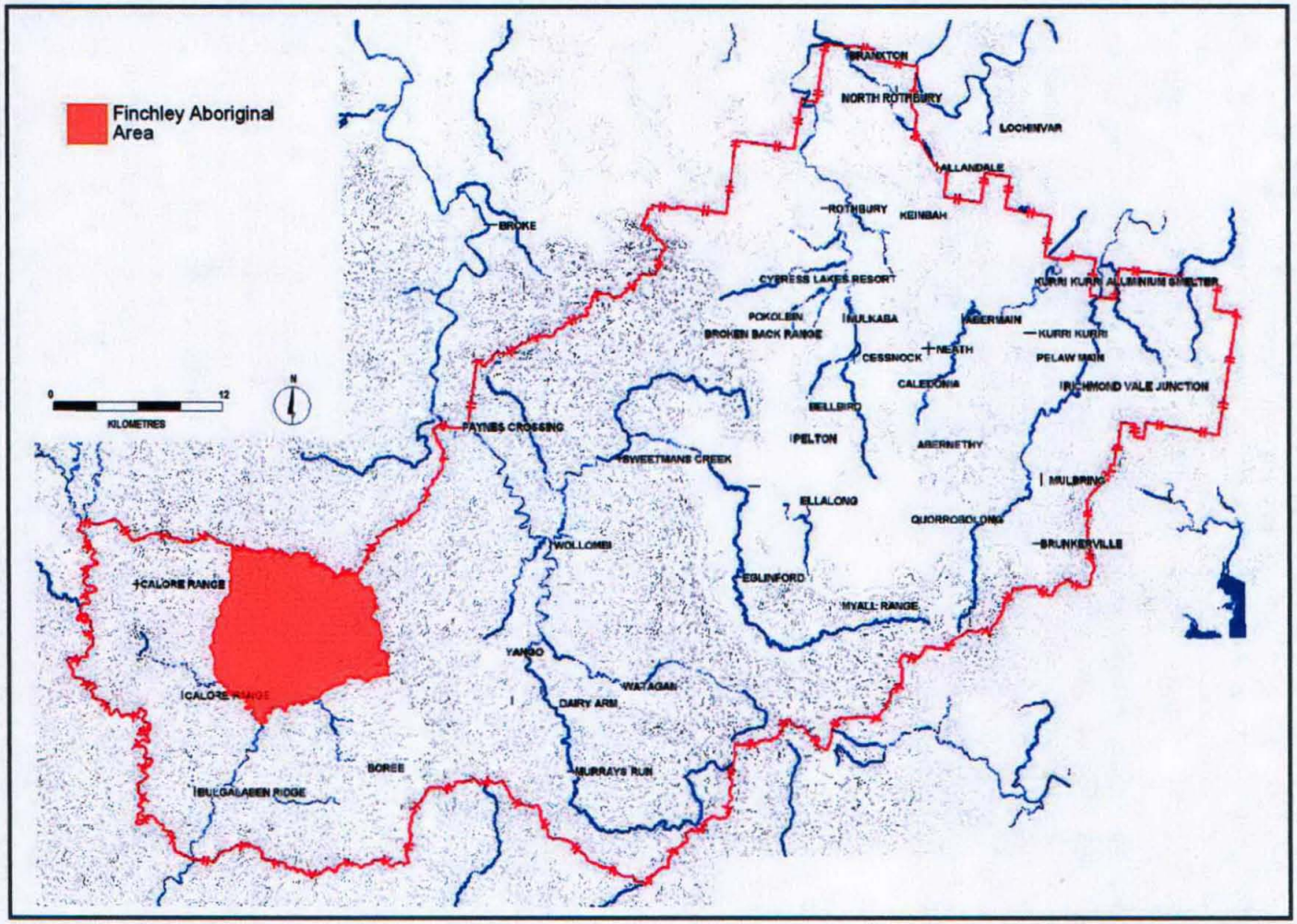

Figure 10. The Finchley Aboriginal Area within the Cessnock LGA.

5 ARCHAEOLOGICAL CONTEXT

5.1 Preamble

As discussed in Section 3, the CCLGA encompasses portions of the Hunter, Wyong and Yengo sub-bioregions of the Sydney Basin bioregion. The archaeology of the Sydney Basin has been well documented over the past 30 years and some 1,097 sites have been recorded and registered on the OEH Aboriginal Heritage Information Management System (AHIMS) in the CCLGA. This reflects both the wealth of archaeology in the region and the number of archaeological investigations undertaken.

Archaeological context is established by examining local and regional trends in the distribution and character of known sites in relation to environment and topography. This, in turn, can indicate the occupational history of the area, trends in the nature and survivability of the archaeological record and the patterns of site distribution across the region. The Hunter and Wyong sub-bioregions exhibit similar archaeological patterns and for this reason, discussion of these two sub-bioregions has been combined. The archaeology of the Yengo sub-bioregion is distinctively different and the archaeological context for this area is discussed separately.

Appendix 2 identifies and reviews the sources used to establish the archaeological context outlined below.

5.2 Research and Analysis

5.2.1 Regional Context - Summary

Archaeological work in the lower Hunter Valley region started as early as the 1930s with the research of Frederick McCarthy of the Australian Museum. Prior to this time, only a few local individuals had taken an interest in the prehistory of the region. W. H. Mathews, a surveyor, is one such example. He left accounts and drawings of some of the Aboriginal "relics" he found (Moore, 1970). In the 1940s McCarthy and Davidson (McCarthy and Davidson, 1943), began locating Aboriginal sites in the terraces and slopes along the Hunter River near Singleton. These early surveys were research-funded projects with the specific aim of gaining an understanding of Aboriginal occupation in the area and placing it in a regional cultural sequence. Helen Brayshaw completed her honours thesis on the material cultural of the Hunter Valley Aborigines in 1966 and kept working in the area over the next two decades.

In 1965-1967, the Australian Museum sponsored a survey that found several types of sites; painted rock shelters, rock engravings, axe-grinding grooves, stone tools and manufacturing sites as well as habitation sites (Moore, 1970). Moore excavated a series of sites to investigate the subsurface nature of open scatters as well as rockshelters. Moore's work was a research project, with the aim of reconstructing the prehistory of the Hunter Valley's occupation by Aboriginal people. The Hunter Valley had been chosen by the Australian Museum as it had not been previously systematically surveyed as had other areas around Sydney, and it was close to the Museum, allowing longer field trips.

From the late 1970s onwards, most of the archaeological work in the Hunter region has been done as a part of Environmental Impact Assessments (EISs) for development proposals. Initially these studies were general in nature but they gradually became more sophisticated, with many including intensive surveys and follow-up test or salvage excavations. Most development related investigations did not

(and still do not) occur within research or thematic contexts, and as such, much of the recent work undertaken in the Hunter is difficult to relate to broader questions and research about landscapes and places of known or potential Aboriginal heritage significance.

Work to date, however, has generally identified the types and distribution of Aboriginal archaeological sites throughout the Hunter Valley and identified that the distribution, density and size of sites is largely dependent on environmental context. For instance, middens are found in close proximity to marine, estuarine and less often, freshwater bodies. Rock shelters are only found in areas of exposed sandstone escarpment, and grinding grooves are found in areas of exposed flat beds of sandstone.

In a study of known sites in the Hunter region, Hughes (1984), concluded that:

- Sites would be found across the entire Hunter Valley;
- Several site types exist, the most common being open artefact scatters;
- Artefact scatters are most likely to occur on creek banks, especially at creek junctions, with low frequencies found over 100 metres from creeks and on hill slopes and crests;
- Sites will generally decrease in size as associated watercourses decrease in catchment (stream order) size; and
- Most archaeological evidence dates to the mid to late Holocene; and technological analysis of stone artefacts may assist in relatively dating sites that cannot be directly dated.

Subsequent investigations (post-1984) have tended to confirm the patterns described above. Environmental and topographic contexts are important determinants of the size and nature of archaeological sites in the Hunter Valley. The most commonly reported pattern in the lower Hunter is the frequency of open artefact scatters found near watercourses.

Archaeological surveys in the Hunter Valley indicate a high density of open artefact scatters along the Hunter River and associated drainage networks. As a result of cyclical flooding, notably the 1949 and 1955 floods, artefact scatters are often buried by more recent alluvial and colluvial deposits. This means that artefacts are often found in areas of sub-surface exposure, such as those caused by erosion.

It has been argued that the concentration of artefact scatter sites along watercourses is a result of sample bias or a function of increased exposure and visibility caused by erosion in these areas (Kuskie and Kamminga, 2000). Barber (1993), however, showed that the pattern was real rather than just a function of bias or increased exposure of artefact-bearing deposits along creeklines. Barber excavated a representative sample of all landforms adjacent to Bettys Creek, north of Singleton, and found 62% of sites were along creeklines even though these areas represented only 22% of the survey area.

5.2.2 Local Context - Summary

Most Aboriginal archaeological assessments and studies conducted within the CCLGA and its immediate context have been undertaken in association with proposed housing, infrastructure, light industrial or mining development proposals. Most were concerned about specific places and most have occurred within the Hunter and Wyong sub-bioregions. In contrast, numerous research studies have been undertaken in the Yengo sub-bioregion due to an ongoing research interest in its art and shelter sites. The majority of the studies in the Hunter and Wyong sub-bioregions have included site survey and some archaeological excavation.

The following is a general summary of the information obtained from a review of select and key studies about archaeological site patterning across the Hunter, Wyong and Yengo sub-bioregions (refer to **Appendix 2**). It applies to the sub-bioregions within and outside the boundary of the CCLGA.

Wyong and Hunter Sub-regions

- Archaeological investigation of the Hunter and Wyong sub-bioregions has been fairly extensive, especially in areas developed for residential, mining and viticulture purposes. Investigations have included site surveys, excavation and salvage works. From these studies, numerous archaeological models have been developed, including those by Hughes 1982; Koettig 1983 and Kohen 1994.
- The models generally indicate that regardless of landform type, stream order proximity is the primary determiner of the scale and complexity of archaeological sites. The number of sites in a given area and sites with higher stone artefact densities (>100 artefacts per site) occur near high order streams and drainage lines, while less sites in a given area and lower densities of artefacts per site occur near low order streams/drainage lines.
- The excavations and stone artefact assemblages in proximity to higher order streams/drainage lines also show evidence of a variety of tool types and repeated occupation over time whereas the stone artefact assemblages in sites near low order drainage are less varied (as well as less in number) and appear to indicate more transient and casual occupation. The scale of occupation near high order drainage lines has been attributed to the greater number of resources in these areas.
- High densities of artefacts have been principally found on lower slopes, alluvial floodplains next to high order streams and on middle to upper ridges. Some of these high density sites show evidence of knapping (stone tool making) activities. However, low density artefact scatters have been found on the surface of all landforms including creek banks, creek terraces, flats, lower and upper slopes, elevated spurs, crests and ridge tops. These results are indicative of a 'background scatter' of occupation occurring across the region with sporadic areas of intensive or repeat usage.
- High density open artefact scatters occur along the Hunter River and associated stream/drainage networks. This landform is subject to cyclical flooding which can result in archaeological material being buried by alluvial and colluvial deposits. This means that archaeological material is often not visible on the ground, but can be found in areas of sub-surface exposure, such as those caused by erosion.
- Regardless of landform, it has also been shown that elevation is a more important determining factor in the location of archaeological sites than aspect.
- Several excavations revealed artefacts made from a raw material from a known quarry (such as Nobbys tuff), even though it was far from the site of the excavation. This indicates that Aboriginal people used a number of raw material sources for toolmaking (most notably silcrete, quartzite, tuff and indurated mudstone) and that preferred tools/materials were carried where people went.
- Analysis indicates that local availability of raw materials is also a key factor in Aboriginal occupation and site distribution. In an overview of Hunter Valley lithic (stone artefact) assemblages Baker (1992), has observed that artefacts are generally made from indurated mudstone and silcrete, with Nobby's Tuff common in the coastal zone. Baker also notes that high quality raw materials at Hunter River gravel point bars, generally result in abundant flaking debris on the sides of watercourses with a stream order of two or higher. Such locations were important sources of raw material for stone artefact manufacture.
- It has been argued that the concentration of sites along watercourses is a result of sample bias or increased exposure and visibility due to erosion in these areas. Despite the evidence of survey

bias, Barber (1993) showed that the pattern was real rather than just a function of bias or increased exposure of artefact-bearing deposits along creek lines. Barber excavated a representative sample of all landforms adjacent to Bettys Creek and found 62% of sites were along creek lines even though these areas represented only 22% of the survey area.

- Following the trend of the archaeology of the Sydney Basin, the majority of sites in the Hunter-Wyong sub-bioregions typologically dated to the mid- to late Holocene (<6,000 years BP). Some evidence suggests that earlier archaeological sites may, however, occur in the form of rockshelters or sand dune deposits in key resource areas (see Section 5.2.3).

Yengo Sub-region

- Archaeological investigation of the Yengo sub-bioregion is limited. Few site surveys and excavations have been completed in the area due to limited development in the area. The majority of work in the area has been primarily research focused, notably that of Val Attenbrow in the Upper Mangrove Creek area.
- Unlike the Hunter and Wyong sub-bioregions, archaeological site patterning is not strictly related to stream order.
- Studies across this region have tended to focus on the individual characteristics of sites, rather than on site patterning across the area. This is because sites will tend to occur in the area in relation to sandstone formations rather than water sources or other variables. Patterning tends to not be as effective in relation to this due to the relatively random and isolated occurrence of shelter formations.
- The main site types across the Yengo sub-bioregion are shelters with deposits, rock art and grinding grooves.
- In their study of the region, Dallas and Sullivan (1993: 28-30) found that: On the Hawkesbury sandstone formations along the river and its feeder creeks the most common site types were Aboriginal art and occupation sites. These were located within sandstone overhangs or shelters. Sheltered, painted art/occupation sites tend to occur more frequently above valley floors or below ridge tops. There appears a general preference for northerly or north-westerly aspects.
- Attenbrow (1981) found that any overhang or rock shelter with reasonable head room, a level dry floor and a depth offering protection from extremes of sun, wind and rain could have been occupied by Aboriginal people in the past. Attenbrow (1981) also demonstrated that 70% of potential archaeological deposits (PAD) recorded within shelters are Aboriginal sites.
- Open artefact scatters are less common due to the lack of open flat areas in the steep sandstone country. However, these site types may still occur and are most likely to be situated on flat terraces adjacent to higher order streams (as in the Hunter and Wyong sub-bioregions).
- Axe grinding grooves are commonly found in creek beds, at the tops of valleys, above or along watercourses and also around rock pools or ridge tops near aquifers.
- Aboriginal burial sites may be located in rock shelter occupation deposits or within soft dry deposits such as sand bodies.

5.2.3 Dating Lower Hunter Valley Sites

Despite over 30 years of investigation within the lower and upper Hunter Valley, few archaeological sites have been dated (**Figure 11**). This is, in large part, due to the nature of the archaeology often occurring in duplex soils, which are problematic to date.

While unpublished, Moffats Swamp is routinely referenced in the consulting literature as one of the earliest appearances of Aboriginal activity for the region. A series of salvage excavations were undertaken at Moffats Swamp near Medowie following the recovery of artefacts during sand dredging

operations of a part of the inner barrier dune (Baker, 1994). The excavations recovered 6,190 artefacts from the upper 100 cm of the dune, which were composed primarily of 'Merewether chert' (now better known by its formal geological name 'Nobbys Tuff') and revealed pre-Bondaian characteristics. Several radiocarbon dates were obtained from the site and provided a basal age around 16,500 years BP (test pit A1, spit 6 - NZA-3016: 14,750 ± 130). However, several other dates from the same level as the basal date showed much younger ages (test pit B3, spit 6 - OZA 257: 7566 ±114; Beta-58866: 6,720 ± 70 - undertaken as part of an earlier study and broadly correlating with spit 3) and inversions (test pit B3, spit 3 - OZA 256: 11,351 ± 143) (Baker, 1994). Further, the charcoal for the dates was, in some cases, obtained from small fragments of charcoal recovered from the sieves rather than during the excavation, so their provenance must be questioned. The chronology of this site is, therefore, unreliable and must be treated with caution, a finding noted by Baker (1994:35) who stated that the dates should only be used as a 'general sense of the temporal parameters of occupation' and concludes the site was occupied between 16,500 and 6,000 years BP.

As part of a pipe-line monitoring project between Singleton and Glennies Creek, Koettig (1986) recovered charcoal in association with 49 artefacts from an open soil profile (labelled 'SGCD16'). Radiocarbon analysis of the charcoal returned dates of ~14ka and 36ka. However, extensive movement of artefacts and charcoal through open soil profiles is now widely documented, and these dates should, similarly, be treated with caution.

A recent excavation of the Warkworth sand sheet, north of Cessnock LGA also proposed an early date for occupation of the region. Scarp (2009) undertook a large excavation (100 sq m) of a sand sheet on the banks of Sandy Hollow creek. The sand sheet was some 500 x 300 m in size and 4 m deep. Excavations identified that no artefacts occurred below 1 m with earlier sand deposits at deeper levels being old and culturally sterile. Some 1,014 flakes were recovered and 2,022 non-diagnostic pieces of stone (some of which proved to be artefacts). While extensive dating and geomorphic interpretation indicated movement of the sand and artefacts within the profile, the authors concluded that two assemblages were present: An upper assemblage characterised as Bondaian and dating to 1-2ka and a lower assemblage (Capertian in composition, although not specifically stated as such) and dating to between 8.4 - 14.1 ka.

More commonly, however, occupation appears to have begun in the mid- to late Holocene (<5,000 years BP). Excavations of Sandy Hollow rockshelter near Denman were undertaken by Moore (1970), who recovered 4,190 artefacts and animal bone (Wallaby, Grey Kangaroo and Brush-tailed Possum) dating to <2,000 years. He also excavated a rockshelter near Wiseman's Ferry, MacDonald River (MR/1) rockshelter, which was initially occupied at ~6ka. Similar results were recovered for Big L rockshelter also by Moore.). POK4 and Paynes Crossing were identified as hearths within wider archaeological sites and were all dated to <3,000 years BP (Williams and Smith, 2013).

A rockshelter near Mount Yengo, YC/1, was excavated as part of McDonald's PhD research (McDonald, 2008). The shelter located on the banks of Big Yengo River, contained over 10,000 artefacts and extensive artwork. The initial occupation was ephemeral and dated to ~6-4.6ka; occupation continued until ~0.5ka and was most intense in the last 1,500 years.

AHMS recently undertook excavations at Oaks Golf Course (OGC1) in the centre of Cessnock (AHMS, 2010). The excavations were focussed on a source-bordering dune adjacent a creek near Mount View Road. They recovered 748 artefacts and 228 manuports found in association with a hearth dated to ~1.2ka.

Further afield, excavations at Wood Gully on the banks of Hexham Swamp recovered a hearth dating to ~2ka (Southeast Archaeology, 2000), and at Williamtown two hearths were found in association with artefact assemblages and dated to <1ka (RPS, 2010),

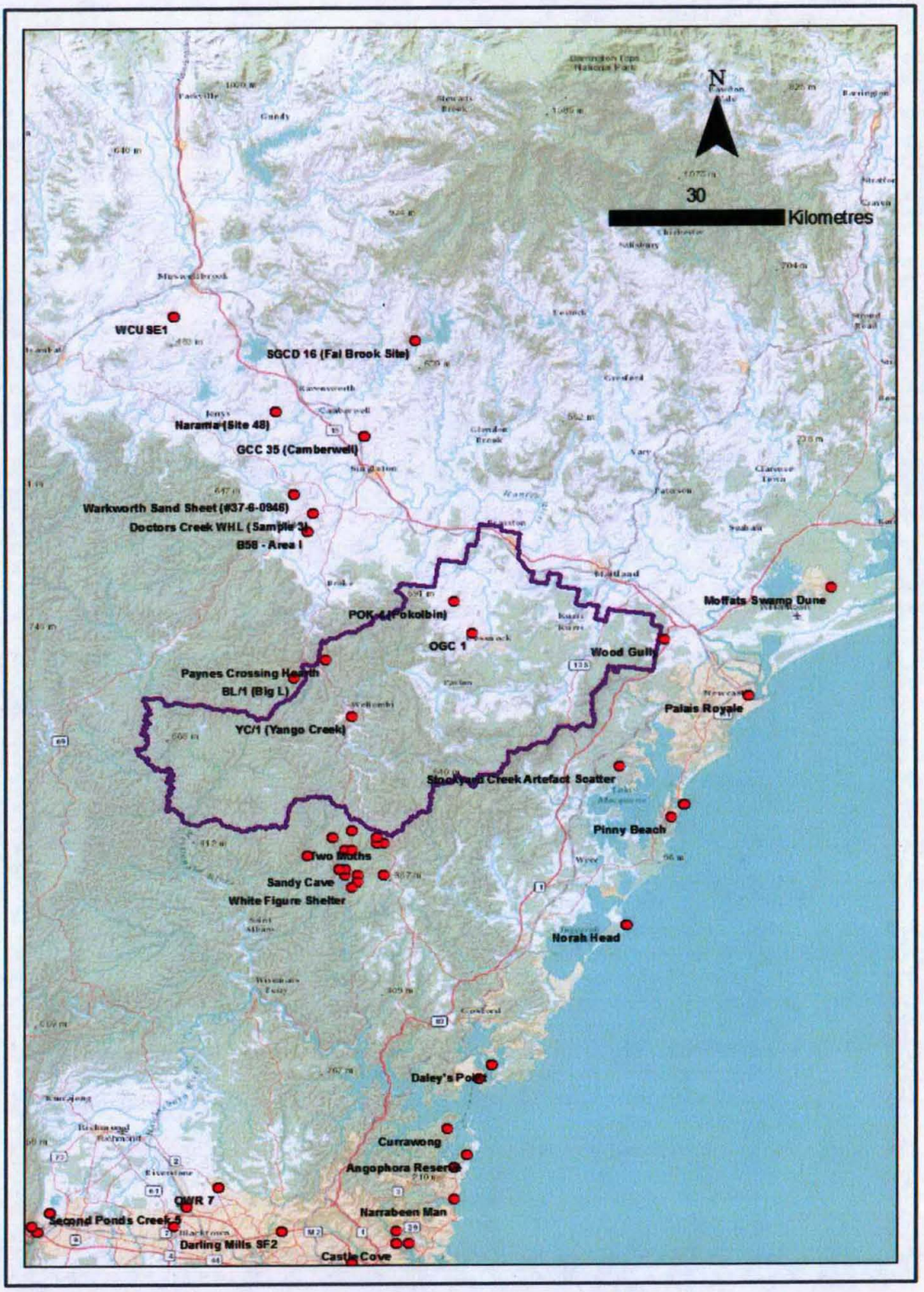

Figure 11. Archaeological sites mentioned in the text, and containing radiocarbon or other forms of chronological information (see Williams and Smith, 2013 for further information).

5.2.4 Archaeological Site Types

Archaeological site types are classified in a number of ways. At the most basic level, sites are divided into rockshelter sites and open sites. Although rockshelter sites are fairly distinctive and definable, an 'Open site' is a fairly broad description. It may be a scatter of stone tools (or even a prediction of them occurring underground) almost anywhere in the landscape or other different and distinctive site types such as grinding grooves or engraved rock art on open slabs of sandstone. The presence or absence of stone artefacts is also often a defining factor, although it is worth pointing out that almost any site is likely to have at least some associated artefacts (recorded or not) as at least some discard or loss of this most ubiquitous and practically indestructible marker of Aboriginal archaeology is likely to have occurred anywhere that Aboriginal people stopped or gathered for any length of time.

Any one site (or close group of linked sites described as a 'site complex') can contain several different site type classifications. For example, a rockshelter may contain rock art on the walls, artefacts on the floor surface or outside the shelter and be predicted to contain faunal remains and further artefacts in the accumulated deposit inside (a 'potential archaeological deposit' or PAD).

A basic description of terms used in relation to different site types is provided in **Table 1**.

Table 1: Description of Archaeological Site Terms

Site type	Description
Open Camp Site	**An open camp site is typically a surface scatter of stone artefacts with further presumed subsurface material associated with it. The term is considered to be something of a misnomer insofar as the allusion to camping tends to suggest an overnight or 'domestic' use, whereas flaked stone material may occur in highest density where artefacts were manufactured. While the term is no longer used in AHIMS site recording, nor used by many archaeologists, its persistence in reporting gives cause to provide definition here**
Isolated Find	**An isolated find is the location of a single artefact find. It may be interpreted to be a part of the essentially ubiquitous 'background scatter' of artefacts across most Australian landscapes (i.e. genuinely isolated) or representative of further subsurface undetected material.**
PAD	**The term 'potential archaeological deposit' when first applied in Sydney regional archaeology in the 1980s referred to rockshelters that were large enough and with enough accumulated deposit to allow archaeologists to presume that subsurface cultural material was highly likely to be present. Since then it has come to be include open site contexts where the same prediction can be made – for example a level raised terrace area near permanent water where inferences from regional patterns suggest artefacts will occur. PAD listings are also sometime made for administrative reasons as a way of generating an AHIMS site number for the purposes of a permit application for test excavation (and in some cases in the past for a precautionary 'consent to destroy' so that unanticipated finds would not hold up development).**
Stone Quarry	**Stone quarries in the Sydney region are principally outcrops of silcrete, quartz of other crystalline rock in open contexts. Stone was also sourced from river gravels and pebbles in conglomerate sandstone although these sources tend not to be recognised as sites.**
Ochre Quarry	**Ochre is typically a clay that is tinted by hydrated iron oxide that is used dried and powdered, although other oxide pigment sources are also given the name. A site may be listed as an ochre quarry based on clear evidence of its extraction, oral history, or just a presumption that its use would have been likely. In some cases, sites have been listed based on entirely modern use by the contemporary Aboriginal community.**

Site type	Description
Grinding groove	Grinding grooves occur mostly in fine, even grained sandstone that has been used as an abrasive for sharpening tool edges or points. This is usually related to ground edge hatchets (or 'axes') although spear sharpening grooves also occur. Grinding grooves are almost always associated with drainage lines (even if ephemeral and not mapped) as water is important in facilitating the grinding process.
Waterhole / well	Waterholes are generally natural formations whereas wells are dug people. They are often found in association with grinding grooves and considered to be natural features in sandstone creek beds where their use by Aboriginal people can be inferred.
Shell Midden	Shell middens are typically coastal sites where large numbers of shellfish remains have been accumulated as food waste near to the resource itself. Middens can occur as large open sites or be considered an attribute of deposits within a rockshelter, usually just denoting that shell has been found along with other remains.
Burial	Burials in the Cessnock region are usually associated with sandy deposits and occasionally in rockshelters. There are only six listed in the LGA although this does not preclude the possibility of human remains occurring, particularly in deeper rockshelter deposits or some of the sandier alluvial river deposits.
Shelter with deposit	Rockshelter are confined to sandstone areas where the shelter is large and dry enough to have been used by Aboriginal people. They often have high archaeological significance because the steady erosion of material from the ceiling of the shelter creates floor deposits that are stratified through time and usually provide for the preservation of organic material such as shell and bone. Rockshelters are also typically where pigment rock art is found and best preserved.
Shelter with art	Rock art in shelters tends to be pigmented art, although engravings do occasionally occur (McDonald 2008). The style is generally described as Simple Figurative Style dominated by crude naturalistic depictions of human and animal motifs. These are done mainly in clay based (e.g. red ochre and white pipeclay) pigments and charcoal. Some stencilling also occurs where pigment mixed with water and saliva was sprayed by mouth over hands, common implements (e.g. boomerangs, hatchets) or animal parts leaving the object highlighted as a bare patch within the pigment (Maynard 1976, McDonald 2008).
Rock engraving	Rock engravings generally occur on large slabs of flat exposed sandstone, although some do occur in rockshelter contexts. As with the pigment art, engravings are generally crude, naturalistic and considered to be part of the Simple Figurative style (McDonald 2008). Most engravings are abraded although some pecking is known.
Scarred tree	Scarred trees typically result from the removal of bark for making implements such as coolamons, shelter panels or canoes (Long 2003, 2005). Some scarred trees have carvings on them although these are not generally known for the subject area. Very few scarred trees have survived to recent times and there are only three listed in the LGA.
Resource Site	Resource use sites have received increasing attention in recent years as the focus of Aboriginal cultural heritage in some areas has shifted from a focus purely on archaeological remains (e.g. English 2000) to one that looks at contemporary culture, continuing practices and cultural revival.

Stone Artefacts

Aboriginal stone artefacts are an important source of archaeological information because stone is preserved for long periods of time whereas organic materials such as bone, shell, wood and plant fibres often decay. Stone artefacts provide valuable information about technology, economy, cultural change through time and settlement patterning. Stone has also been used for 'relative' dating of sites where direct methods such as radiocarbon dating cannot be applied. A technological sequence for stone artefacts for the region was first described in the late 1940s by Fred McCarthy and has since been refined over time by Hiscock and Attenbrow (Hiscock and Attenbrow1998, Hiscock 2002) into the 'Eastern Regional Sequence':

- Capertian – is distinguished by large uniface pebble tools, core tools, horse-hoof cores, scrapers and hammerstones. Backed artefacts occasionally present. Generally dates to before 5,000 years BP.
- Early Bondaian – Aspects of the Capertian assemblage continue, but backed artefacts and ground-edged artefacts increase. Artefacts during this period were predominantly made from fine-grained siliceous stone such as silcrete and tuff. Generally dated from 5,000 BP to 2,800 BP.
- Middle Bondaian – Characterised by backed artefacts, particularly Bondi Points and ground-edged artefacts. Artefacts made from siliceous materials, however quartz becomes more frequent. Generally dated from 2,800 BP to 1,600 BP.
- Late Bondaian – characterised by bipolar technology, eloueras, ground-edged artefacts, and bone and shell artefacts. Bondi points are virtually absent and artefacts are predominantly made from Quartz. Generally dated from 1,600 BP to European contact.

In an overview of Hunter Valley lithic assemblages, Baker (1992) observed that stone artefacts are generally made from indurated mudstone and silcrete, with Nobby's Tuff common in the coastal zone. Baker also notes that high quality raw materials at Hunter River gravel point bars generally result in abundant flaking debris on the sides of watercourses with a stream order of two or higher. Such locations were important sources of raw material for stone artefact manufacture. Outcrops of Nobby's Tuff at Nobby's Head and a site west of Tomago were also important stone sources in the lower Hunter area.

Survivability of the Archaeological Record

The following observations can be made about the nature and survivability of the archaeological record across the Hunter, Wyong and Yengo sub-bioregions:

- Archaeological material is often found in areas of sub-surface exposure, such as those caused by erosion.
- Surface evidence (or the absence of surface evidence) does not necessarily indicate the potential, nature or density of sub-surface material. Extensive excavations have shown that areas

with no surface evidence often contain sub-surface deposits buried beneath current ground surfaces (JMCHM, 2001; Kohen, 1984).

- Due to the limitations of surface surveys, test excavation is often required to establish the nature and density of archaeological material.
- Aboriginal cultural material is more likely to survive in areas that contain remnant portions of the pre-European soil profile, in contrast to landforms that have been impacted by historical or recent disturbances.
- The potential for survival of any archaeological sites will largely depend on the degree of past disturbance.
- Past disturbance to the soil profile can be due to European activity such as clearing, ploughing, grazing, and urban development and/or due to environmental factors such as flooding events, erosion and colluvial movement. These activities may disturb, erode or remove the natural soil profile completely.
- Aboriginal stone artefacts are more likely to survive because stone is preserved for long periods of time whereas organic materials such as bone, shell, wood and plant fibres decay.

A major impact of 170 years of post-contact settlement on Aboriginal sites would have been the destruction of carved and scarred trees, which would have been removed as part of clearing and the construction of infrastructure such as buildings, earthworks, roads, and railways.

5.3 AHIMS database searches

5.3.1 Preamble

A search of the Office of Environment & Heritage (OEH) Aboriginal Heritage Information Management Systems (AHIMS) database was undertaken in May 2012, and the results were finally received on 25 September 2012 (**Figures 12** and **13**). They were provided under an OEH Data License (obtained by CCC with subsequent internal permission given to AHMS to use the data) for use in this study.

5.3.2 Archaeological Site Distribution

Archaeological site types are currently recorded in the AHIMS database in two ways: First of all whether it is an enclosed rock shelter site or an open site; and then by one of 20 different 'features' that it may contain (of which only 14 are recorded for the subject area). A previous system of 'Aboriginal site register type' is no longer recorded but remains as a field in AHIMS data outputs. Statistics on these are presented below in **Tables 2 – 4**. The features present in any one site can lead to multiple entries for a single type and these are counted separately, leading to a greater number of records than the 1,097 sites registered in the LGA (as at September 2012). Sites are listed for the LGA as a whole and then split by whether they are in the Wyong/Hunter or Yengo sub-regions.

Table 2: Sites by 'context' and sub-bioregion

Context	LGA	Hunter sub-bioregion	Wyong sub-bioregion	Yengo sub-bioregion
Open Site	843 (76.8%)	594 (70.5%)	146 (17.3%)	**103 (12.2%)**
Enclosed Shelter	254 (23.2%)	6 (2.3%)	50 (19.7%)	**198 (78%)**
Total	**1,097**	**600 (54.7%)**	**196 (17.9%)**	**301 (27.4%)**

Table 3: Sites by 'feature' and sub-bioregion.

Feature	LGA	Hunter sub-bioregion	Wyong sub-bioregion	Yengo sub-bioregion
Artefact	695 (61.9%)	555 (80%)	81 (11.5%)	**59 (8.5%)**
Stone Quarry	1 (0.08%)	1(100%)		
Burials	6 (0.5%)	0 (0%)	3 (50%)	**3 (50%)**
Habitation Structure	2 (0.2%)	1 (50%)	1 (50%)	
PAD	76 (7.6%)	36 (47.4%)	35 (46.1%)	**5 (6.5%)**
Grinding Groove	72 (6.3%)	15 (20.8%)	11 (15.4%)	**46 (63.8%)**
Waterhole	3 (0.3%)	2 (66.7%)		**1 (33.3%)**
Aboriginal Resource Gathering	4 (0.4%)	3 (75%)	1 (25%)	
Shell Midden	1 (0.08%)			**1 (100%)**
Ceremonial Ring	5 (0.4%)		1 (20%)	**4 (80%)**
Scarred Tree	9 (0.8%)	5 (55.6%)	3 (33.3%)	**1 (11.1%)**
Art Site	250 (22%)	7 (2.8%)	23 (9.2%)	**220 (88%)**
Stone Arrangement	6 (0.5%)		3 (50%)	**3 (50%)**
Aboriginal Ceremony	4 (0.4%)	1 (25%)	1 (25%)	**2 (50%)**
Total	**1,134**	**626 (55.2%)**	**163 (14.4%)**	**345 (30.4%)**

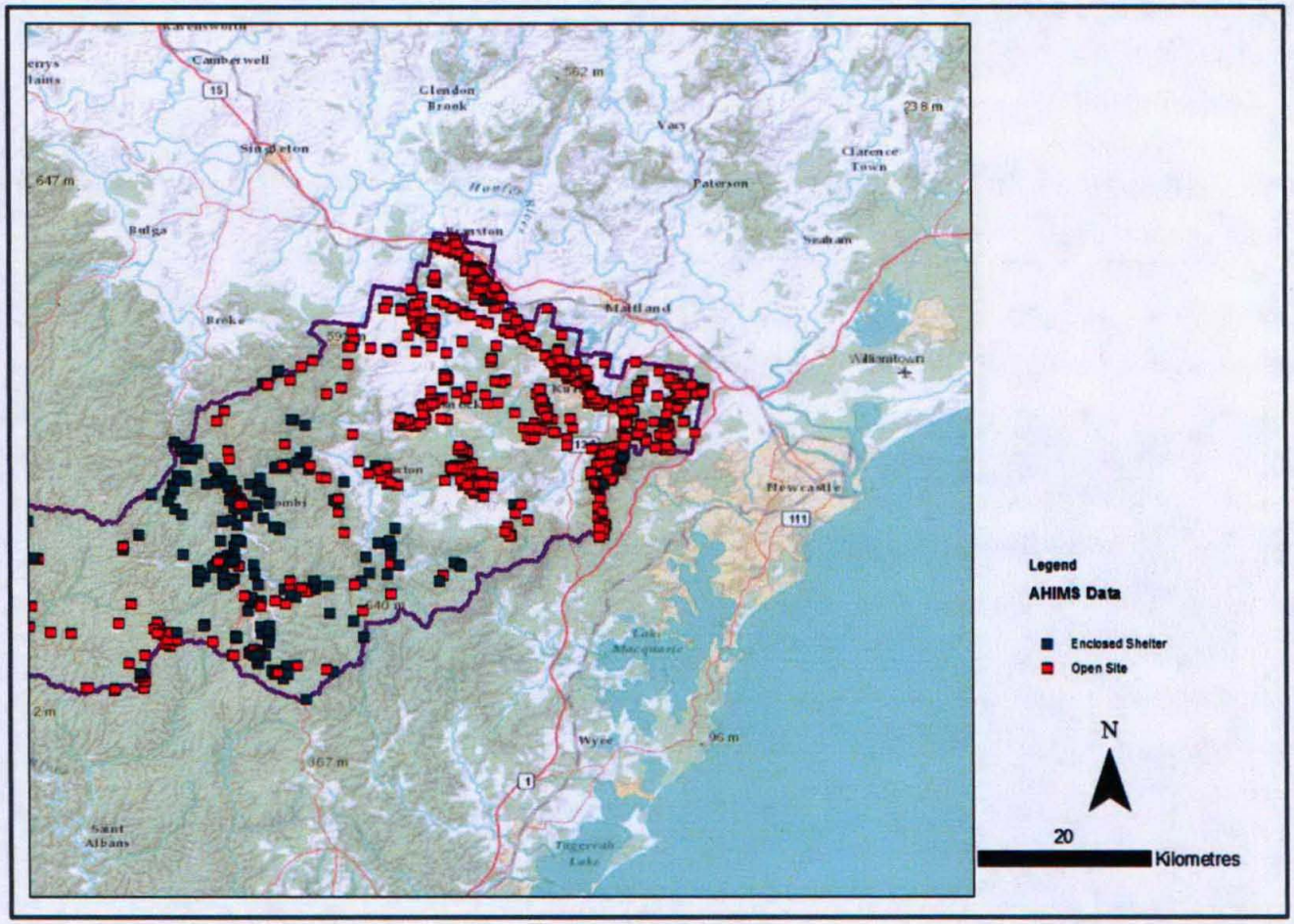

Figure 12 ***Previously documented Aboriginal objects/sites recorded on the AHIMS database with the Cessnock LGA. This map is divided between open and enclosed sites.***

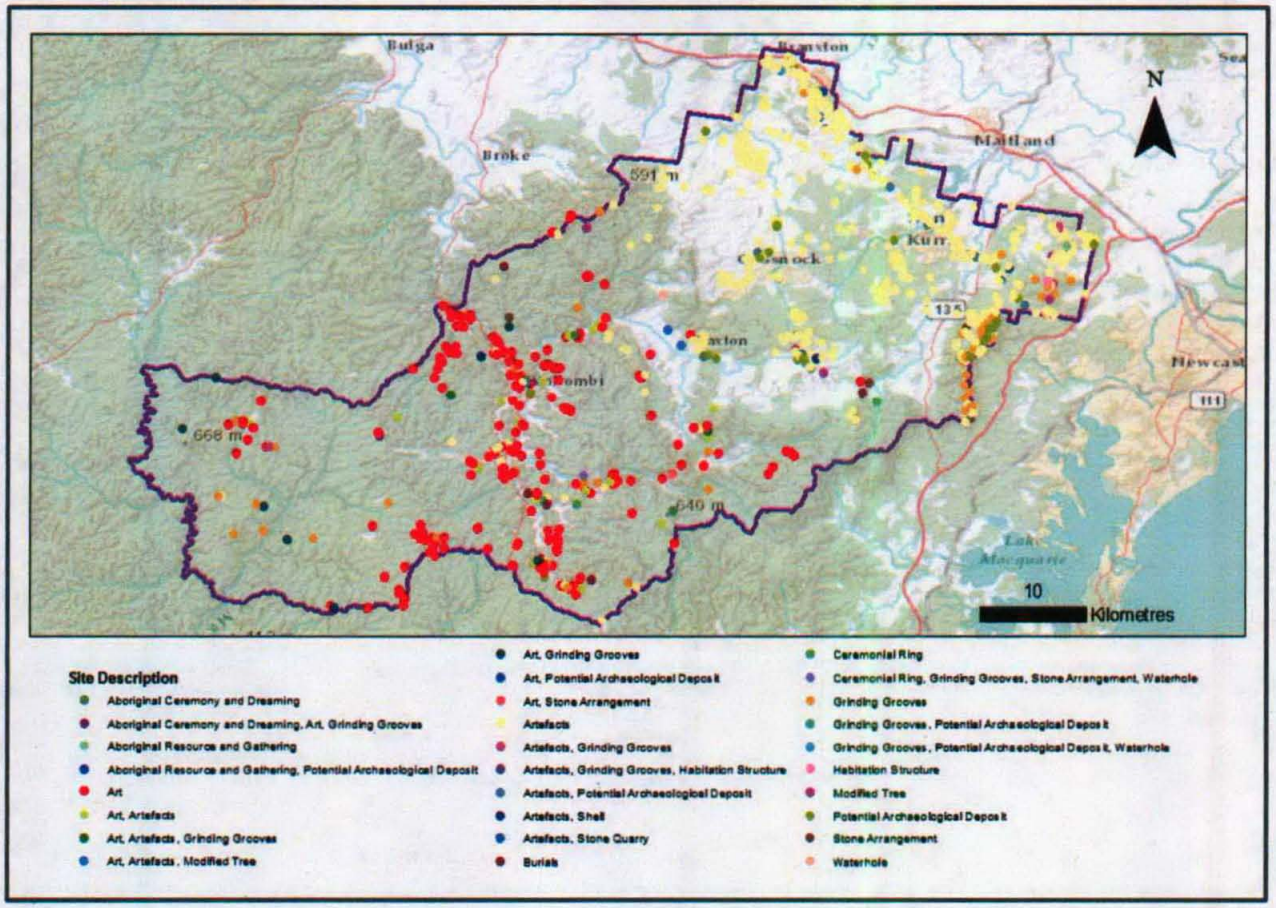

Figure 13 ***Previously documented Aboriginal objects/sites recorded on the AHIMS database with the Cessnock LGA. This map is divided between into site types after Table 3.***

Table 4: Sites by 'type' and sub-bioregion.

AHIMs type	LGA	Hunter sub-bioregion	Wyong sub-bioregion	Yengo sub-bioregion
None given	658 (57.6%)	513 (77.9%)	134(20.4%)	**11 (1.7%)**
Open Camp Site	69 (6%)	55 (79.7%)	4 (5.8%)	**10 (14.5%)**
Aboriginal Area	1 (0.08%)			**1 (100%)**
Isolated Find	32 (2.8%)	26 (81.3%)	2 (6.3%)	**4 (12.4%)**
Shelter with deposit	47 (4.1%)		7 (14.9%)	**40 (85.1%)**
Shelter with midden	1 (0.08%)			**1 (100%)**
Shelter with art	199 (17.4%)	3 (1.5%)	20 (10%)	**176 (88.4%)**
Rock engraving	85 (7.4%)		2 (2.3%)	**83 (97.7%)**
Grinding groove	28 (2.4%)	1 (3.5%)	26 (93%)	**1 (3.5%)**
Waterhole / well	2 (0.2%)	1 (50%)		**1 (50%)**
Scarred tree	1 (0.08%)			**1 (100%)**
Burials	6 (0.5%)		3 (50%)	**3 (50%)**
Carved tree	1 (0.08%)		1 (100%)	
Bora/Ceremonial	5 (0.4%)		1 (20%)	**4 (80%)**
Natural Mythological Area	2 (0.2%)	1 (50%0	1 (50%)	
Stone arrangement	5 (0.4%)		2 (40%)	**3 (60%)**
Historic place or not a site	1 (0.08%)			**1 (100%)**
Total	**1143**	**600 (52.5%)**	**203 (17.8%)**	**340 (29.7%)**

On average, the LGA has approximately one previously recorded site per square kilometre. The Hunter/Wyong sub-bioregions contain by the far the greatest number of sites - about 65% of all sites previously documented with a distribution of approximately 1.3 sites per square kilometre. These sites are primarily open sites and often composed of artefactual material (either artefact scatters or isolated finds). They appear to be largely distributed along the margins of the Hunter River and its tributaries in the northeast of the LGA, with other large concentrations around Branxton and Ellalong (probably as a result of extractive and residential development in these areas). Conversely, the Yengo sub-bioregion has the lowest number of previously recorded sites, around 0.3 per square kilometre (or around one per 3 square kilometres). The sub-bioregion does, however have the highest concentrations of enclosed sites, and sites that retain rarer features, such as natural mythological areas, ceremonial grounds, and an Aboriginal area. The majority of these sites are situated along the valley edges of the Wollombi Brook and Congewai Creek, and encompass the areas of Laguna and Bucketty.

The factors that define the site distribution referred to in the sub-bioregional comparisons relate to whether a particular area has a sandstone or substrate. The Hunter/Wyong sub-bioregion is mostly shale and the Yengo mostly sandstone country, but these are by no means absolute distinctions, with a relatively broad transition area. There are a number of sites in the Hunter/Wyong portion that are sandstone country sites (56 enclosed sites, mostly rockshetlers) even though these generally occur in very low numbers across the majority of the sub-bioregion. Conversely, a number of open sites, frequently artefact scatters of isolated finds, were located in the Yengo sub-bioregion (n=14). The subregional patterns outlined here are therefore less clear than would happen with selected sample

areas in the centre of the two sub-bioregions or if the current mapping were refined to better reflect local intricacies of the geological transition.

It should be further noted that the distribution and significant numbers of previously documented sites within the Hunter/Wyong sub-bioregion almost certainly reflects some form of bias towards areas that have been subject to greater investigation due to development and urban expansion. The inaccessibility of large parts of the Yengo sub-bioregion and associated national parks is probably also a factor in the under-representation of previously documented sites in these areas.

5.4 Archaeological Context - Summary

Hunter/Wyong sub-region

- The majority of recorded Aboriginal sites in the Hunter and Wyong sub-bioregions are open sites composed of artefactual materials (either artefact scatters or isolated finds) and PADs.
- Stream order is of primary importance in determining the density and scale of the sites.
- Sites with low densities of artefacts have been identified on all landforms adjacent to low order drainage lines. These include floodplains, creek banks, elevated spurs, lower slopes, mid slopes and upper slopes. They have been interpreted as evidence of transient use, which in turn is evidence of short term or casual occupation
- Archaeological sites near high order drainage lines occur on lower slopes, floodplains and ridges have high artefact densities and demonstrate a variety of tool types, frequent or repeat use, and complex assemblages.
- Areas of historical and/or modern disturbance (such as buildings, roads, services, market gardening, etc) are severely detrimental to archaeological preservation/survivability. Hence, where disturbance is high, archaeological material is often unlikely to occur.

Yengo sub-region

- The majority of recorded sites in the Yengo sub-bioregion are shelters with deposits, art sites and grinding grooves.
- Any sandstone overhang or cave has potential to contain cultural deposits and/or art. These frequently occur along the margins of major and minor tributaries, such as Wollombi Brook.
- Grinding grooves may occur on any suitable flat outcrop of sandstone with an available source of water, either in a rock pool or in a stream bed.
- Rock art may occur on any suitable flat outcrop of sandstone. Not always, but frequently art is found adjacent areas of long -term occupation (such as major water sources) and/or good view points/lookouts etc.
- Unlike the Hunter and Wyong sub-bioregions stream order is not of primary importance in determining the density and scale of sites. Rather, the geological nature of an area is more important to site distribution.
- Open sites (artefact scatters) are less common in this area, although may still occur on open flat landforms adjacent to water sources.
- Areas of historical and/or modern disturbance (such as buildings, roads, services, market gardening, etc) are severely detrimental to archaeological preservation/survivability. Hence, where disturbance is high, archaeological material is considered unlikely to occur. However, such impacts in this sub-bioregion are relatively minor due to the large amount of national park within the LGA.

6 MODELLING AND SENSITIVITY MAPS

6.1 Preamble

Archaeological predictive models identify, locate and map where archaeological resources are likely to survive. They can apply to small single sites or large areas and can be simple exercises or enhanced by the use of specially designed GIS based spatial models.

GIS based archaeological predictive models are primarily used in development and land use planning contexts to strategically identify constraints (e.g. AHMS 2008a; AHMS 2008b). By doing this, the risk often associated with archaeological resources and sites is decreased and planning processes streamlined. This is because predictive models allow information about the location and likely type and heritage value of archaeological sites to be combined with other environmental and cultural information in a common GIS environment to inform the overall planning process. Models also provide the best chance for areas with a higher potential of surviving cultural resources to be avoided, if possible, or for sites to be located and documented prior to their disturbance.

This study includes the development of two archaeological predictive models to identify areas of archaeological probability within the Hunter/Wyong and Yengo sub-bioregions. The models combine known archaeological information (**Section 5**) and key environmental variables (**Section 4**) within a GIS framework to characterise the natural and cultural landscape and 'predict' where archaeological resources are likely to occur and survive. Specific areas identified in the thematic history (**Section 3** and **Appendix 1**) have also been included in the final models (**Section 6.3**).

This section summarises the rationale, methods, framework and results of the exploration and development of an Aboriginal archaeological predictive models for the Hunter/Wyong and Yengo sub-bioregions. The model was used to identify areas of likely Aboriginal archaeological heritage sensitivity, and hence Aboriginal heritage risk, of land across the CCLGA by highlighting archaeologically relevant environmental factors (such as proximity to water, elevation, etc) and classifying them accordingly.

6.2 Methods

6.2.1 General

The development of the GIS based archaeological predictive models of the sub-bioregions included:

- Collating environmental variable GIS layers (including hydrology, elevation, slope, soils, geology, geomorphology, vegetation, archaeological sites, and ethnographic spatial information).
- Rasterizing environmental variables and their components to allow for equal comparison between vector and raster based environmental variables.
- Ranking or weighting each environmental variable component mathematically, dependent on its ability to influence cultural heritage site distribution.
- Adding selected environmental variable GIS layer together through their mathematical weightings.
- Manually classifying the multiple GIS layers for all the environmental variables into rankings of high, moderate or low (archaeological potential) dependent on each raster pixels overall mathematical value (and hence archaeological influence).

6.2.2 The Dataset

The development of the model included all previously documented archaeological sites with the exception of isolated finds (**Section 5.3**). Isolated finds (n=32) are ubiquitous across Australia and previous models have shown these confuse the modelling process.

Of the 1,097 sites within the Cessnock LGA, 880 were used in the development of the model and the remaining 217 were used to test the model. These 217 sites were randomly selected from the overall dataset to provide statistical rigor in the testing process.

Specific areas identified through the thematic history (**Section 4** and **Figure 6**) were included in the model as an additional layer. They were not used to influence the environmental variables or model, but simply highlighted as of sensitivity based on the findings of the thematic history review.

6.2.3 Environmental Variable Rankings

The development of a model combines information about known/documented archaeological sites (i.e. from the AHIMS database) and their underlying environmental variables to extrapolate or predict where as yet 'unknown' sites are likely to occur. Environmental variables commonly include proximity to water, type of geology and soils, elevation, slope, aspect and landform. An initial map of archaeological probability, according to each environmental variable, can then be developed.

For example, if it is assumed that three environmental variables are significant to archaeological site distribution such as 'lower slopes', '100 m from a creek line' and 'on sandy soils', wherever these three variables overlap elsewhere in the subject area, it can be assumed that the likelihood of archaeological site distribution is high. Where only two of the environmental variables occur there is a still a chance of archaeological material occurring, however the classification of this combination of variables will be lower than the area with three converging variables. The presence of only one variable will be lower again. Models will use information from several environmental variables (generally over five and often over 10) and several 'known' archaeological sites, to develop a comprehensive picture of the known and unknown archaeology.

6.2.4 GIS Layers Used

The content and accuracy of the data used to develop the archaeological probability maps has a direct effect on the model outputs. Often in GIS, the data sources used will be a 'best fit' for the purposes of the study. Accordingly, information regarding the source of the data, the content, and any manipulations and applications is essential for transparency and to provide for future improvements.

The GIS data layers to develop the models needed to be either sourced or specifically developed. CCC was able to provide AHMS with the environmental data, which was sourced from various agencies, such as the Office of Environment & Heritage. CCC also provided infrastructure data such as roads, railways and cadastre data. The landform data used in the modelling was developed by AHMS and Business Latitude and was sourced from CCC and other sources. **Table 5** outlines the types of data used, their source and how they were used in the archaeological probability maps. The landform data used for the probability maps was generated by AHMS and requires a separate discussion located below.

Table 5: GIS data and the environmental attributes used for the archaeological predictive models

Attribute	Source	Use in Model
Agricultural Classification	NSW Department of Primary Industries	**Open Sites: Grazing land or land well suited to pasture improvement (weighting = 2)** **Enclosed Sites: Grazing land or land well suited to pasture improvement (weighting = 1)**
Erosion	Provided by CCC	**Open Sites: No appreciable erosion (weighting = 1)** **Enclosed Sites: Sheet erosion (weighting = 1)**
Pre Vegetation type	Hunter & Central Coast Regional Environmental Management Strategy	**Open Sites: Lower Hunter Spotted Gum – Ironbark Forest (weighting = 2) and Hunter Lowland Redgum Forest (weighting = 1)** **Enclosed Sites: Hunter Range Grey Gum Forest (weighting = 1) and Sheltered Blue Gum Forest(weighting = 1)**
Woody Extent	Provided by CCC	**Open Sites: N/A** **Enclosed Sites: Woody (most likely and likely) native (weighting = 1)**
Disturbance	**Geoscience Australia 250K topographic dataset**	**Areas of moderate to high urbanisation were classified as disturbed for both models. This received a nil rating**

In many archaeological predictive models, landforms of the subject area are generally defined by reviewing topographic maps and/or aerial photographs. From these sources, landforms are 'drawn on' either in a graphics program or in a GIS. For the current project however, the size of the subject area prohibited the use of this drawing method and an alternate means of defining the locations of different landform types were required. A variety of data sources and manipulations were tried and tested to define landforms. In general, most of this data could be directly applied to the modelling process. For example, the water course GIS layer already mapped the creeks and their stream order in the assessment areas, and so it was straightforward to include the creeks of interest (i.e. 1st and 2nd order) and remove the rest. Similar exercises could be undertaken for geology, and vegetation with only minor manipulation required. However, in relation to elevation and landform data – the latter being critical to the development of the archaeological models – a more complex approach was needed since such data was not directly available (see **Appendix 3**). Similarly detailed soil landscape data was not available for the subject area, and this was omitted from the modelling process. Soil type was, however, indirectly captured through the inclusion of geology and vegetation, both of which closely correlate with the soil landscape.

6.2.5 Data-Mining

To identify environmental variables that influenced archaeological distribution, a data-mining process was undertaken. This process is described in detail below:

The specific component of each environmental variable (e.g. a particular soil landscape, or elevation, or distance to water) for each archaeological site was documented. This data was then inputted into WEKA (University of Waikato), a software package specializing in data pre-processing, classification, regression, clustering, association rules, and visualization.

Table 6 lists the components of environmental variables which give rise to the 'clusters' of archaeological site distribution. The numbers of sites associated with each component out of a total number of sites are presented in brackets. These components were used in the development of the models. Using the clustering analysis of WEKA, the dataset demonstrated four 'clusters' that explained all of the variance of the dataset. Specifically, it produced four clusters of environmental variables that explain the entire distribution of archaeological site types in the dataset (**Table 6**). The numbers of sites associated with each component out of a total number of sites are presented in brackets. Of these, two clusters explained 60% of the variance of the dataset, and these formed the basis of the eventual models produced. These two clusters were primarily divided by site type, with 35% of the variance relating to artefact or open sites, and 25% relating to art and rock shelter sites. These sites can visually be seen as occurring in quite different parts of the subject area (Figures 14-16).

This analysis indicated that one model would be unsuitable for both types of data, and subsequently two models were developed (**Section 6.2.6**); one focusing on open sites and artefact scatters primarily located in the northeast of the LGA, and the other encompassing most of the southern portion of the LGA and targeting art sites and rockshelters. A third cluster was closely linked to grinding grooves and explained 24% of the variance, but many of the environmental variables associated with this cluster could be subsumed within the models of the other two clusters, and a third model was therefore not considered necessary. A similar approach was undertaken for the fourth cluster, which represented a small number of open artefact sites.

The models were divided along geological boundaries, since sandstone and elevation was one of the key differences between the two models. Largely, this means the models follow the sub-bioregion boundaries, although the Wyong sub-bioregion has been divided by the model, since it contains both open plains and steep sandstone country.

Table 6: ***Environmental variables explaining the 'clusters' of archaeological site distribution. The numbers of sites associated with each component out of a total number of sites are presented in brackets.***

	Clusters Artefacts	Art	Grinding Grooves	Artefacts
Variance Explained (%)	35	25	24	15
Main Site Type	Open site (232/236) Enclosed shelter (4/236)	Enclosed shelter (143/170) Open site (26/170)	Open site (110/162) Enclosed shelter (52/162)	Open site (101/103) Enclosed shelter (1/103)
ASR Description	No data (194/258) Open site (37/258)	Shelter with art (112/192) Shelter with Art, Shelter with Deposit (16/192)	Grinding grooves (48/188) Art (45/188) Artefacts (27/188)	Artefacts (78/129) Grinding grooves (9/129)
Environmental Variable				
Agricultural Type	Grazing land or land well suited to pasture improvement (140/242) Land suitable for grazing but not for cultivation (71/242)	Land unsuitable for agriculture or at best suited to only light grazing (74/176) No data (40/176)	State forests (74/168) National Parks, Nature reserves and recreation areas (40/168)	Land unsuitable for agriculture or at best suited to only light grazing (83/110) Grazing land or land well suited to pasture improvement (8/110)
Erosion	No appreciable erosion (176/239) Sheet erosion (35/239)	No data (57/173) Sheet Erosion (68/173)	No data (132/165) Sheet Erosion (28/165)	No data (98/106) Sheet erosion (4/106)
Woody Extent	No data (135/236) Woody (likely) – native (70/237)	Woody (most likely) - native (78/171) Woody (likely) – native (63/171)	Woody (most likely) – native (128/162) Woody (likely) – native (28/163)	Woody (most likely) – native (52/104) Woody (likely) – native (28/104)
REMS Vegetation mapping	No data (146/273) Lower Hunter Spotted Gum - Ironbark Forest (28/273)	Hunter Range Grey Gum Forest (80/207) No data (39/207)	Coastal Plains Smooth-barked Apple Woodland (46/199) Exposed Yellow Bloodwood Woodland (32/199)	Lower Hunter Spotted Gum - Ironbark Forest (39/140) No data (35/140)
Pre 1750 Vegetation	Lower Hunter Spotted Gum - Ironbark Forest (144/258) Hunter Lowland Redgum Forest	Hunter Range Grey Gum Forest (89/192) Sheltered Blue Gum Forest	Coastal Plains Smooth-barked Apple Woodland (49/184)	Lower Hunter Spotted Gum - Ironbark Forest (54/125) Alluvial Tall

	Clusters Artefacts	Art	Grinding Grooves	Artefacts
	(50/258)	(23/192)	Exposed Yellow Bloodwood Woodland (34/184)	Moist Forest (22/125)
Land capability	V (100/245) IV (99/245)	VIII (76/179) IV (35/179)	State (81/171) VIII (43/171)	IV (87/112) V (4/112)
Distance to major water courses	Average: 1,400m Standard deviation: 1,070m	Average: 870m Standard deviation: 975m	Average: 2,900m Standard deviation: 1,490m	Average: 1,585m Standard deviation: 1,120m
Distance to minor water courses	Average: 80m Standard deviation: 70m	Average: 150m Standard deviation: 40m	Average: 150m Standard deviation: 140m	Average: 140m Standard deviation: 125m
Elevation	Average: 70m Standard deviation: 30m	Average: 150m Standard deviation: 38m	Average: 280m Standard deviation: 90m	Average: 40m Standard deviation: 25m
Slope	Average: 3 degrees Standard deviation: 2.5 degrees	Average: 30 degrees Standard deviation: 16 degrees	Average: 29 degrees Standard deviation: 19 degrees	Average: 4.6 degrees Standard deviation: 5 degrees

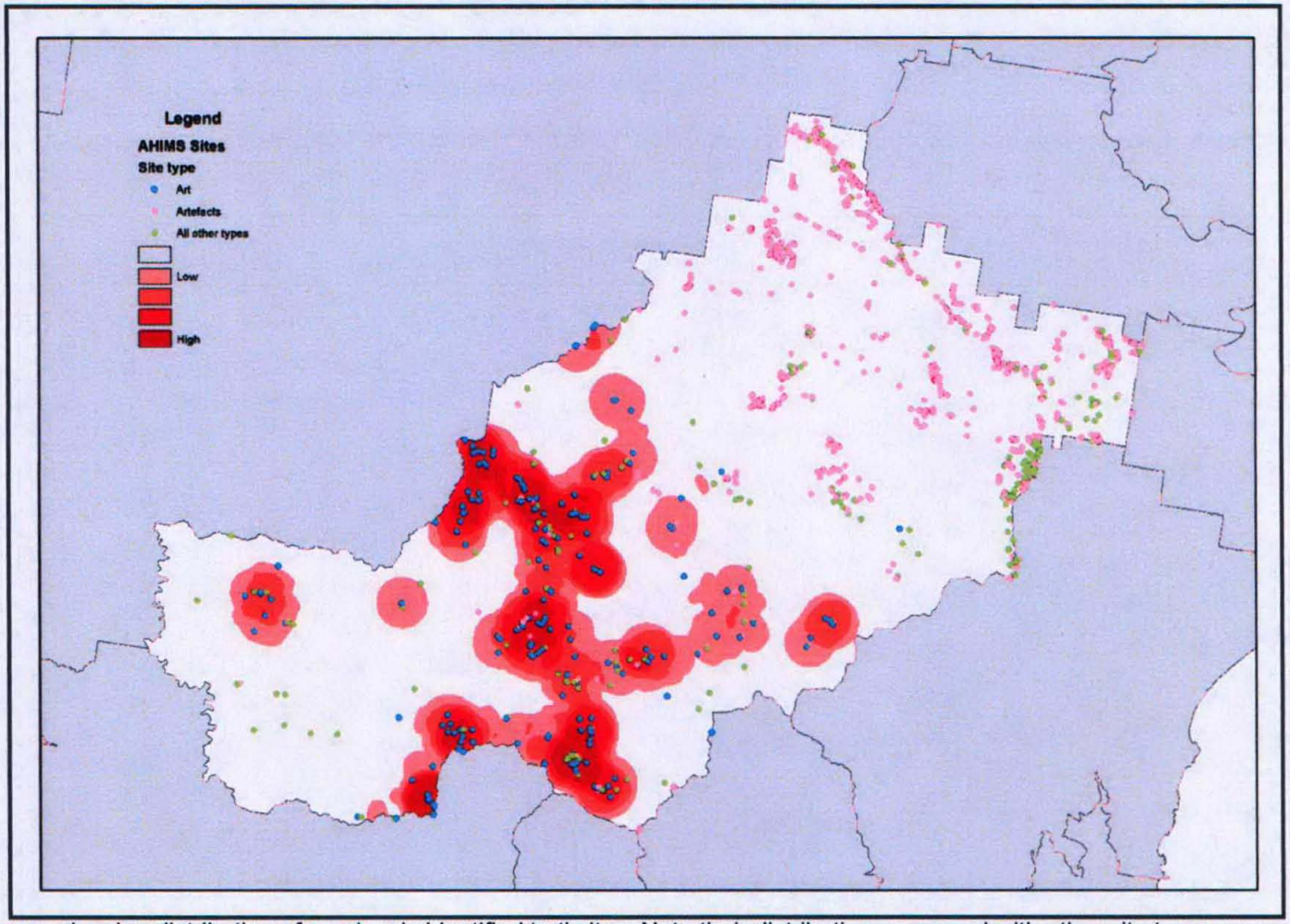

Figure 14. Density map showing distribution of previously identified 'art' sites. Note their distribution compared with other site types.

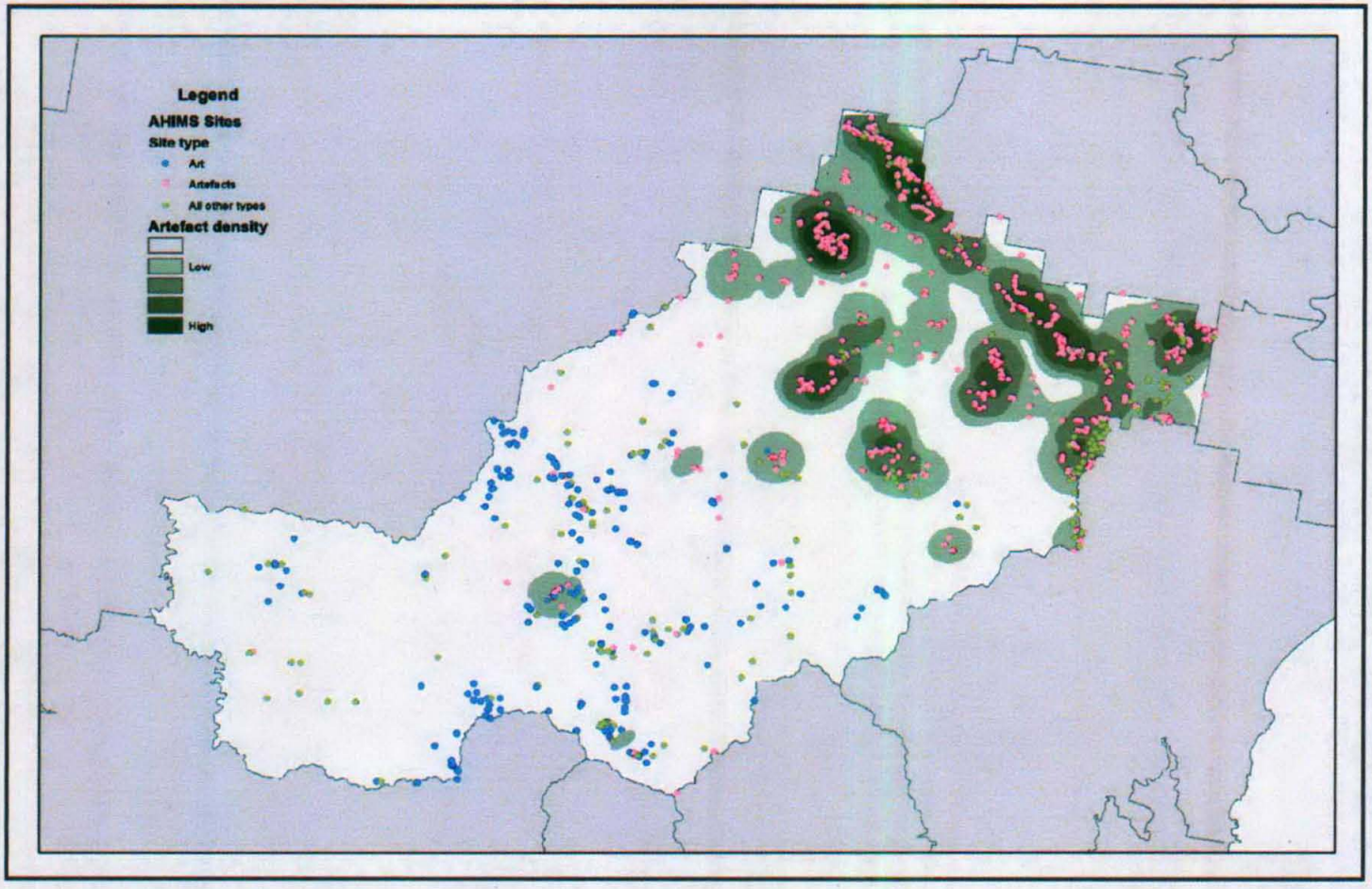

Figure 15. Density map showing distribution of previously identified 'artefact' sites. Note their distribution compared with other site types.

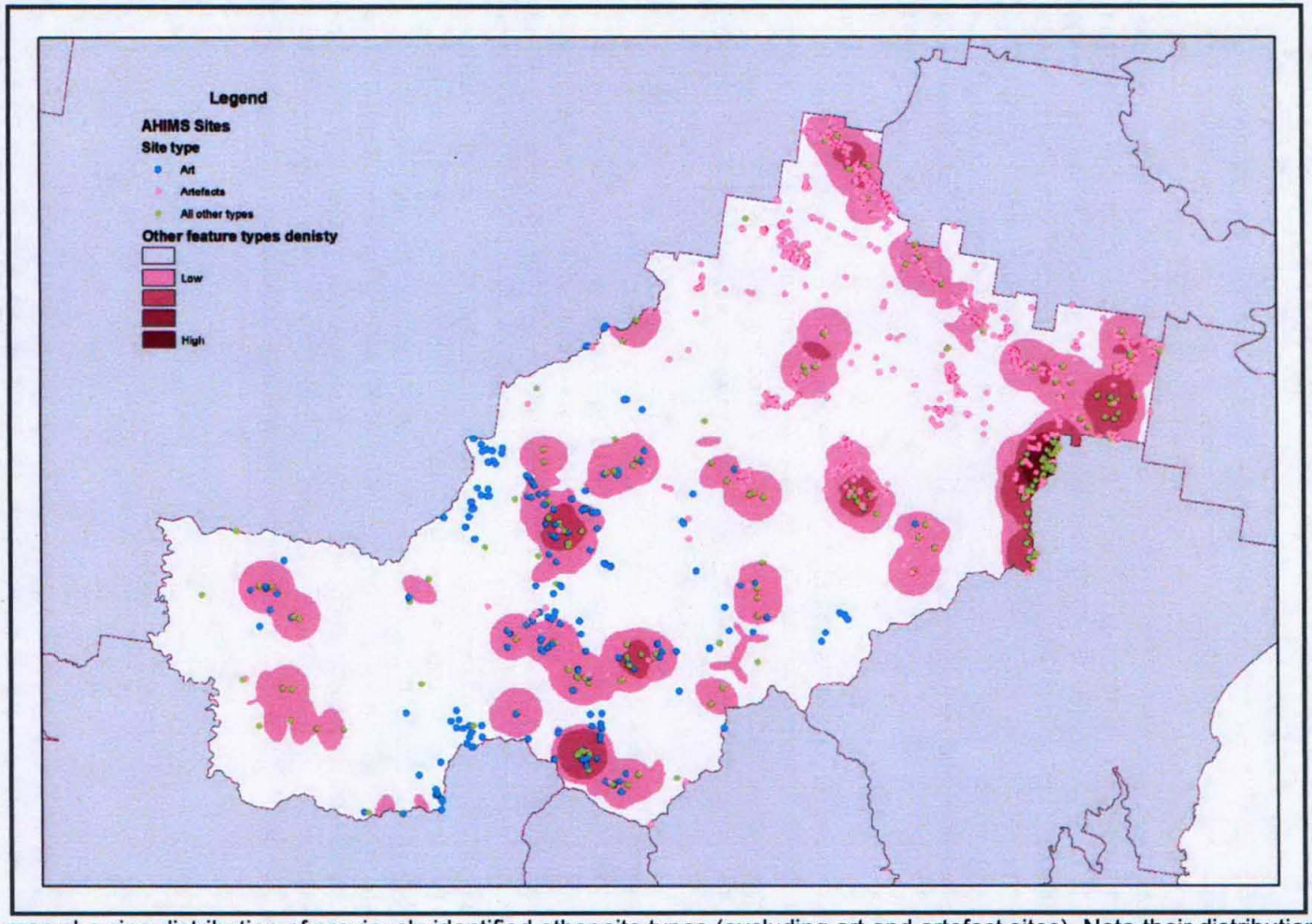

Figure 16. Density map showing distribution of previously identified other site types (excluding art and artefact sites). Note their distribution compared with other site types.

6.2.6 Development of the Models

Following the data-mining (**Section 6.2.5**), the model was compiled using the environmental variable components identified in Table 6. Initially the model is a mathematical construct and identifies the importance of each environmental variable through numerical values and rankings across the subject area. As shown in Tables 7 and 8, each environmental variable that was shown in **Section 6.2.5** to have importance in determining the distribution of archaeological materials was given a numerical value. The values assigned to variables can be of any number, as long as those components of importance are ranked higher than other components that are not. In this case, the majority of variables were assigned values 0, with those of influence valued between 1 and 2, and those that reduce the potential of archaeological sites to occur to between -1 and -2. Within each major environmental variable were a number of sub-categories and these were similarly numerical ranked within the process depending on the amount of influence they had on archaeological site distribution (e.g. in the vegetation variable, two sub-categories were identified as of important in Table 6; of these the Lower Hunter Spotted Gum-Ironbark Forest proved the most significant factor followed by Hunter Lowland Redgum Forest, and these were subsequently both given appropriate numerical values). Once all environmental variables were incorporated into the model, the overall numerical value attained for each spatial grid square based on values in Tables 7 and 8 was calculated between 0 (low potential) to 8/9 (high potential) simply by adding up the various numerical rankings each grid square achieved (**Figures 17** and **18**).

Disturbance was introduced as a negative variable where possible. Where areas could be identified as disturbed, they reduced the numerical ranking of an area by '2', so an area of high ranking would be reduced to one of moderate or low and so on. However, it should be noted that disturbance was constrained to existing GIS information, which largely captured major conurbations and road networks only.

Once the models were developed with the numerical ranking for each spatial grid square, areas of high, moderate and low archaeological potential were created from them using the archaeological information outlined in Section 5 and the previously recorded sites used to create the model. This division of the numerical scale was undertaken by the modeller and sought to ensure the largest number of identified archaeological sites and places were encompassed within areas of high potential, while maintaining the effectiveness and usefulness of the model (i.e. ensuring the process maintained a balance between the ranking zones and not identifying the entire subject area as of high potential and thereby making the application of the model useless).Areas of high potential were delineated to encompass as much of the known archaeological sites as possible, and any areas highlighted by the review (such as close proximity to water), which meant that high areas encompassed all grid squares with numerical rankings of 6 -9. The moderate areas were developed to capture any data that fell outside of 6-8, and included 3-5, while 0-2 were consider of low potential and encompassed the rest of the LGA.

Table 7: Environmental variable and ranking used in the development of the open site model

Theme	Attribute	Model weighting
Agricultural Type	Grazing land or land well suited to pasture improvement	**+2**
	Land suitable for grazing but not for cultivation	**+1**
Erosion	No appreciable erosion	**+1**
Pre 1750 Vegetation	Lower Hunter Spotted Gum - Ironbark Forest	**+2**
	Hunter Lowland Redgum Forest	**+1**
Elevation/Slope	Elevation < 100m AND Slope < 5	**+2**
	Elevation < 100m OR Slope < 5	**+1**
Distance to minor water courses	Areas within 75 m of minor water courses.	**+1**
Disturbance		**-2**

Table 8: Environmental variable and ranking used in the development of the art and rock shelter model

Theme	Attribute	Model weighting
Agricultural Type	Land unsuitable for agriculture or at best suited to only light grazing	**+1**
Erosion	Sheet erosion	**+1**
Woody Extent	Woody (most likely) - native	**+1**
	Woody (likely) – native	**+1**
Pre 1750 Vegetation	Hunter Range Grey Gum Forest	**+1**
	Sheltered Blue Gum Forest	**+1**
Elevation/Slope	Elevation > 100m AND Slope >15	**+2**
	Elevation > 100m OR Slope >15	**+1**
Distance to minor water courses	Areas within 75 m of minor water courses.	**+1**
Disturbance		**-2**

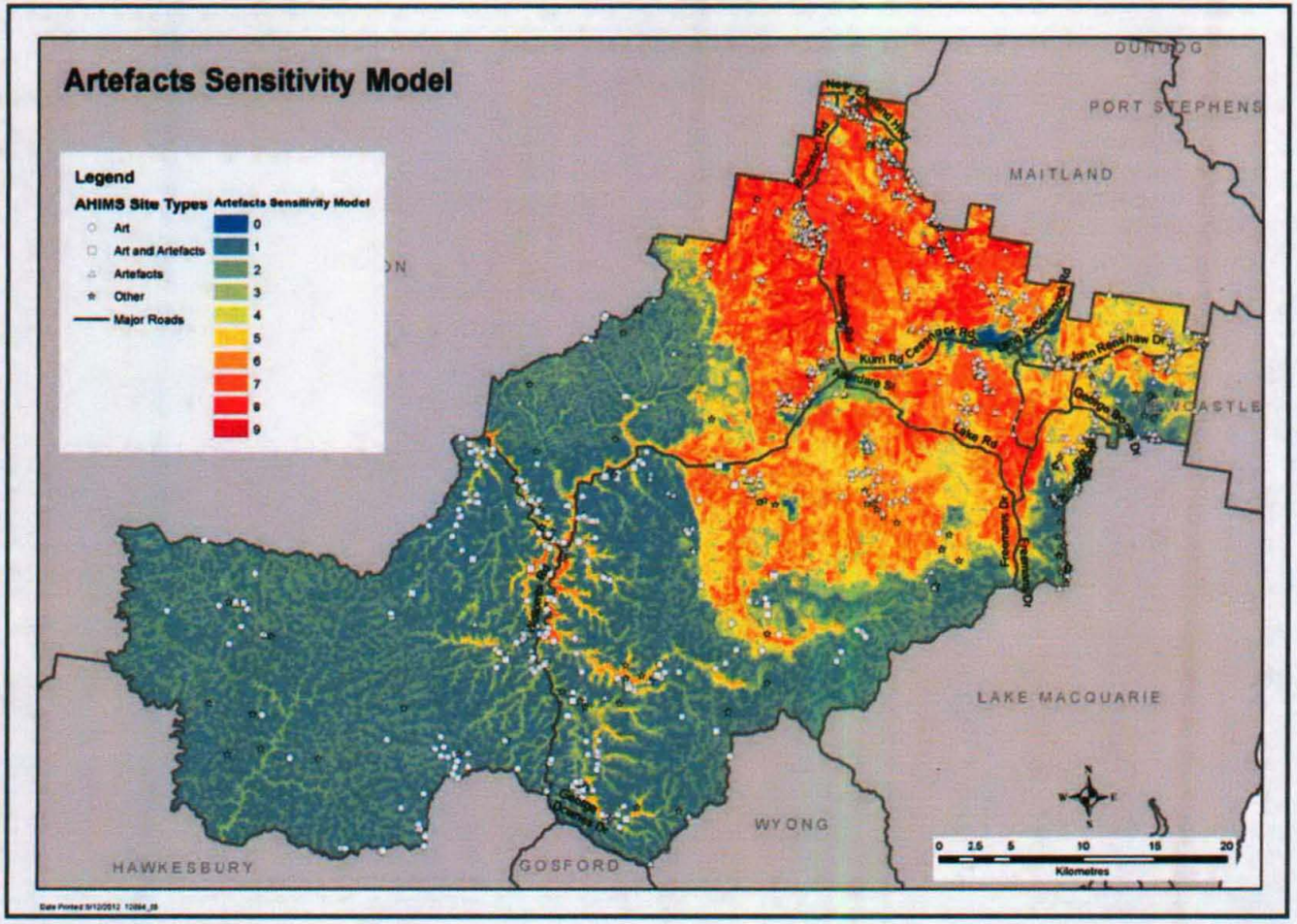

Figure 17. The early formation of the 'open site' predictive model using numerical rankings. These rankings were subsequently modified using archaeological information to create areas of high, moderate and low archaeological potential.

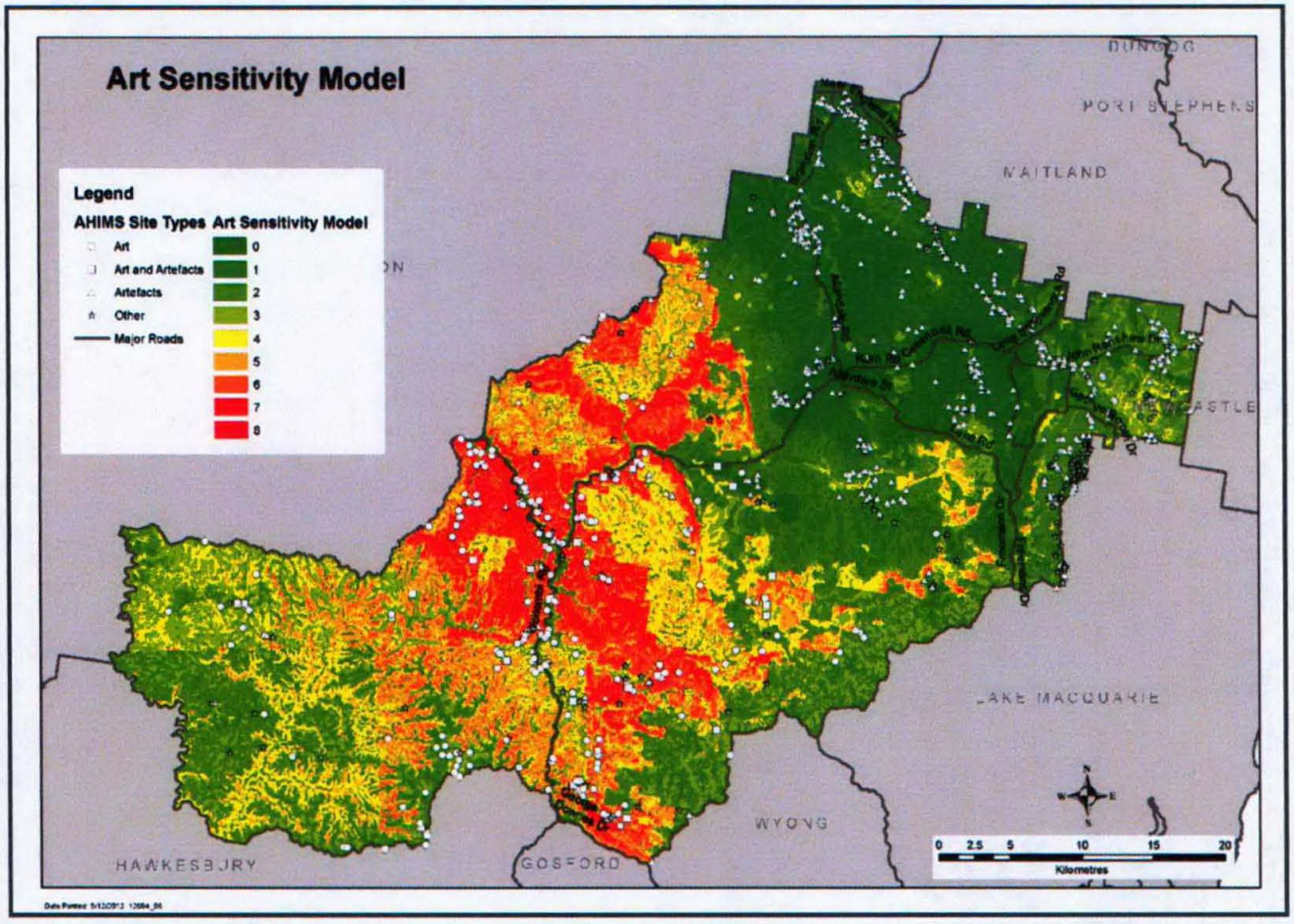

Figure 18. The early formation of the 'art and rockshelter' predictive model using numerical rankings. These rankings were subsequently modified using archaeological information to create areas of high, moderate and low archaeological potential.

6.3 Predictive Archaeological Model

The final model for the subject area is shown in **Figure 19**.

The final model has been developed as outlined in **Section 6.2**, using a series of 'environmental' and 'archaeological' variables to predict the archaeological potential across the subject area. **Section 6.2.6** provides more detailed information on the specific variables that needed to be present to classify an archaeological probability ranking for any given area. For example, in the 'open site' models, areas identified as of high archaeological classification were required to be 'Grazing land or land well suited to pasture improvement ', within 'Lower Hunter Spotted Gum - Ironbark Forest ', be on 'Elevation > 100m AND Slope >15' and must not be on erosional/disturbed soils. Existing disturbance also played a role. In contrast, areas identified as of very low archaeological classification were considered areas that did not retain any of those variables.

Once the model was developed, it was tested using a 'test set' of known archaeological sites, the entire dataset and comparisons with other models of the region (**Section 6.4**). The testing indicated that the model predicts archaeological material with 63% accuracy when considering the zones of high and very high ranking, but ~90% when incorporating the moderate ranking as well. A comparison with regional models developed by OEH produced similar results and confirmed the reliability to the model produced here.

One of the limitations of the model, however, is that there is little GIS data available on existing disturbance and impacts. Therefore, the model probably over represents areas of very high, high and moderate archaeological sensitivity, since this information is not available. For example, several large mines in the northeast of the LGA would have significantly impacted any sensitivity, but these are not captured in the modelling.

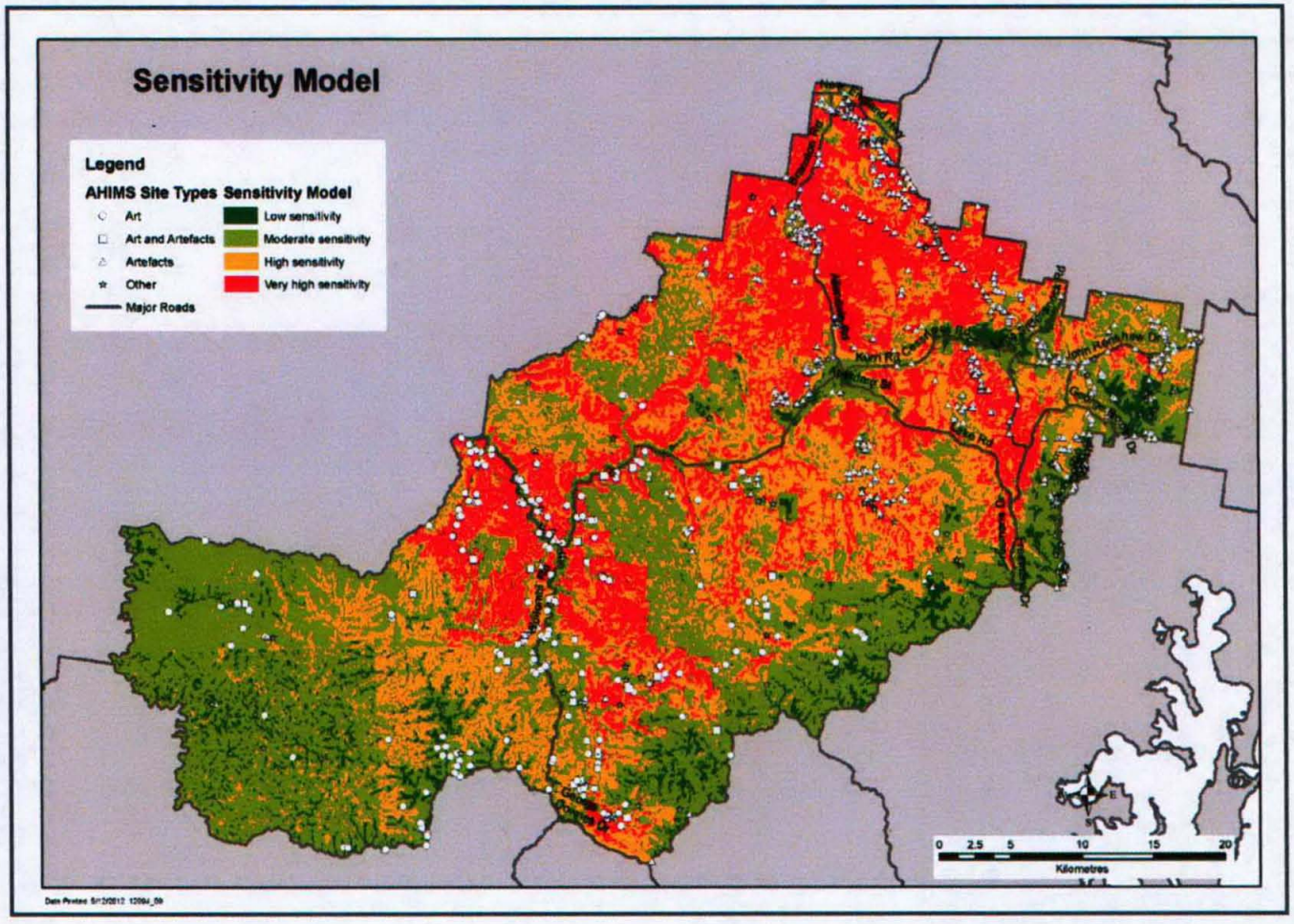

Figure 19. Composite predictive model of archaeological sensitivity for Cessnock LGA. The development and testing of this model is outlined in Section 6.4.

6.4 Testing the Models

Following the completion of the final models (**Section 6.3**), the model was tested to identify its effectiveness at predicting archaeological materials. Typically there are three different ways to test this type of model:

- Compare the model with the previously documented archaeological sites and identify whether they are found in appropriately ranked areas. Use of both the archaeological data used to develop the model and/or a separate test subset can be suitable for comparison.
- Review the model against previous heritage assessment and/or excavations in the subject area to compare detailed local data with the wider model rankings. Unfortunately, few such assessments/excavations exist within the subject area, and make such analysis problematic.
- Undertake targeted field investigation to visually confirm/refute the identification of areas by the model. This may form a subsequent stage of this study.

As outlined in **Section 6.2.2**., a small subset of randomly selected sites was retained for testing. The data revealed that some 144 out of 219 sites (66%) fall within areas of high or very high archaeological sensitivity (**Table 9**). When incorporating moderate areas, some 199 (91%) of the data is encompassed within the top three zones of sensitivity. When using the entire dataset, values of 685 (62%) for areas of high and very high, and 984 (90%) for areas of very high, high and moderate were achieved (**Table 10**).

These results indicate that the model is effective, with values in the order of 75-80% being considered satisfactory for modelling purposes. Ideally, the archaeological ranking zones would shifted slightly by elevating some of the moderate areas into high ranking. Unfortunately, this would lead to an extensive amount of the subject area being identified as of archaeological sensitivity, and would reduce the overall usefulness of the model.

Table 9: Testing of the model using a subset of the AHIMS data.

Numerical Ranking	Ranking	Art	Art, Artefacts	Artefacts	Other	Grand Total
0	Low	3		4	2	9
1	Low	3		5	3	11
2	Moderate	3	2	4	3	12
3	Moderate	11	1	4	6	22
4	Moderate	5		15	1	21
5	High	6	5	35	5	51
6	High	3	1	24	6	34
7	Very High	12		16	1	29
8	Very High	2	1	15	2	20
9	Very High			10		10
Grand Total		48	10	132	29	219

Table 10: Testing of the model using all AHIMS data obtained for this study.

Numerical Ranking	Ranking	Art	Art, Artefacts	Artefacts	Other	Grand Total
0	Low	15		21	11	47
1	Low	11	1	24	30	66
2	Moderate	25	2	19	26	72
3	Moderate	28	4	36	29	97
4	Moderate	25	4	87	14	130
5	High	35	7	148	29	219
6	High	22	6	131	20	179
7	Very High	51	3	95	10	159
8	Very High	9	1	62	5	77
9	Very High			44	7	51
Grand Total		221	28	667	181	1097

While detailed local assessments/excavations for the subject area are not readily available, the model can be compared with the predictive modelling of the region undertaken by OEH. OEH's modelling is a relatively new development to assist proponents and landowners in their due diligence processes under OEH's Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010). The models are not as detailed as those presented here, but do provide a rough indication as to Aboriginal heritage issues within a given area. As can be demonstrated in **Figures 20**

and 21, OEH had similarly modelling issues as those outlined in **Sections 6.2** and **6.3**, specifically that the LGA had to be divided into two different models along sub-bioregional boundaries. The OEH models demonstrated that rock shelter and enclosed sites were focused within the south of the LGA, within the Yengo sub-bioregion (**Figure 20**), while open sites and artefact scatters were mainly present in the Hunter/Wyong sub-bioregions (**Figure 21**). This widely different distribution of site types meant that one effective model could not be produced for from the OEH modelling tool, and two separate models had to be developed, as was found above.

However, when comparing the OEH models with the model developed here (**Sections 6.2.6** and **6.3**), they show close correlation, with high areas of sensitivity for open sites being located in the northeast of the LGA (**Figure 21**), and for art/rockshelter sites in the vicinity of Wollombi Brook (**Figure 22**). This close correlation provides an additional level of reliability to the models produced as part of this study.

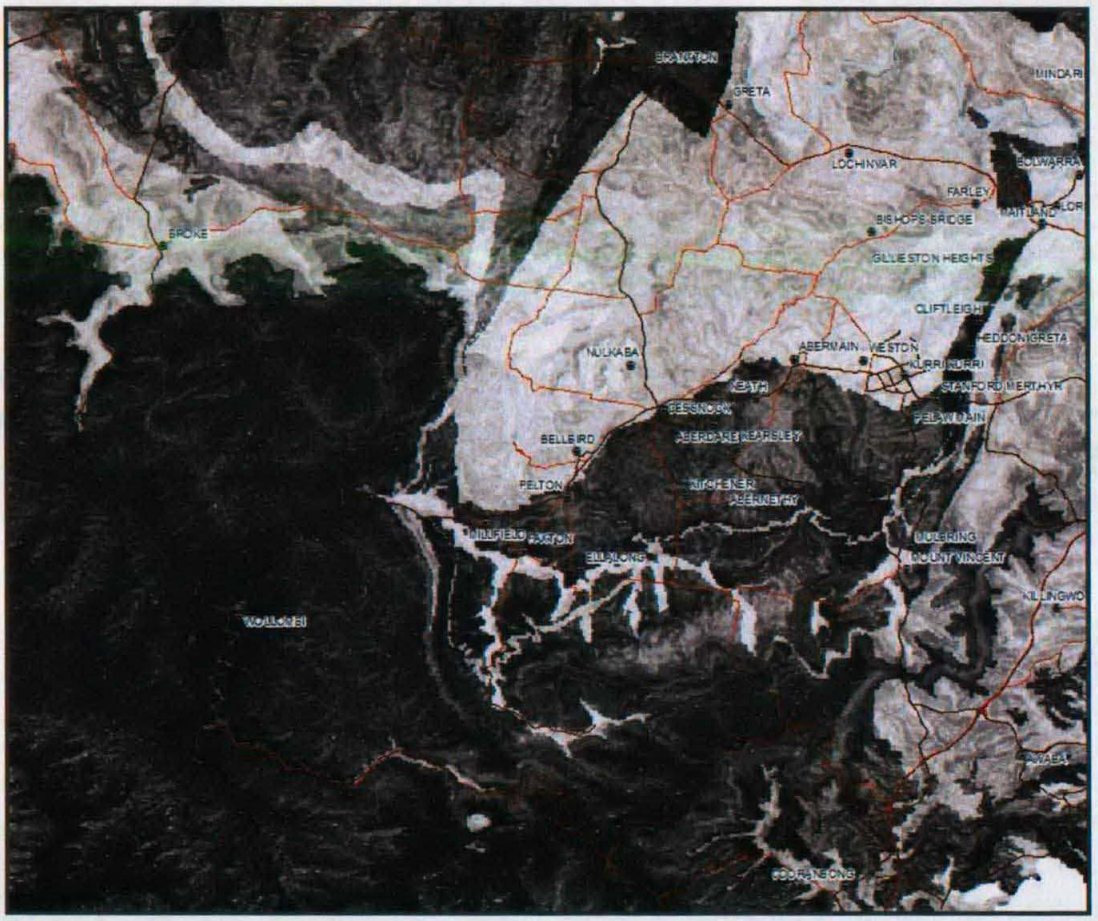

Figure 20. Predictive archaeological map (rockshelters) of the general region by OEH's Aboriginal heritage due diligence support tool. (http://www.environment.nsw.gov.au/licences/AboriginalSitesDecisionSupportTool.htm). High sensitivity is identified by darker colours; lower sensitivity by lighter colours.

Figure 21. Predictive archaeological map (open sites) of the general region by OEH's Aboriginal heritage due diligence support tool. (http://www.environment.nsw.gov.au/licences/AboriginalSitesDecisionSupportTool.htm). High sensitivity is identified by darker colours; lower sensitivity by lighter colours.

6.5 Limitations

Due to the theoretical and mathematical approaches to the development of the models, there were several limitations that apply, as follows:

- The model outlined in **Section 6.3** is a scientific model based on environmental variables and landforms known to be important for Aboriginal populations. However, there are cultural and ritualistic sites (such as bora rings, initiation, birthing and increase sites) that do not necessarily follow the environmentally determined principles above, since their location is related more to cultural importance than environmental attributes. These sites may not follow the trends above, and will display as an error within the model. Because of this reliance on the model solely without considering the possibility that such sites exist may lead to poor conservation outcomes.

- The development and nature of a model requires averaging of data to provide a holistic perspective to a given area. Such 'averaging' introduces error and reduces accuracy in predicting archaeological resources. For this reason, the models will not explain all of the archaeological data and are unlikely to be 100% effective in predicting archaeological sites.
- The model provides information on the probability of Aboriginal archaeological materials occurring. The models do not provide any information on or consideration of the significance or integrity of archaeological sites/deposits within these probability areas.
- Due to the nature of consulting archaeology, the archaeological knowledge and documented sites/deposits in the Lower Hunter Valley are constrained to areas of proposed development. This can clearly be seen in several of the models where clusters of sites are shown in specific areas. Such an approach means that specific landform testing or research type analysis has not generally been undertaken in this area of the Lower Hunter Valley, so there is likely to be some bias in the data in relation to the location and landform type where archaeological material occurs.
- The models were both developed and tested with existing and known Aboriginal site data from OEH's AHIMS database. However due to the size of the project no quality control of the AHIMS data (e.g. confirming site location and site types) could be undertaken. This had three main implications for the integrity of the model:
    - AHIMS sites are frequently assigned erroneous co-ordinates and locations. The development of a model based on site co-ordinates, therefore will not necessarily accurately represent the actual site's location.
- Much of Lower Hunter Valley retains a low density of artefacts (a background scatter) in all landforms and environments. Such a low density scatter indicates the general use of the region, but does not identify the specific areas of occupation or intense use. AHIMS data identifies 695 (63%) of the sites for this assessment as consisting of artefacts in nature, but does not distinguish (in all cases) between isolated artefacts (i.e. part of the wider background scatter) from large-scale artefact scatters. As such, the models could not be developed or focused towards significant archaeological sites.
- The AHIMS data provides one co-ordinate or 'point' for each Aboriginal site in the subject area. However, it provides no contextual information on the size or extent of the site. Hence while the models have been developed and tested on these 'points', sites may extend beyond the co-ordinate in question and thereby affect the accuracy and/or effectiveness of the model.
- Modern disturbance and development is under-represented in the model. The absence of a specific GIS layer for current urban activities such as roads, urban areas and/or services, restricted the input into the models. While disturbance through soil landscape and vegetation have been considered, the existing urban environment was not specifically included in the model and so some areas in the model identified as very high, high and/or moderate may warrant revision should this information become available.
- The development of the model required extensive GIS manipulation, most notably of the landforms. Prior to this study, no GIS layer existed for the assessment in relation to landforms, such as lower slopes, ridgelines, hill crests, etc. The development of such a layer was complex and had to use a combination of elevation and slope angle and so will have introduced some error into the model;
- There are some limitations in the application of the archaeological modelling within a GIS framework. For example, the archaeological modelling has identified areas within 75 m of a creekline to be archaeologically sensitive. The 75 m should be considered from the top of bank of the creek for archaeological interest, however, due to a limitation of the GIS data, the 75 m buffer either side of the creek originates from the centerline of the creek rather than the top bank of the creek. This adds some spatial disparity to the application of the model.

- The nature of GIS requires every environmental variable to be defined accurately, but in reality, this cannot always be the case. For example, several of the creeklines are identified as a singular creek line by GIS, whereas in reality some areas are a series of low lying swampy and water logged areas. The former is of interest archaeologically, while the latter is not. Therefore, the simplicity of GIS in some areas creates limitations and spatial constraints.
- This model has been developed based on existing data and desktop review. No field investigation has been undertaken to verify or ground-truth this model. Recommendations are made in **Section 8** that seek to demonstrate and test the effectiveness of the models in a real environment. Caution should be used when considering the effectiveness and accuracy of the models until such investigations and testing is undertaken.
- The models presented here are first-order attempts at predicting as yet unrecorded archaeological material in the subject area. The models are not intended to be the determinant of archaeological resource distribution in the Lower Hunter Valley. Additional investigations, studies, excavations and assessments undertaken in these areas should be used to provide input into and revise the models as appropriate.

7 ABORIGINAL CONSULTATION

7.1 Consultation undertaken for the Phase 1 study

Focussed and strategic Aboriginal consultation was undertaken during the Phase 1 study. The aim of the consultation was to facilitate constructive discussion of how consultation about Aboriginal heritage should best proceed during the finalisation of the Phase 1 Study and during the Phase 2 study, should it be warranted. A key aim was to identify who has an interest in and who has the right to speak for country.

The consultation included a series of meetings with AHMS consultants and representatives from CCC, the Office of Environment and Heritage (OEH) and the five Local Aboriginal Land Councils whose boundaries are partially within the LGA (Awabakal, Koompahtoo, Metropolitan, Mindaribba and Wanaruah). Background research formed the basis for initial discussion.

7.2 The Process

To begin Aboriginal consultation, in July 2012 AHMS and CCC representatives met with senior representatives of each of the LALCs. Representatives were (**Table 11**):

- Paul Morris, Metropolitan Local Aboriginal Land Council
- Noel Downs, Wanaruah Local Aboriginal Land Council.
- Richard McGuinness, Awabakal Local Aboriginal Land Council.
- Ken Riddiford, Mindaribba Local Aboriginal Land Council.[1]

Meetings were conducted at the various LALC offices over several days. The focus of the first meeting was to outline the proposed study, obtain permission to access large volumes of Aboriginal heritage data from OEH, identification of other relevant Aboriginal stakeholders, and to explore possible consultation strategies that might apply as the project proceeded.

A letter outlining the discussions was distributed to each LALC shortly after the meetings. The letter provided a summary of the discussions, and a compilation of common outcomes identified in each of the separate meetings.

1 The Koompahtoo LALC also partially encompasses the Cessnock LGA, but no longer exists. A new LALC is being implemented to cover the old Koompahtoo LALC boundaries, but was not operational at the time of this study.

Table 11: List and contact details of Aboriginal stakeholders contacted during this study.

Name	Position	Organisation	Address	Telephone No.	E-mail
Noel Downs	CEO	Wanaruah LALC	PO Box 127 Musswellbrook, NSW 2333	02 6543 1288	wanarua@bigpond.net.au
Ken Riddiford	CEO	Mindaribba LALC	1A Chelmsford Drive, Metford, NSW 2323	02 4015 7000	admin@mindaribbalalc.org
Richard McGuinness		Awabakal LALC	127 Maitland Road. Islington, NSW 2296	02 4965 4532	ceo.awabaka@bigpond.net.au

7.3 Consultation Outcomes

The consultation resulted in three main outcomes:

- Permission to access the OEH AHIMS database for the purposes of the Phase 1 Study.
- Identification of other potential Aboriginal stakeholder groups.
- A recommendation to establish a formal CCC Aboriginal heritage committee.

Accessing OEH AHIMS Data

Following a request from the OEH that AHMS obtain Aboriginal stakeholder permission to access the AHIMS data for the Cessnock LGA, AHMS forwarded a letter to the LALCs seeking their endorsement. Two LALCs, Metropolitan and Mindaribba, both provided permission for AHMS/CCC to obtain the AHIMS data. The Wanaruah LALC rejected AHMS/CCCs request. Since the majority of the data was within the Mindaribba and Metropolitan LALCs boundaries, however, the OEH subsequently provided the AHIMS data in October 2012. No response was received from the Awabakal or Metropolitan LALCs.

Other Aboriginal Stakeholder Groups

During consultation meetings, AHMS/CCC sought to identify other Aboriginal stakeholder groups that the LALCs considered relevant to the Cessnock LGA. Five Aboriginal stakeholder groups were mentioned during these conversations:

- Awabakal Traditional Owner Aboriginal Corporation (Kerrie Brauer – A: PO Box 253 Jesmond NSW 2299; T: 02 4958 8170; E: kerrie@awabakal.com.au).
- Awabakal Descendant Traditional Owner Aboriginal Corporation (Shane Frost – A: PO Box 85, Clarence Town, NSW 2321; T: 02 4996 4325; E: awabakal_to@bigpond.com).
- Lower Hunter Wonnarua Council (Tommy Miller – A: 51 Bowden Street, Heddon Greta, NSW 2321; T: 02 4937 2694; E: tn.miller@southernphone.com.au).
- Guringai Tribal Aboriginal Link Aboriginal Corporation (Tracey Howie – A: 19 Coolabah Road, Wyongah, NSW 2259; T: 02 4392 8743; E: tracey@guringai.com.au).
- Central Coast Hunter Range Aboriginal Co-Management Committee (a committee of LALC and traditional owners managed by OEH and encompassing much of the Central Coast and Lower Hunter).

It should be noted that the two Awabakal organisations together currently have a registered Native Title Claim over Mount Sugarloaf within the eastern portion of Cessnock LGA. Another claim over a broader area is currently due for a registration decision (see Section 2.1.2). It should be further noted, however, that there is a significant number of other Aboriginal stakeholder organisations practising cultural heritage within the Lower Hunter region, and their lack of identification here does not remove their relevance to, or possible interest in this study or the Aboriginal heritage of CCLGA.

Aboriginal Heritage Committee

Extensive discussions were undertaken by AHMS/CCC about the most appropriate way to undertake Aboriginal consultation through the development of this study and its subsequent stages, should they be warranted. It was noted during consultation with the relevant LALCs that following the OEH consultation requirements may result in a large number of registrations from interested parties who may not hold cultural knowledge about the study area.

Several of the LALC representatives suggested that a better process would be the creation of a formal CCC Aboriginal Heritage Advisory Committee. There are currently several Aboriginal Advisory Committees operating with nearby local councils, such as the Guraki Aboriginal Advisory Committee (Newcastle City Council) and the Central Coast Hunter Range Regional Aboriginal Co-management committee that works with the Office of Environment and Heritage.

The LALCs identified that:

- The committee should be composed of a representative from each of the LALCs, and possibly from the identified Traditional Owner Aboriginal stakeholders.
- The committee should be funded by the CCC.
- The committee should meet regularly (every other month) to liaise with CCC on Aboriginal heritage matters, including the review of this study, input into the planning and approval process, and the management of any Aboriginal heritage matters.

8 RESULTS AND OUTCOMES

8.1 Outcomes

8.1.1 Sites and Places of Heritage Significance

The Phase 1 Aboriginal Heritage Study for CCC has identified and mapped hundreds of known Aboriginal archaeological sites in the LGA and identified and mapped varied landscapes of high, medium and low archaeological heritage sensitivity.

The results demonstrated that some 1,097 Aboriginal objects/sites have been previously recorded within the LGA (**Figure 13**). These can generally be divided into open sites dominated by artefacts in the north and east of the LGA, and enclosed sites situated in the sandstone country encompassing the southern portions of the LGA. These results are presented in **Figures 12** and **13**. A review of existing archaeological studies confirm this distribution, and suggest that most prehistoric occupation in Cessnock was probably constrained to the last few thousand years, and focussed on elevated areas adjacent major tributaries (especially the Hunter River and Wollombi Brook) and sandstone escarpments.

Using this data, previous archaeological studies of the region and environmental data, a predictive model was developed to assign archaeological likelihood across the LGA (**Figure 19**). Testing of the model proved it to be effective at identifying locations of Aboriginal heritage significance within the subject area.

The study, however, identified that there are few known or recorded sites or places of post-contact historical Aboriginal heritage significance in the LGA, apart from the traditional walking tracks that were still in use during the period of early colonial settlement in the area. The identification of contact and post contact sites was the focus and main aim of the Phase 1 study however the methodology was focussed on a review of the documentary evidence. The thematic history identifies that the lack of documentation that researcher encountered was because there were no Aboriginal missions or reserves or similar places established within the Cessnock LGA, although there were many nearby in adjoining LGAs and because the area was not settled by Europeans until relatively late. Early European exploration largely passed through the area and did not record its Aboriginal inhabitants or their lifestyles or places where conflict or other events may have occurred.

When settlement did occur, disease and dispossession as well as movement to missions and reserves to places outside the LGA, rapidly depleted the local Aboriginal population. This combination of factors did not result in recorded places of post-contact of known or potential post-contact Aboriginal heritage significance. However, the possibility that elements of such information exists in family oral histories has not been explored as part of this project. It would require a substantial community consultation approach and would be best combined with an exploration of places of contemporary use and significance to the Aboriginal people in the LGA.

8.1.2 Consultation

The purpose of Aboriginal community consultation during Phase 1 of the Cessnock LGA Aboriginal Heritage Study was to make contact with the relevant Local Aboriginal Land Councils whose boundaries are within the LGA (Awabakal, Mindaribba, Metropolitan and Wanaruah), discuss the study and establish an appropriate strategy to continue effective consultation between Cessnock Council and the broader Aboriginal community.

Based on the Phase 1 consultation and the results of the Phase 1 study, it is recommended that CCC implement the following:

- Provide a copy of the draft Phase 1 report to the Awabakal, Mindaribba, Metropolitan and Wanaruah Local Aboriginal Land Councils for their review and feedback.
- Establish an Aboriginal heritage Advisory Committee. The purpose of such a committee would be to provide advice regarding to Aboriginal issues within the LGA and engage the Aboriginal community in Local Government. A similar committee, known as the Guraki Aboriginal Advisory Committee, is associated with Newcastle City Council.

9 MANAGING ABORIGINAL HERITAGE

9.1 The Heritage Values to Manage

The Phase 1 study has resulted in the creation of maps which identify the location of presently known Aboriginal archaeological sites and also graded areas of archaeological potential where unrecorded archaeological sites are most likely to occur. The maps of 'Aboriginal Archaeological Sensitivity' identify certain areas of the local landscape that are more likely than others to contain surface and/or buried evidence of prior Aboriginal occupation and use.

The maps, however, have not been informed by land disturbance (post contact land use) overlays, detailed research, consultation or field survey. Their use and application, therefore, is limited and the maps cannot be considered sufficiently rigorous to inform statutory considerations without further refinement.

The Phase 1 study has not resulted in maps that indicate known or potential places of contact or post contact Aboriginal heritage significance apart from the traditional walking trails that were already mapped. Historical research indicates that Aboriginal missions and reserves were not established in Cessnock LGA and there are no documentary records of places of conflict, protest or similar activities. Specific and detailed research, field work and community consultation would be needed to identify the location of any post contact places of Aboriginal heritage value. The lack of specific places reinforces that the themes of Dispossession and Protectionism are very relevant to Cessnock, not because there are specific places that demonstrate those themes, but because the dearth of typical post contact places across the whole of the Cessnock LGA demonstrates the net effect of those themes.

9.2 Principles

The following principles establish the values basis for managing the mostly archaeologically based Aboriginal heritage in CCLGA. For regional consistency reasons they are, wherever possible, consistent with the principles established for the Newcastle Aboriginal Heritage Study, Newcastle City Council (AMBS, 2005).

9.2.1 General Principles

Cessnock City Council, on behalf of the people of the Cessnock City Council local government area, recognises that:

- The Aboriginal cultural heritage of Cessnock City is a finite and valuable resource that is important to the history and identity of Aboriginal people.
- The Aboriginal heritage of Cessnock City can include places of spiritual, traditional, historical or contemporary cultural significance. They need not contain material evidence of Aboriginal use or occupation.
- The Aboriginal cultural heritage of Cessnock City is an important part of the wider cultural heritage of Cessnock City.
- The Aboriginal cultural heritage of Cessnock City should be conserved and managed according to its heritage significance to Aboriginal people.
- The Aboriginal community has a primary right to identify how its cultural heritage is identified, assessed, recorded and managed and to determine its cultural significance.

- The community of Cessnock and Cessnock City Council as well Aboriginal people are jointly responsible for the proper care, conservation and management of the Aboriginal heritage of Cessnock City.
- Cessnock City Council will meet all its statutory obligations and will strive to meet all community expectations to manage and appropriately conserve the Aboriginal heritage of Cessnock City.
- Cessnock City Council will actively promote the importance of the Aboriginal cultural heritage of Cessnock City to the broader community.

9.3 Recommendations and Actions

The table below summarises some policies and actions that together may assist CCC to appropriately manage the Aboriginal heritage in CCLGA within the constraints of the outcomes of the Phase 1 study.

Element or Value	Policies	Actions for Council
Seek the adoption of The Phase 1 Cessnock Aboriginal Heritage Study Report	The Phase 1 Cessnock Aboriginal Heritage Study Report should be adopted as an interim background document about Aboriginal heritage in the LGA.	The Phase 1 Study Report should be forwarded to Aboriginal Stakeholders, the OEH and CCC for formal adoption (in whole or part) and integration if applicable with applicable records, land information systems and planning.
The Phase 1 Report - Access	The Phase 1 Report should be a public document and available in public repositories.	Lodge copies of the Phase 1 Report CMP with the OEH, in appropriate CCC files and the CCC Library.
Using the Predictive Model Maps	Facilitate the use of the Predictive Model Maps of the Phase 1 Report to generally indicate where further detailed Aboriginal heritage assessment may be required	The Predictive model maps in the Phase 1 Report should be considered as a potential reference source in Council's land information system
Consultation Strategy	The Aboriginal community will continue to be central to determining how its cultural heritage is identified, assessed, recorded and managed in the LGA	CCC should consider establishing an Aboriginal Heritage Committee to assist it to implement the recommendations of the Phase 1 Study and advise on other matters as they arise.
Understanding places of contemporary significance to Aboriginal people in the CCC LGA	The Aboriginal community will continue to be central to determining how its cultural heritage is identified, assessed, recorded and managed in the LGA	Undertake a study with Aboriginal community in the CCLGA which looks at places of contemporary use and significance.

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Appendix 1: Thematic History

A thematic history of the Aboriginal People of Cessnock Local Government Area

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History & Heritage Consultants
Text edited by Felicity Kay
April 2013

Contents

Abbreviations

AAPA – Australian Aborigines Progressive Association

AIM – Aborigines Inland Mission

APB – Aboriginal Protection Board

BP - Before Present (time scale used for radiocarbon dating)

LGA – Local Government Area

JRAHS – Journal of the Royal Australian Historical Society

RAHSJ&P - Royal Australian Historical Society Journal and Proceedings

V & P – Votes and Proceedings of the NSW Legislative Assembly

INTRODUCTION

Preamble

An Aboriginal history of the Cessnock local government area has been developed to provide a useful context for documenting and identifying, and then interpreting and understanding, known and potential places of Aboriginal heritage value in the Cessnock local government area. Various Commonwealth and State Aboriginal heritage assessment guidelines identify the types of places that can hold great meaning and significance to Aboriginal people that include:

a) Places associated with Dreaming stories
b) Places that are associated with spirituality and cultural activities
c) Places where other cultures came into contact with Indigenous people
d) Places that are significant for more contemporary uses[1]

The history explores themes developed by the NSW Heritage Office for use as guidelines when assessing historically significant sites and identifies local activities and events related to these themes.[2] It presents its findings in a chronological narrative, which traces the experiences of Aboriginal people from the pre-colonisation period to recent times. This approach provides a broad overview of the Aboriginal history of Cessnock LGA.

Method and Identifying Themes

A range of sources were used to compile the history including government files and reports, archaeological surveys, newspaper articles, settler and explorers' diaries and journals, ethnologies, journal articles and academic and local histories. Many of these sources are housed in the University of Newcastle library, which contains a large collection of material on the Aboriginal peoples of the Hunter Valley and surrounding areas. Sources held in the Mitchell Library, the State Records Office and local studies libraries were also consulted. Where possible, primary sources written from firsthand knowledge of the people and events were used in preference to secondary sources. Of primary importance were the articles published by Robert Hamilton Mathews, a

[1] Department of Sustainability, Environment, Water, Population and Communities, Indigenous Heritage <http://www.environment.gov.au/heritage/about/indigenous/index.html>
[2] Heritage Council of NSW, NSW Historic Themes, 2001 <http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/themes2006.pdf>

Singleton based surveyor and amateur ethnologist, who recorded aspects of Aboriginal culture in the Hunter Valley in the 1890s, and the writings of early explorers and settlers in the area. Andy Macqueen's, *'somewhat perilous', The Journeys of Singleton Parr, Howe, Myles & Blaxland in the North Blue Mountains*, (Riverwood, 2004) was an important source for tracing the routes taken by the early explorers.[3]

The information obtained from these sources was used to identify local historic events, activities and themes. The historic themes most relevant to this study are the relationship between the environment and human activities, activities associated with teaching and transmission of Aboriginal culture and identity and the role of Aboriginal people in the exploration of the region. These and other themes have been ordered into a chronological narrative broken into the following three chapters:

1. 'People of the Woods and Mountains' which discusses traditional society and culture and how it was transmitted across communities and from generation to generation;
2. 'Invasion' which documents first contact experiences, exploration, Aboriginal reactions to British settlements and frontier violence;
3. 'Surviving between two worlds' which discusses the impact of British settlement on Aboriginal communities and shows how Aboriginal people coped with attempts to assimilate them into European lifestyles.

The Scope and Limitations of this History

In the source documents, the Aboriginal people who lived around the Cessnock area, were called by various names. It was only in the 1890s that they were recognised as being members of the Darkiñung tribe (variously spelt Darkinyung, Darkinjung, Darkinung, Darkinoong, Darrkinyung). The meaning of the word is unclear and it is doubted that the Aboriginal people referred to themselves by that name.[4] However, for consistency and convenience, this history will employ the term Darkiñung people

[3] Andy Macqueen is a bushwalker who has guided archaeology teams to Aboriginal rock art sites around Mount Yengo and in the Greater Blue Mountains National Park.

[4] Darkiñung is possibly a corruption of a word for one of their ceremonies. See Michael Powell & Rex Hesline, 'Making Tribes: constructing Aboriginal tribal entities in Sydney and coastal NSW from the early colonial period to the present', JRAHS, 90, 2, 2010, pp 115-148

when writing about the pre-colonisation period and contemporary names, such as the Wollombi tribe, when writing about a particular period after colonisation.

There has been considerable debate over the extent of Darkiñung territory. A recent assessment placed the topographical boundaries of Darkiñung country as running from the Newcastle Sugarloaf Range in the east; south along the ridge line to the Watagan Range and continuing along Peats Ridge to the Hawkesbury River upstream of Mooney Mooney in the SE; west along the Hawkesbury River floodplains and into the Colo River catchment in the Blue Mountains; north along the Central Tablelands to the Goulburn River catchment; east to the Upper Hunter River floodplains between Muswellbrook and Singleton; downriver to the junction of Wallis Creek near Maitland; and thence along the ridgeline to the Sugarloaf.[5] Even though these boundaries are well outside those of Cessnock LGA, they have been used as the geographical limits of the region covered in this history.

The extension of the history outside the boundary of Cessnock LGA is for three reasons. First, the present boundaries are recent constructs and confining the history to this area only would distort our understanding of what happened. Second, there is very little primary historical information about the Aboriginal history of the Cessnock LGA because early settlers mostly passed through it to get to the "good sheep country" elsewhere in the Hunter Valley. As the settlers did not stay, the Aboriginal people living between the Hawkesbury and Hunter Rivers attracted only fleeting comments in explorer and settler journals and most of the recorded historic events involving the Darkiñung people took place elsewhere in the Hunter Valley. Finally, the aim of a thematic history is to place local events in a wider historical context. Anything that happened to Aboriginal people living in the Hunter and Hawkesbury River catchment basins had an impact on Aboriginal people living within the current boundaries of Cessnock LGA and is therefore relevant to this history.

The history should be regarded as a predictive or indicative history. Hopefully its findings can be used not only to identify and interpret historic sites in Cessnock LGA but also to initiate further research on particular aspects of Indigenous history in the

[5] Dr G.E. Ford, 'Darkiñung Recognition', MA Thesis, University of Sydney, 2010, p 10

BRIDGE AND MAJOR CULVERT LEVEL 2 INSPECTION

CESSNOCK CITY COUNCIL

Component Inventory and Condition Assessment Form

Bridge Name	Fosters bridge	Suburb	Quarrybalong	Road	Sandy Creek Road	Road Type	Rural Sealed	Bridge Type	Timber Girder
Structure ID	11	Type Of Inspection Level		L2		Inspected By		Justin Fairfull	
Program ☑		Exceptional ☐		Underwater ☐		Signature			

	Modification	Group	Group Number	Component	Component Code	Component Number	Component Material	Unit	Maintenance Required	Quantity Per Condition State				Comments
										1	2	3	4	
	○ Yes ◉ No	A_Approach	1	Guardrailing / End Posts / Kerb Logs	RTIM	1	Timber	ea	○ Yes ◉ No		1			Mulbring End. End post.
	○ Yes ◉ No	A_Approach	1	Miscellaneous Railing including Guardfence	RMIS	2	Timber	ea	○ Yes ◉ No		2			Handrails.
	○ Yes ◉ No	A_Approach	1	Approach Carriageway	MAPP	1	Other	ea	○ Yes ◉ No		1			Hot mix approach.
	○ Yes ◉ No	A_Approach	1	Miscellaneous Railing including Guardfence	RMIS	2	Timber	ea	◉ Yes ○ No		1	1		Handrails. Top rail loose and needs tighten up.
	○ Yes ◉ No	A_Approach	1	Guardrailing / End Posts / Kerb Logs	RTIM	1	Timber	ea	◉ Yes ○ No		1			End Post. Needs pushing back straight.
	○ Yes ◉ No	AB_Abutment	1	Abutment Sheeting / Gravel	TASG	1	Other	ea	○ Yes ◉ No		1			Wing Wall. Natural ground
	○ Yes ◉ No	AB_Abutment	1	Pile	TPIL	3	Timber	ea	◉ Yes ○ No		1	1	1	Down stream pile ok. Middle pile rotted and eaten away badly where caps bolt on. Upstream pile has ant damage.
	○ Yes ◉ No	AB_Abutment	1	Abutment Sheeting / Gravel	TASG	7	Timber	ea	◉ Yes ○ No		2	5		Sheething deteriorating. Keep check on.

	Modification	Group	Group Number	Component	Component Code	Component Number	Component Material	Unit	Maintenance Required	Quantity Per Condition State				Comments
	○ Yes ◉ No	AB_Abutment	1	Capwale / Headstock / Sill	TCHS	2	Timber	ea	◉ Yes ○ No		1	1		Capwales. Back cap has rot or ant damage wher bolting onto pile.Keep check on for further deterioration.
	○ Yes ◉ No	AB_Abutment	1	Abutment Sheeting / Gravel	TASG	3	Timber	ea	○ Yes ◉ No		3			Gravel boards. Seem ok.
	○ Yes ◉ No	AB_Abutment	1	Abutment Sheeting / Gravel	TASG	1	Other	ea	○ Yes ◉ No		1			Wing Wall. Natural ground wing wall seems ok.
	○ Yes ◉ No	S_Span	1	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	◉ Yes ○ No		4			Handrails. (2 top,2 bottom) Needs bolt repairs.
	○ Yes ◉ No	S_Span	1	Miscellaneous Railing including Guardfence	RMIS	5	Timber	ea	○ Yes ◉ No		5			Handrail Posts. ok
	○ Yes ◉ No	S_Span	1	Guardrailing / End Posts / Kerb Logs	RTIM	2	Timber	ea	○ Yes ◉ No		2			Kerb logs.
	○ Yes ◉ No	S_Span	1	Transverse Deck Plank	TTDK	43	Timber	ea	○ Yes ◉ No	12	23	8		Some deteriorating keep check on.
	○ Yes ◉ No	S_Span	1	Bolting Planks.	TBPL	6	Timber	ea	○ Yes ◉ No		5	1		Showing signs of wear but holding up.
	○ Yes ◉ No	S_Span	1	Girder / Cross Girder	TGCG	4	Timber	ea	◉ Yes ○ No		2	2		Upstream girder has alot of ant activity in sap.
	○ Yes ◉ No	S_Span	1	Guardrailing / End Posts / Kerb Logs	RTIM	2	Timber	ea	○ Yes ◉ No		2			Kerb Logs.
	○ Yes ◉ No	S_Span	1	Miscellaneous Railing including Guardfence	RMIS	5	Timber	ea	◉ Yes ○ No		5			Handrail posts. Need bolt s tightening and replaced.
	○ Yes ◉ No	S_Span	1	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	◉ Yes ○ No		4			Handrails. (2 top,2 bottom) Needs straps tightening up on top rail.
	○ Yes ◉ No	Pier	1	Pile	TPIL	3	Timber	ea	○ Yes ◉ No		3			Middle pile has sap wood falling off but seems ok underneath.
	○ Yes ◉ No	Pier	1	Wale / Brace	TWBR	2	Timber	ea	○ Yes ◉ No		1	1		Bottom wales. 1 has minor split and some ant damage, holding up ok for now.
	○ Yes ◉ No	Pier	1	Wale / Brace	TWBR	2	Timber	ea	○ Yes ◉ No		2			Middle Wales.

	Modification	Group	Group Number	Component	Component Code	Component Number	Component Material	Unit	Maintenance Required	Quantity Per Condition State				Comments
	○ Yes ◉ No	Pier	1	Capwale / Headstock / Sill	TCHS	2	Timber	ea	◉ Yes ○ No				2	Cap Wales. Both need replacement rotting away.
	○ Yes ◉ No	Pier	1	Wale / Brace	TWBR	4	Timber	ea	○ Yes ◉ No		4			Cross bracing.
	○ Yes ◉ No	Pier	1	Corbel	TCOR	4	Timber	ea	◉ Yes ○ No		2		2	2 have large splits and need repair or replacement.
	○ Yes ◉ No	S_Span	2	Miscellaneous Railing including Guardfence	RMIS	6	Timber	ea	○ Yes ○ No		5	1		Handrails. (3 top,3 bottom)
	○ Yes ◉ No	S_Span	2	Miscellaneous Railing including Guardfence	RMIS	5	Timber	ea	◉ Yes ○ No		5			Handrail posts. Need loose bolts tightening up.
	○ Yes ◉ No	S_Span	2	Guardrailing / End Posts / Kerb Logs	RTIM	2	Timber	ea	○ Yes ◉ No		2			Kerb Logs.
	○ Yes ◉ No	S_Span	2	Transverse Deck Plank	TTDK	44	Timber	ea	○ Yes ◉ No	14	20	7	3	3 could be replaced. Others deteriorating.
	○ Yes ◉ No	S_Span	2	Bolting Planks	TBPL	6	Timber	ea	○ Yes ◉ No		4	2		Couple showing signs of wear but holding up for now.
	○ Yes ◉ No	S_Span	2	Girder / Cross Girder	TGCG	4	Timber	ea	○ Yes ◉ No		2	2		Couple showing signs of wear .
	○ Yes ◉ No	S_Span	2	Guardrailing / End Posts / Kerb Logs	RTIM	3	Timber	ea	○ Yes ◉ No		3			Kerb logs.
	○ Yes ◉ No	S_Span	2	Miscellaneous Railing including Guardfence	RMIS	5	Timber	ea	○ Yes ◉ No		5			Handrail Posts.
	○ Yes ◉ No	S_Span	2	Miscellaneous Railing including Guardfence	RMIS	6	Timber	ea	◉ Yes ○ No		6			Handrails (3 top,3 bottom) Need loose bolts and straps tightening up.
	○ Yes ◉ No	Pier	2	Pile	TPIL	3	Timber	ea	◉ Yes ○ No		2		1	Middle pile rotted or eaten out by ants at top where caps bolt onto.
	○ Yes ◉ No	Pier	2	Wale / Brace	TWBR	2	Timber	ea	◉ Yes ○ No			1	1	Bottom Wales. 1 wale been eaten on end by ants needs replacement.
	○ Yes ◉ No	Pier	2	Wale / Brace	TWBR	2	Timber	ea	○ Yes ◉ No		2			Middle wales.
	○ Yes ◉ No	Pier	2	Capwale / Headstock / Sill	TCHS	2	Timber	ea	◉ Yes ○ No		1		1	Cap Wales. 1 been eaten out where bolts onto pile.

	Modification	Group	Group Number	Component	Component Code	Component Number	Component Material	Unit	Maintenance Required	Quantity Per Condition State				Comments
	○ Yes ◉ No	Pier	2	Corbel	TCOR	4	Timber	ea	◉ Yes ○ No		3	1		1 splitting could do with cross bolt , others look bit rough but seem ok.
	○ Yes ◉ No	Pier	2	Wale / Brace	TWBR	4	Timber	ea	○ Yes ◉ No		4			
	○ Yes ◉ No	S_Span	3	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	◉ Yes ○ No		4			Handrails. Need loose bolts tightening up.
	○ Yes ◉ No	S_Span	3	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	○ Yes ○ No		4			Handrail posts. Has some loose bolts which need tightening up.
	○ Yes ◉ No	S_Span	3	Guardrailing / End Posts / Kerb Logs	RTIM	1	Timber	ea	○ Yes ◉ No		1			Kerb Log.
	○ Yes ◉ No	S_Span	3	Transverse Deck Plank	TTDK	37	Timber	ea	○ Yes ◉ No	15	15	7		
	○ Yes ◉ No	S_Span	3	Bolting Planks	TBPL	6	Timber	ea	◉ Yes ○ No		4	1	1	
	○ Yes ◉ No	S_Span	3	Girder / Cross Girder	TGCG	4	Timber	ea	○ Yes ◉ No		2	2		
	○ Yes ◉ No	S_Span	3	Guardrailing / End Posts / Kerb Logs	RTIM	1	Timber	ea	○ Yes ◉ No			1		Kerb log. rotting but still intact for now.
	○ Yes ◉ No	S_Span	3	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	◉ Yes ○ No		3		1	Handrail Posts. End post rotted and needs replacing.
	○ Yes ◉ No	S_Span	3	Miscellaneous Railing including Guardfence	RMIS	4	Timber	ea	○ Yes ◉ No		4			Handrails.
	○ Yes ◉ No	AB_Abutment	2	Pile	TPIL	2	Timber	ea	○ Yes ◉ No		2			Wing piles. Seem ok.
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	10	Timber	ea	○ Yes ◉ No		7	3		Wing sheething. 3 showing wear but ok for now.
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	2	Timber	ea	◉ Yes ○ No				2	Wing Rail and cap. Both rotted and need replacement.
	○ Yes ◉ No	AB_Abutment	2	Pile	TPIL	4	Timber	ea	○ Yes ◉ No		2	2		Couple rotting on top.
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	17	Timber	ea	○ Yes ◉ No		11	6		Sheething.

	Modification	Group	Group Number	Component	Component Code	Component Number	Component Material	Unit	Maintenance Required	Quantity Per Condition State				Comments
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	3	Timber	ea	○ Yes ◉ No			3		Gravel boards. Look rough but holding up.
	○ Yes ◉ No	AB_Abutment	2	Capwale / Headstock / Sill	TCHS	2	Timber	ea	◉ Yes ○ No			1	1	Cap Wales. Back cap rotted badly and needs replacement.
	○ Yes ◉ No	AB_Abutment	2	Pile	TPIL	1	Timber	ea	○ Yes ◉ No		1			Wing pile. Seems ok.
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	3	Timber	ea	◉ Yes ○ No				3	Wing sheething. What can see is rotted.
	○ Yes ◉ No	AB_Abutment	2	Abutment Sheeting / Gravel	TASG	2	Timber	ea	◉ Yes ○ No				2	Wing rail and cap. Both rotted badly and need replacement.
	○ Yes ◉ No	A_Approach	2	Concrete Railing / End Posts	RCON	1	Timber	ea	○ Yes ◉ No		1			End Post. Sap wood been eaten away but seems solid underneath.
	○ Yes ◉ No	A_Approach	2	Miscellaneous Railing including Guardfence	RMIS	2	Timber	ea	◉ Yes ○ No		2			Handrails. Loose bolts need tighten up.
	○ Yes ◉ No	A_Approach	2	Approach Carriageway	MAPP	1	Other	ea	○ Yes ◉ No		1			Hot Mix approach
	○ Yes ◉ No	A_Approach	2	Concrete Railing / End Posts	RCON	1	Timber	ea	○ Yes ◉ No		1			End Post. Sap been eaten away but seems solid underneath.
	○ Yes ◉ No	A_Approach	2	Miscellaneous Railing including Guardfence	RMIS	2	Timber	ea	○ Yes ◉ No		2			Handrails. Both ok.
	○ Yes ◉ No	A_Approach	2	Guardrailing / End Posts / Kerb Logs	RTIM	3	Steel	ea	◉ Yes ○ No		2		1	Guardrail. End curved rail been hit and needs replacement.
	○ Yes ◉ No	A_Approach	2	Guardrailing / End Posts / Kerb Logs	RTIM	6	Steel	ea	◉ Yes ○ No		5		1	Guardrail Posts. End post been hit and needs replacement.

IDENTIFIED DEFECTS

Recommend a level 3 inspection to be carried out on bridge due to condition of caps and some piles.
Bridge very high and at bottom of hill,cars and trucks hit at speed putting alot of pressure on bridge components.

Cap Wales on pier 1 in very bad condition need replacement.

Back Cap Wale Rotting.

Further Description

BRIDGE RESTORATION OFICER SIGN OFF (Inspection completed and submitted electronically)	OFFICER PRINT NAME	Justin Fairfull	DATE	26/11/2012	SIGNATURE	

STRATEGY ASSETS SIGN OFF (Inspection received and uploaded Asset System)	OFFICER PRINT NAME	Chris	DATE	27/11/2012	SIGNATURE	

FURTHER WORK REQUIRED ◯ Yes ◯ No ◯ NA

List Further Work Required					
		Work Required	Level 3 inspection.	CRMS NO.	

STRATEGIC ASSETS COMMENTS

Are corrective actions adequate? ◯ YES ◯ NO

STRATEGY ASSETS SIGN OFF (Corrective actions have been completed)	OFFICER PRINT NAME		DATE		SIGNATURE	