



Wollondilly Shire Council Local Environmental Study: Aboriginal and Historical Heritage Assessment

**Report for Cardno on behalf of Wollondilly
Shire Council**

September 2011

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ACKNOWLEDGMENTS

Biosis Research acknowledges the contribution of the following people and organisations in preparing this report:

- Philip Patton and Connie Lau (Cardno)
- Sophie Perry (Wollondilly Shire Council)
- Shannon Freeburn and Sharlene Freeburn (DECCW now OEH)
- Glenda Chalker (Cubbitch Barta Native Title Claimants Aboriginal Corporation)
- Donna Whillock (Tharawal Local Aboriginal Land Council)
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ABBREVIATIONS

AHC	Australian Heritage Council
AHIMS	Aboriginal Heritage Information Management System
ATSIC	Aboriginal and Torres Strait Islander Commission
CBNTCAC	Cubbitch Barta Native Title Claimants Aboriginal Corporation
CHL	Commonwealth Heritage List
CMP	Conservation Management Plan
DECCW	Department of Environment, Climate Change and Water NSW (now OEH)
EP&A	Environmental Protection and Assessment
EPBC	Environment Protection and Biodiversity Conservation
GSV	Ground surface visibility
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LES	Local Environmental Study
LGA	Local Government Area
MGA	Map Grid of Australia – unless otherwise specified all coordinates are in MGA
NHL	National Heritage List
NNTT	National Native Title Tribunal
NPWS	National Parks and Wildlife Service (now part of DECCW)
OEH	Office of Environment and Heritage
REP	Regional Environment Plan
RNE	Register of the National Estate
SCA	Sydney Catchment Authority
SHI	State Heritage Inventory
SHR	State Heritage Register
TLALC	Tharawal Local Aboriginal Land Council

EXECUTIVE SUMMARY

Biosis Research was commissioned by Cardno on behalf of Wollondilly Shire Council to undertake an Aboriginal and historical cultural heritage assessment of a number of precincts proposed for rezoning to Zone No. R2 Low Density Residential, located at:

- West Picton
- East Thirlmere
- South Thirlmere
- East Tahmoor
- West Tahmoor
- South Tahmoor

The Local Environmental Study (LES) assesses the suitability of the proposed land uses on the sites and provides a planning framework to guide the future developments on the lands.

The aim the archaeological and cultural heritage investigation was to identify, record and assess the value of Aboriginal and historical archaeological sites within the proposed rezoning precincts. Fourteen previously identified Aboriginal archaeological sites were identified within a 1.5 km radius of the proposed areas for rezoning. None of these sites are located within any of the rezoning precincts. Predictive modelling suggests that Aboriginal stone artefacts are likely to be encountered. Three new archaeological sites were identified during the field survey – two open artefact scatters (*Macquarie Place AFT-1 – 52-2-3801*; *Rita Street AFT-1 – 52-2-3876*) and an isolated artefact (*Macquarie Place AFT-2 – 52-2-3802*). In addition, four areas of archaeological sensitivity were recorded along drainage lines in the East Tahmoor, South Tahmoor (both unnamed ephemeral drainage lines); and West Tahmoor (Myrtle Creek) and East Thirlmere (Redbank Creek) Study Areas.

A number of historical features were identified within the East Tahmoor precinct, including three residences and bunya pine and one brick chimney stack. All of these sites are considered to be at least of local historical significance.

The Aboriginal archaeological sites and historical items may be affected by the rezoning of the Study Area. As such, the following recommendations have been devised:

Historic Heritage

Recommendation 1 – LEP Listed Heritage Items

- Future investigation will be required at a later stage of development as impacts related to design and construction are not known. Proposed residential development at the West

Picton precinct, in the vicinity of the Wollondilly LEP listed item #I211 - Weatherboard Cottage at 796-800 Thirlmere Way (Lot 1 DP 500116), will trigger the LEP requirement for an assessment of the visual impact a development will have on the heritage item. The Wollondilly LEP 2011 makes provisions for consideration and assessment of impacts to heritage items in Part 5, Clause 5.10.

Recommendation 2 – Other Identified Heritage Items

- Items identified in Section 6.3.2 have been identified as potentially possessing heritage values. Should impacts be proposed, assessment of their significance should be undertaken followed by a statement of heritage impacts to manage change.
- Number 25 Bell Street, Thirlmere (Lot 138 DP 751270) has been identified as a site of non-Aboriginal archaeological sensitivity. Undertake additional research on this property and if appropriate consider adding to the heritage schedule of the Wollondilly Local Environmental Plan 2011. This property retains a standing chimney believed to have belonged to a building in the Federation Queen Anne architectural style.
- Further, if impacts are proposed to Lot 138 DP 751270, an archaeological assessment will be required to evaluate the likelihood of relics being disturbed. A permit application under the *Heritage Act 1977* and approval from Council may be required.

Recommendation 3 - Stop work provision: Historic sites

- Should any previously unidentified historic archaeological objects or places be identified during excavation and construction within any of the precincts, all works must cease in the vicinity of the find and the following be notified:
 - Heritage Branch, Office of Environment and Heritage
 - The land owner/s
 - A qualified archaeologist

Aboriginal Heritage

Recommendation 4 – Conservation & Ongoing Management

- In the first instance, Wollondilly Shire Council should avoid impact to all registered Aboriginal archaeological sites and areas of archaeological sensitivity at the rezoning stage. Include these areas in conservation zones.
- To successfully manage Aboriginal cultural heritage within the Study Area, an Aboriginal Cultural Heritage Management Plan (ACHMP) should be developed once the Concept Design has been finalised, in consultation with relevant Aboriginal stakeholder groups and OEH. This would consider the management of Aboriginal cultural heritage and mitigate acceptable impacts at all stages of future development, including construction, vegetation remediation and rehabilitation, weed removal, flooding measures, etc.

Recommendation 5 – Further Archaeological Work

- Where registered Aboriginal archaeological sites and areas of archaeological potential cannot be avoided, additional archaeological work will be required, including impact assessments, detailed archaeological excavation and recording.
- No further archaeological work is required within all other areas where no Aboriginal archaeological sensitivity has been identified.

Recommendation 6 – Aboriginal Stakeholder Consultation

- All aspects of management and mitigation should be developed and implemented in consultation with the registered Aboriginal stakeholders and a qualified Aboriginal heritage consultant.

Recommendation 7 - Stop work provision: Aboriginal

- While Aboriginal archaeological sites or areas of potential were identified within the Study Area, it should be noted that all Aboriginal places and objects are protected under the *National Parks and Wildlife Act 1974*. This protection includes Aboriginal places and objects which have not been identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

- Office of Environment and Heritage (OEH)

- A qualified archaeologist
- Aboriginal stakeholders

Recommendation 9 – Human Remains

Where suspected human skeletal remains are found, implement the following process:

- The remains will be reported to police and state coroner
- Wollondilly Shire Council and the land owner will be notified of the find
- Aboriginal stakeholders will be notified of the find
- OEH will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the National Parks and Wildlife Act 1974 (NSW) and the NSW NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan.

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1.0 INTRODUCTION

1.1 Project background

In March 2010 Biosis Research Pty Ltd was commissioned by Cardno on behalf of Wollondilly Shire Council to undertake an archaeological and cultural heritage assessment of a number of precincts proposed for rezoning.

In 1999, Wollondilly Shire Council endorsed the Picton Tahmoor Thirlmere (PTT) Strategy which identified land for potential future growth within the three townships. The Strategy nominated the preparation of the draft Local Environmental Study (LES) for PTT, which established a framework for future growth within the nominated urban precincts (Cardno 2010). In 2003, Council adopted the PTT Master Plan, which provided a visual representation of future development within the PTT area within seven identified new urban precincts.

Wollondilly Shire Council received 6 rezoning applications in 2005-2006 seeking to rezone rural-zoned land identified as “New Urban Lands” in Council’s adopted PTT Urban Lands Implementation Strategy, and have been labelled:

- West Picton
- East Thirlmere
- South Thirlmere
- East Tahmoor
- West Tahmoor
- South Tahmoor

The Local Environmental Study (LES) assesses the suitability of the land for low density residential development and provides a planning framework to guide future developments on the lands. A Planning Proposal has also been prepared in conjunction with the LES.

The aim of this cultural heritage investigation is to identify, record and assess Aboriginal and historical archaeological sites within the proposed rezoning precincts.

1.1.1 The Study Area

The Study Area consists of precincts within the PTT area. The PTT locality is approximately 4,445 ha and is a predominantly rural area with concentrated urban land at the towns of Picton, Tahmoor and Thirlmere. It is located approximately 90 km southwest of Sydney and is serviced by the Main Southern Railway Line and F5 South Western Freeway/Hume Highway, which provide regional access to Sydney, Canberra and Melbourne. Picton Road provides road access to Wollongong, which is located approximately 45 km southeast of the PTT area.

Each precinct is located on the Cumberland Plain in the Wollondilly Local Government Area

(LGA) (Figure 2). The *West Picton* Precinct is located on the eastern and western sides of Rumker Street, Picton, to the north of Antill Street. *East Thirlmere* Precinct is centred on Marion Street and Rita Street in Thirlmere, including properties that front onto Myrtle Creek. The *South Thirlmere* Precinct extends east and west of Thirlmere Way to Dennis Street and Antill Street respectively. Bell Street and Jarvis Street mark the northern and southern boundaries of the Study Area. The *East Tahmoor* Precinct is located over a large area and covers a number of blocks. It extends from west of Progress Street through to River Road in the northeast. The *West Tahmoor* Precinct extends north of Thirlmere Way to Myrtle Creek, while the *South Tahmoor* Precinct extends between Byron Road, the rail line and south of Bronzewing Street.

1.2 Aims

The following is a summary of the major objectives for the Aboriginal cultural heritage and historical heritage assessment.

- Conduct heritage register searches to identify any previously recorded cultural heritage sites within the proposed Precincts. Searches will include the Aboriginal Heritage Information Management System (AHIMS), the National Heritage List, Register of the National Estate, State Heritage Register, Wollondilly Local Environmental Plan and National Trust heritage lists.
- Conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- Consult with the Tharawal Local Aboriginal Land Council and Cubbitch Barta Native Title Claimants Aboriginal Corporation, who are identified as Aboriginal stakeholders in the area.
- Undertake appropriate survey of each precinct. Survey coverage will target landforms with high potential for heritage places, as identified through background research.
- Reassess all previously recorded sites within the Study Area.
- Record and assess sites identified during the survey in compliance with the guidelines endorsed by OEH and the Heritage Branch.
- Make recommendations to manage the cultural heritage values within the Study Area.

2.0 PLANNING FRAMEWORK

2.1 Commonwealth Registers

2.1.1 National Heritage Registers

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) establishes two mechanisms for protection of heritage places of National or Commonwealth significance. The National Heritage List provides protection to places of cultural significance to the nation of Australia. The Commonwealth Heritage List comprises natural, Aboriginal and historical heritage places owned and controlled by the Commonwealth and therefore mostly includes places associated with defence, communications, customs and other government activities.

Nominations to these two lists are assessed by the Australian Heritage Council (AHC), which also administers the (now static) Register of the National Estate (RNE), a list of places identified as having national estate values.

APPLICATION TO THE STUDY AREA – NATIONAL HERITAGE REGISTERS

While a number of items within the locality are listed on the CHL, the NHL or the RNE within the Wollondilly LGA, no sites / places are listed within the precincts.

2.1.2 National Native Title Register

The Commonwealth *Native Title Act* 1993 (Cth) establishes the principles and mechanisms for the recognition, determination of Native Title for Aboriginal people.

The purpose of searching the register is to identify any Traditional Owner groups with current registered claims close to the Study Area that may identify themselves as relevant stakeholders with traditional knowledge or experience.

APPLICATION TO THE STUDY AREA – NATIONAL NATIVE TITLE REGISTER LISTINGS

A search of the National Native Title Register, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements was completed on 10 March 2010.

- There are no lands determined to have native title or indigenous land use agreements within any proposed Precinct or its immediate vicinity.
- The registered native title claim NC97/7 Gundungurra Tribal Council Aboriginal Corporation #6 covers the entire Precinct.

2.2 State Registers

2.2.1 National Parks and Wildlife Act Registers

The Department of Environment, Climate Change and Water NSW (DECCW) maintains two registers of heritage sites under the auspices of the *NSW National Parks and Wildlife Act 1974*. All Aboriginal sites in NSW are required to be registered on the Aboriginal Heritage Information Management System (AHIMS) register. Historic heritage places within lands managed by DECCW (lands such as National Parks) are listed on the Historic Heritage Information Management System (HHIMS). As the Study Area is not within lands managed by DECCW, the HHIMS Register was not searched.

AHIMS: A search of the AHIMS register was undertaken at the commencement of the project. The AHIMS database is maintained by the Office of Environment and Heritage and contains a list of all Aboriginal objects, Aboriginal places and other Aboriginal heritage values in NSW that have been registered as required under the *NSW National Parks and Wildlife Act 1974*.

The area searched on the AHIMS database was larger than the Study Area, as Aboriginal sites recorded within the wider area will provide a regional perspective on the types of sites that maybe expected to be found within the Study Area.

APPLICATION TO THE STUDY AREA – AHIMS DATABASE

A search of the AHIMS Database completed on 15 March 2010 identified:

- 14 previously recorded Aboriginal sites within a 1.5 km radius of the precincts.

2.2.2 Heritage Act Registers

The NSW Heritage Office, recently incorporated into the Office of Environment and Heritage from the Department of Planning and Infrastructure, maintains registers of heritage and archaeological items that are of significance to New South Wales.

The State Heritage Register (SHR) contains items that have been assessed as being of State Significance to New South Wales. SHR listed items are protected under the *Heritage Act 1977*.

The State Heritage Inventory (SHI) contains items that are listed on Local Environmental Plans, Regional Environmental Plans and/or on a State Government Agency's Section 170 registers. Items on the SHI are listed on one or more statutory registers.

If an item or place is not listed on the SHR or on an environmental planning instrument it may not mean that the item or place does not have heritage or archaeological significance; many

items have not been assessed to determine their heritage significance.

APPLICATION TO THE STUDY AREA – NSW STATE HERITAGE REGISTER LISTINGS

There are no items within the Study Areas listed on the NSW State Heritage Register.

- The Tahmoor Railway Station Group is situated in the vicinity of the East, West and South Tahmoor subdivision areas

The NSW Heritage Act 1977 currently affords automatic statutory protection to ‘certain relics’ that form part of archaeological deposits. Sections 139–145 of the Act prevent the excavation of a relic, except in accordance with a gazetted exception or an excavation permit issued by the Heritage Council of New South Wales. Consultation and discussion with the NSW Heritage Office should begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

APPLICATION TO THE STUDY AREA – NSW HERITAGE ACT 1977 RELICS PROVISIONS

There is one identified archaeological sites within the Study Area;

- Lot 138 DP 751270– it’s status as a relic has not been assessed
- Relics provisions are applicable to relics regardless of heritage listing. Archaeological sites that may be identified in the Study Area during survey will be protected by the relics provisions of the *NSW Heritage Act 1977*.

2.2.3 Environmental Planning and Assessment Act Registers

The *Environmental Planning and Assessment Act 1979* includes provisions for local government authorities to consider environmental impacts in land-use planning and decision making. Such impacts are generally considered in relation to the planning provisions contained in the Local Environment Plan (LEP) or Regional Environment Plan (REP).

Local Environmental Plans: Each Local Government Area (LGA) is required to create and maintain a LEP that includes Aboriginal and historic heritage items. Local Councils identify items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the *EP&A Act 1979* and *Heritage Act 1977*.

APPLICATION TO THE STUDY AREA – WOLLONDILLY LEP 2011 SCHEDULE 5 ENVIRONMENTAL HERITAGE

The following items listed in Schedule 5 to Wollondilly LEP 2011 within close proximity to the precincts:

- Item I211 comprises a Weatherboard Cottage at 796-800 Thirlmere Way (Lot 1 DP 500116) and is considered to be of Local Significance; it is located to the immediate south of the West Picton precinct.
- Item I251 is listed as Thirlmere Railway Precinct and Heritage Centre at 10 Bourbon Road (Lot 11, DP1124669; Lot 10 DP1118845); it is within 200 m and 250 m from South Thirlmere and East Thirlmere precincts respectively.
- Thirlmere Conservation Area is within 200 m of the East Thirlmere precinct. Neither precinct is visually or spatially connected with these items – they do not form part of the shared streetscape and are not within significant view corridors along shared thoroughfares.
- Item I228 comprises a house at 13 Larkin Street (lot 87, DP8982); it is approximately 400m west of East Tahmoor, 900m S-E of West Tahmoor and 500m N-E of South Tahmoor precincts.
- Item I229 is listed as Tahmoor Railway station Group; it is located at the Main Southern railway and is approximately 500m west of East Tahmoor, 400m N-E of South Tahmoor and 750m S-E of West Tahmoor precincts.
- Item I230 comprises of a house at 30 Milne Street (Lot 193, DP8982); it is located approximately 250m north of South Tahmoor and 250m south of West Tahmoor precincts.
- Item I231 is listed as Bellefield at 31-33 Pitt Street (Lots 137 and 138, DP8982); it is located approximately 500m west of East Tahmoor, 500m N-E of South Tahmoor and 700m S-E of West Tahmoor precincts.
- Item I232 is listed as Tahmoor House at 27 Remembrance Driveway (Part Lot 14, DP1091377); it is located approximately 700m north of East Tahmoor precinct.
- Item I234 comprises of a cottage at 55-59 Remembrance Driveway (Lot 6, DP864238); it is located approximately 500m north of East Tahmoor precinct.
- Item I234 is listed as Denfield Villa at 152-158 Remembrance Driveway (Lot 6, DP597171); it is located approximately 200m west of East Tahmoor and 350m east of South Tahmoor precincts.
- Item I235 is listed as Stratford House at 20 Rockford Road and 2705 Remembrance Driveway (Lot 2, DP236262; Lot 6, DP12096); it is located approximately 400m S-W of East Tahmoor and 400m east of South Tahmoor precincts.
- Item I288 is listed as Bunya Pine and is Tahmoor Village Shopping Centre at 165-173 Remembrance Driveway (Part Lot 1, DP1130397); it is located approximately 250m west of East Tahmoor and 250m east of South Tahmoor

- precincts.
- Item I207 comprises of Koorana Homestead outbuildings and trees at 2240 Remembrance Driveway (Lot 2, DP207443); it is located approximately 1.3km south of West Picton precinct.
- Item I262 comprises of Thirlmere Cemetery including Estonian Cemetery at Station Street (Lot 7027, DP92833); it is located approximately 250m S-W of South Thirlmere precinct.
- Item I258 is listed as Stationmaster's House at 2 Oaks Street (Lot 2, DP812022); it is located within WLEP 2011 Thirlmere Conservation Area 3, and is approximately 250m west of East Thirlmere and 500m north of South Thirlmere precincts.
- Item I259 is listed as Thirlmere Public School and Residence at 10 Oaks Street (Lot 1, DP598357); it is located within Thirlmere Conservation Area 3; and is approximately 500m south of South Thirlmere and 400m west of East Thirlmere precincts.
- Item I256 comprises of a cottage at 2 Kevin Place (Lot 152, DP870391); it is located approximately 750m west of East Thirlmere and 850m north of South Thirlmere precincts.
- Item I253 comprises of a cottage at 50 Carlton Road (Lot 66, Sec C, DP1569); it is located approximately 500m west of East Thirlmere and 700m north of South Thirlmere precincts.
- Item I266 is listed as Railway Cottage at 59 Westbourne Avenue (Lot 24, DP1569); it is located approximately 400m west of East Thirlmere and 900m north of South Thirlmere precincts.
- Item I257 comprises of a house at 1-3 North Street (Lot 3, DP1154053); it is located approximately 300m west of East Thirlmere and 900m north of South Thirlmere precincts.
- Item I254 comprises of a cottage at 6 Gordon Street (Lot 21, Sec D, DP1569); it is located approximately 300m N-W of East Thirlmere and 950m north of South Thirlmere precincts.
- Item I263 is listed as Thirlmere Way Cottages at 415, 417 and 419 Thirlmere Way West (Lots A and B, DP393033; Lot 265, DP1064335); it is located within Thirlmere Conservation Area 3; and is approximately 250m N-W of East Thirlmere and 1.1km north of South Thirlmere precincts.
- Item I252 is listed as Thirlmere House at 145 Burns road (Lot 2, DP773135); it is located approximately 1.6km north of East Thirlmere and 2.4km west of West Picton precincts.
- Item I264 comprises of a house at 427 Thirlmere Way (Lot 7, Sec 4, DP2339); it

- is located approximately 300m N-W of East Thirlmere precinct.
- Item I265 is listed as Queen Victoria Hospital at 615 Thirlmere Way (Lot 31, DP867897); it is located approximately 1km S-W of West Picton and 1km N-E of East Thirlmere precincts.
 - Item I210 is listed as Mill Hill and comprises of Miller's house and archaeological relics at 675 Thirlmere Way (Lot 31, DP867897); it is located approximately 800m S-W of West Picton precinct.
 - Item I146 is listed as Redbank Unity Church at 385 Argyle Street (Lots 11 and 12, DP871248); it is located approximately 200m S-E of West Picton precinct.
 - Item I222 is listed as a Picton General Cemetery at Wild Street (Lot 2, DP758843); it is located approximately 400m east of West Picton precinct.
 - Item I130 is listed as Industry Housing Group at 15-23 Antill Street (Lot 15, DP1093393; Lots 6-8, DP36147); it is located approximately 300m east of West Picton.
 - Item I170 is listed as Industry Housing Group at 14,16, 18 and 20 Cowper Street; and 4,6,8, 10, 16 and 18 Dunlop Place (Lots 4-7, DP23284; Lots 1-4, DP36147; Lot 4, Sec 6, DP758843; Lot 8, DP23284); it is located approximately 250m east of West Picton precinct.
 - Item I169 comprises of houses at 6,8 and 10 Cowper Street (Lot 11, DP855203; Lot 10, DP855203; Lot 1, DP742837); it is located approximately 500m east of West Picton precinct.
 - Item I219 comprises of a cottage at 30 Wild Street (Lot 1, DP10011820); it is located approximately 450m S-E of West Picton precinct.
 - Item I280 is listed as Kedron at 305 Wilton Park Road (Lot 2, DP572157); it is located approximately 500m S-E of West Picton.
 - Item I221 comprises of a cottage at 38 Wild Street (Lot 1, DP1069975); it is located approximately 500m S-E of West Picton precinct.
 - Item I129 comprises of a cottage at 6 Antill Street (Lot 40, DP32031); it is located approximately 650m S-E of West Picton precinct.
 - Item I174 is listed as Rogers Stone Cottage at 41G Hill Street (Lot 2, DP1005288); it is located approximately 300m S-E of West Picton precinct.
 - Item I147 is listed as James Cottage at 404 Argyle Street (Lot 9, Sec8, DP758843); it is located approximately 300m S-E of West Picton precinct.
 - Item I148 is listed as Fairly residence (former) at 426 Argyle Street (Lot 9, Sec8, DP758843); it is located approximately 500m S-E of West Picton precinct.
-

Regional Environmental Plans: Under the EP&A Act, some broad scale regional plans addressed cultural heritage resources that may extend beyond the geographic limit of one

LGA.

2.3 Non-Statutory Registers

2.3.1 The National Trust of Australia (NSW)

The National Trust of Australia (NSW) is a community-based conservation organisation. The Trust maintains a Register of heritage items and places. Although the Register has no legal foundation or statutory power, it is recognised as an authoritative statement on the significance to the community of particular items, and is held in high esteem by the public. The National Trust lists items or places that have heritage or cultural value to the community and, as such, the Trust encourages and promotes the public appreciation, knowledge, and enjoyment of heritage items for future and present generations.

APPLICATION TO THE STUDY AREA – NATIONAL TRUST OF AUSTRALIA (NSW)

No items classified (listed) by the National Trust of Australia are located within the Study Area.

2.4 Summary of heritage listings in the vicinity of the Study Area

There are 15 previously identified AHIMS heritage items within a 1.5 km radius of the precincts. The heritage listings from Schedule 5 to WLEP that are summarised in the table below are within the vicinity of the precincts. (Figure 4)

Table 1: Summary of known heritage items surrounding the Study Area.

ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 2011	IREP 1986	SREP 20 1997	NATIONAL TRUST
14 AHIMS sites are located within a 1.5 km radius of the proposed urban precincts however none of these sites are located within the urban precincts.				Y						
I211 - Weatherboard Cottage 796-800 Thirlmere Way (Lot 1 DP 500116)							Y			
I251 - Thirlmere Railway Precinct and Heritage Centre 10 Barbour Road (Lot 11 DP1124669; Lot 10 DP1118845)							Y			
Thirlmere Conservation Area C3							Y			
I228 - House 13 Larkin Street (Lot 87, DP 8982)							Y			
I229 - Tahmoor Railway Station Group Main Southern Railway							Y			
I230 - House 30 Milne Street (Lot 193, DP8982)							Y			
I231 - Bellefield 31-33 Pitt Street (Lots 137 and 138, DP8982)							Y			
I232 - Tahmoor House 27 Remembrance Driveway (Part Lot 14, DP1091377)							Y			
I233 - Cottage 55-59 Remembrance Driveway (Lot 6, DP 864238)							Y			
I234 - Denfield Villa 152-158 Remembrance Driveway (Lot 6, DP597171)							Y			
I235 - Stratford House 20 Rockford Road and 2705 Remembrance Driveway (Lot 2, DP236262; Lot 6, DP12096)							Y			

ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 2011	IREP 1986	SREP 20 1997	NATIONAL TRUST
I288 – Bunya Pine (Tahmoore Village Shopping Centre) 165-173 Remembrance Driveway (Part Lot 1, DP1130397)							Y			
I207 – Koorana Homestead, outbuildings and trees 2240 Remembrance Driveway (Lot 2, DP207443)							Y			
I262 – Thirlmere Cemetery including Estonian Cemetery Station Street (Lot 7027, DP92833)							Y			
I258 – Stationmaster's House 2 Oaks Street (Lot 2, DP 812022)							Y			
I259 – Thirlmere Public School and Residence, 10 Oaks Street (Lot 1, DP598357)							Y			
I256 – Cottage 2 Kevin Place (Lot 152, DP870391)							Y			
I253 – Cottage 50 Carlton Road (Lot 66, Sec C, DP1569)							Y			
I266 – railway Cottage 59 Westbourne Avenue (Lot 24, DP1569)							Y			
I257 – House 1-3 North Street (Lot 3, DP1154053)							Y			
I254 – Cottage 6 Gordon Street(Lot 21, Sec D, DP1569)							Y			
I263 – Thirlmere Way Cottages 415, 417 and 419 Thirlmere Way West (Lots A and B, DP393033; Lot 265, DP1064335)							Y			
I252 – Thirlmere House 145 Burns Road (lot 2, DP773135)							Y			
I264 – House 427 Thirlmere Way (Lot 7, Sec 4, DP2339)							Y			
I265 – Queen Victoria Hospital 615 Thirlmere way (Lot 32, DP1022462)							Y			
I210 – Mill Hill Miller's house and archaeological relics 675 Thirlmere Way (Lot 31, DP867897)							Y			

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ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 2011	I/REP 1986	SREP 20 1997	NATIONAL TRUST
I146 – Redbank Unity Church 385 Argyle Street (corner Thirlmere Way) (Lots 11 and 12, DP 871248)							Y			
I222 – Picton General Cemetery Wild Street (Lot 2, DP758843)							Y			
I130 – Industry Housing Group 15-23 Antill Street (Lot 15, DP1093393; Lots 6-8, DP36147)							Y			
I170 – Industry Housing Group 14, 16, 18 and 20 Cowper Street; 4, 6, 8, 10, 16 and 18 Dunlop Place (Lots 4-7, DP 23284; Lots 1-4, DP 36147; Lot 4, Sec 6, DP 758843; Lot 8, DP 23284							Y			
I169 – Houses 6, 8 and 10 Cowper Street (Lot 11, DP855203; Lot 10, DP855203; Lot1, DP742837)							Y			
I219 – Cottage 30 Wild Street (Lot 1, DP1001820)							Y			
I280 – Kedron 305 Wilton Park Road (Lot 2, DP572157)							Y			
I221 – Cottage 38 Wild Street (Lot 1, DP1069975)							Y			
I129 – Cottage 6 Antill Street (Lot 40, DP732031)							Y			
I174 – Rogers Stone Cottage 41G Hill Street (Lot 2, DP1005288)							Y			
I147 – James Cottage 404 Argyle Street (Lot 9, Sec 8, DP758843)							Y			
I148 – Fairly Residence (former) 426 Argyle Street (Lot 9, Sec 8, DP758843)							Y			

3.0 ENVIRONMENTAL CONTEXT

A description of the environmental background to the Study Area is provided in order to give context to the archaeological assessment. The environmental aspects of an area will influence the type of archaeological remains that are likely to be present.

Firstly, the environmental conditions of the Study Area may have influenced the land use by people in the past, and secondly, they will affect the processes by which sites are preserved. Environmental values of an area can also contribute to the cultural significance and attachments people have to a place.

The following background is a brief summary of information relevant to the current assessment of archaeological values of the Study Area.

3.1 Geology, Soils and Landforms

The current Study Area is located on the Cumberland Lowlands, on the margin of the Cumberland Plain and the Woronora Plateau, in the transitional zone between these two physiographic regions. It is situated on primarily Wianamatta Group shales underlain by deep Permian Coal Measures that consist of shale sandstone, conglomerates, tuff, chert and coal (Branagan and Packham 2000). The shale overlies Hawkesbury Sandstone, and the sandstone is present at the surface where it has been exposed by the larger rivers and creeks, usually as steep, blocky scarps flanking the drainage lines. Further north and west, moderate rolling hills and ridges dissected by minor feeder creeks and tributaries that flow into the steep sandstone cliff lines along the incised Bargo River. The feeder streams include Myrtle, Redbank and Matthews creeks within the study area.

There are two physiographic soil landscapes that have been defined as occurring in the study area (Hazelton and Tille 1990). Each soil landscape has distinct morphological and topological characteristics. This results in each landscape having different archaeological potential. Because they are defined by a combination of soils, topography, vegetation and weathering conditions, soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

Both soil landscapes are defined as residual landscapes (Hazelton and Tille 1990: 23-6, 45-9). Residual soil landscapes are characterised by areas where soils are derived from the long-term, in situ weathering of parent materials. Examples of these types of soil landscapes are flats, plains and plateaus with poorly defined drainage lines. The soils derived from within the proposed urban precincts are dominated by the Blacktown (bt) soil landscape with lenses of Lucas Heights (lh) soil landscapes as mapped on the Wollongong 1:100,000 mapsheet (Hazelton and Tille 1990). A minor lens of Lucas Heights soil landscape is found within the West Tahmoor Precinct. In general, soils in these areas are loose, shallow and contain mostly shale.

The Blacktown Soil Landscape consists of Ashfield and Bringelly shale lenses. The topography of this soil scape is one of gently undulating rises with local relief between 10 and 30 metres. Gentle slopes predominate, as slopes generally have an incline of less than 5% but may pitch up to 10%. Crests and ridges within this landscape are broad and rounded with convex upper slopes grading into concave lower slopes and broad drainage depressions and valley flats. Rock outcropping within this topography is absent (Hazelton & Tille 1990; 27). The soil deposits are often shallow to moderately deep and consist of red, brown and yellow Podzolic soils. The raw materials found within this soil landscape are considered to have archaeological potential.

The Lucas Heights Soil landscape can be described as having gently undulating crests, ridges and plateau surfaces, with local relief between 10 to 50 metres and slopes of less than 10% (Hazelton & Tille 1990). The soils are generally yellowed to lateritic podsollic, however, this landscape is known for rocky outcrops and limited deep soil bases (Hazelton & Tille 1990). Other characteristics include stoniness, hard-setting surfaces and low soil fertility. Within each of the urban precincts this soil type is confined to the ridge tops and gentle slopes. Although this soil landscape generally consists of shallower soils, it is still considered to contain some Aboriginal archaeological potential. These site types are more likely to comprise isolated stone artefact occurrences situated on travel routes rather than campsites.

The Bargo and Nepean rivers are located immediately east of the Study Area. A number of feeder creeks flowing into these rivers include Myrtle Creek, Redbank Creek, Matthews Creek and Cedar Creek. Alluvial deposits along the banks of the Bargo River would also have provided sources of silcrete and quartzite cobbles which would have been used extensively by Aboriginal people.

3.2 Climate

In general, the climate within the region is warm to temperate. There are, however, significant variations within the various landscape types. Average maximum daytime temperatures in the Picton region range from 29 degrees Centigrade in summer and 16 degrees Centigrade in winter. February is the wettest time of the year and September the driest, with average annual rainfall at over 800 millimetres (Bureau of Meteorology 2010). Conditions in the region would have been relatively mild during human habitation of the region and would not have posed any major restriction to a hunter-gatherer lifestyle.

The climate of the region would have allowed a hunter-gather lifestyle year-round in the Holocene period that is the last 10,000 years. The prior glacial period would have been cooler and drier. Sea levels were lower as most of the water was trapped in glacial ice. Mainland Australia had few glaciers, which were located in alpine areas. A cooler climate would have affected a hunter gatherer lifestyle as, for example, flora and fauna resources would be different than that found in today's warmer climates.

3.3 Flora and Fauna

Much of the Study Area comprises open pastured paddocks as a result of land clearance for agricultural practices and settlement, and more recently, the development of housing. Some pockets of remnant vegetation do however occur within the study area corridor and are indicative of the vegetation communities that were once present across the entire region prior to settlement and non-traditional land use in New South Wales.

The Study Area can be incorporated into the broad scale regional vegetation mapping of the Cumberland Plain Woodland (CPW). This vegetation community is made up of two sub-units, the Shales Hills Woodland (thrives across undulating hills) and the Shale Plains Woodland (thrives across flat, open plain).

Prior to settlement, the dominant tree species of the Cumberland Plain Woodland included Grey Box *Eucalyptus moluccana* and Forest Red Gum *E. tereticornis*, with Narrow-leaved Ironbark *E. crebra*, Spotted Gum *Corymbia maculata* and Thin-leaved Stringybark *E. eugenoides* occurring less frequently. The shrub layer is dominated by Blackthorn *Bursaria spinosa*, and it is common to find abundant grasses such as Kangaroo Grass *Themeda australis* and Weeping Meadow Grass *Microlaena stipoides var stipoides* (NSW NPWS 2002).

Terrestrial mammals would presumably have been an abundant and reliable food source in the woodlands for Aboriginal people. Land mammals such as kangaroos and arboreal mammals such as possums would have been important prey species within these vegetation communities. Birds, reptiles and fish would also have been important resources.

3.4 Resource Statement

The wider Cumberland Plain / Wollondilly area generally provides a number of resources used by Aboriginal inhabitants.

The outcrops of shale and sandstone of the Wianamatta Group would have been in abundant supply within relatively close proximity to the Study Area. Silcrete is the most common raw material type used for stone tool making recovered from archaeological sites within the greater Wollondilly area and across the Cumberland Plain and the Cumberland Lowlands. Known sources of silcrete include the St Marys Formation, Rickabys Creek gravels and terraces along the Nepean River. Elsewhere on the Plain in the region, other raw materials suitable for stone artefact manufacture include silicified wood, tuff, mudstone, quartz, quartzite and basalt. Suitable pebbles of hard, igneous rock for axes also occur along the Nepean River (JMCHM 2007:17). Sandstone formations also provided areas where tools might be ground and sharpened and art might be engraved, of which a number are located along Myrtle Creek and Redbank creeks, and the Bargo and Nepean Rivers surrounding the Study Area.

The Wollondilly region includes distinct ecological zones, including open forest and open woodland, with riparian vegetation extending along many of the watercourses. Each ecological zone hosts a different array of floral and faunal species, many of which would have been utilised according to seasonal availability. Aboriginal inhabitants of the region would have had access to a wide range of avian, terrestrial and marine fauna and repeated firing of the vegetation would have opened up the foliage allowing ease of access through and between different resource zones.

Plant resources were used in a variety of ways. Fibres were twisted into string, which was used for many purposes, including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002).

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record. Animals such as Brush-tailed Possums were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other. Kangaroo teeth were incorporated into decorative items, such as head bands (Attenbrow 2002).

4.0 ABORIGINAL CONTEXT

4.1 Ethnohistory & Contact History

Our knowledge of Aboriginal people and their land-use patterns and lifestyles prior to non-Aboriginal contact is mainly reliant on documents written by non-Aboriginal people. The inherent bias of the class and cultures of these authors necessarily affect such documents. They were also often describing a culture that they did not fully understand – a culture that was in a heightened state of disruption given the arrival of settlers and disease. Early written records can, however, be used in conjunction with archaeological information and surviving oral histories from members of the Aboriginal community in order to gain a picture of Aboriginal life in the region.

Despite a proliferation of Aboriginal sites there is considerable ongoing debate about the nature, territory and range of pre-contact Aboriginal language groups in the greater Sydney region. These debates have arisen largely because by the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Aboriginal people in the late 19th century, pre-European Aboriginal groups had been broken up and reconfigured by European settlement activity.

Despite conflicting views between historical sources of the exact boundaries of tribal groups in the region, the linguistic evidence does identify distinct language groups at the time of European contact. The arrival of settlers in the region and new competition for resources began to restrict the freedom of movement of Aboriginal hunter-gatherer inhabitants from the early 1800's. European expansion along the Cumberland Plain was swift and soon there had been considerable loss of traditional lands to agriculture. This led to violence and conflict between Europeans and Aboriginal people as both groups sought to compete for the same resources (Dallas 1994). In the Cowpastures region, it began following the murder of an Aboriginal woman and her children, which resulted in violent clashes between several Aboriginal men and European settlers between 1814 and 1816 (Liston 1988: 50). The violence had escalated by 1816 following the outlaw proclamation by Macquarie, resulting in the massacre of 14 Aboriginal people hiding at Appin (Liston 1988: 54). This event is known as the 'Appin Massacre' and is regarded as a pivotal part of the history of the destruction of the Aboriginal people in the region.

During the early settlement years, diseases, such as small pox, were having a devastating affect on Aboriginal populations. Death, starvation and disease were some of the disrupting factors that lead to a reorganisation of the social practices of Aboriginal communities after European contact. The formation of new social groups and alliances were made as Aboriginal people sought to retain some semblance of their previous lifestyle.

4.2 Regional Context

It is generally accepted that people have inhabited the Australian landmass for at least 50,000 years (Allen and O'Connell 2003). Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. Whilst there is some possible evidence for occupation of the region around 40,000 years ago, the earliest undisputed radiocarbon date from the region comes from a rock shelter site north of Penrith on the Nepean River, known as Shaws Creek K2, which has been dated to 14,700 ± 250 Before Present (BP) (Attenbrow 1987, 2002: 20). The assessment of the deposits concurred that the people living in the shelter exploited the food and resources from the nearby creeks and rivers, as well as the surrounding countryside. East of Campbelltown, a sandstone rock shelter site (known as Bull Cave) was excavated and yielded a basal date of 1820 ± 90 BP (Koettig 1985). In general, the majority of both open and rock shelter sites in the Sydney region date to within the last 3,000 to 5,000 years.

Archaeological evidence of Aboriginal occupation of the broader Cumberland Plain area indicates that the area was intensively occupied from approximately 4,000 years BP (JMCHM 2007). Such 'young' dates are probably more a reflection of conditions of archaeological site preservation and sporadic archaeological excavation, rather than actual evidence of the presence or absence of an Aboriginal hunter-gatherer population prior to this time.

Results of archaeological work completed in the northern, central and southern Cumberland Plain region have clearly identified that the predominant recorded sites on the Cumberland Plain are open camp sites (Kohen 1986; Smith 1989; Haglund 1989; McDonald 1992; JMCHM 2006, 2007; Dibden 2003). Towards the peripheries of the plain on Hawkesbury sandstone, shelters with art and/or deposit and grinding grooves have been recorded. Most recent archaeological studies have been impact driven assessments in response to increasing development activity in the region and changing legislation requirements.

4.3 Local Context

4.3.1 Identified Aboriginal Archaeological Sites – Study Area

A search of the NSW DECCW Aboriginal Heritage Information Management System (AHIMS) database was conducted on 27 of April 2010. The search identified those sites within a 5 x 5 km area. There were a total of 13 sites identified within the search area; none of these sites fell within the boundary of the proposed development (Table 2 following).

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area.

Table 2: Aboriginal archaeological sites recorded within 1.5kms of the proposed Precincts

SITE NUMBER	SITE NAME	SITE TYPE
52-2-0461	Couryah	Shelter with art
52-2-2078	Tahmoor 1	Shelter with art, shelter with deposit
52-2-2080	Redbank Creek 2	Shelter with art
52-2-2081	Redbank Creek 3	Shelter with art
52-2-2082	Redbank Creek 4	Axe grinding groove site
52-2-2083	Matthews Creek 1	Scarred tree
52-2-2084	Thirlmere 2	Shelter with deposit
52-2-3663	Unknown	Potential Archaeological Deposit

Table 3 below provides a list of the Aboriginal archaeological sites by site type located within the AHIMS search area surrounding the Study Area

Table 3: Aboriginal sites by site type within 1.5km radius of proposed Precincts.

SITE TYPE	NUMBER	AS % OF ALL SITES
Isolated Artefact	7	50%
Open Camp Site	3	21%
Shelter with Art	1	7%
Shelter with Art and Deposit	1	7%
Potential Archaeological Deposit	1	7%
Scarred Tree	1	7%

Of the 14 previously recorded sites in the general region, the dominant site types are Isolated Artefacts (43%), Open Camp Site (15%), Shelter with Art (7%), Shelter with Art and Deposit (7%), Potential Archaeological Deposit (7%) and Scarred Tree (7%) (Table 3). All registered sites are located within closed proximity to a permanent water source, principally creek lines. Most of the registered sites were recorded as a result of surveys undertaken either in response to development proposals or academic research.

4.3.2 Localised Archaeological Record

Within the greater Picton, Thirlmere and Tahmoor areas, a number of heritage studies have been undertaken. These have been private and mine development-driven assessments or are research and site-management based investigations. The following investigations have been undertaken within the landscape surrounding the current Study Area:

Kamminga (1975) conducted an archaeological survey for the proposed coal mine development at Tahmoor, NSW for Clutha Development Corporation. During this survey no

Aboriginal sites were identified.

Dames and Moore (1979) conducted an environmental impact assessment for the proposed Tahmoor mine. During this survey, one Aboriginal shelter with hand stencils was discovered. No further details were given of the site.

Dallas (1994) undertook a survey for Aboriginal archaeological sites on part of DP 10669 on the Bargo River at Tahmoor. This survey was conducted as part of the planning process of a proposed land subdivision.

Sefton (1994a) was commissioned to undertake an archaeological survey of the proposed Tahmoor mine Longwalls 14 to 18 as part of an approval application. This survey involved the systematic identification of sandstone overhangs with art, deposits and other archaeological features. During this survey three shelters with art were identified. These sites were *Couridjah 1* (52-2-1719), *Couridjah 2* (52-2-1720) and *Couridjah 3* (52-2-1721). Sefton determined that due to the frequency of the types of art present within *Couridjah 2* (indistinct hand stencils) and 3 (an indeterminate charcoal drawing) the art is of a low archaeological significance. As the art comprised four art techniques (charcoal drawing, red ochre hand stencils, white drawings and white paintings), the archaeological significance of *Couridjah 1* is relatively higher. These sites are already registered with AHIMS which gives them state protection; therefore, they do not need to be included into the LEP.

Sefton (1994b) undertook an addendum to the aforementioned Sefton 1994a archaeological survey on behalf of Kembla Coal and Coke Pty. Ltd. This addendum involved Sefton surveying an additional 1.24ha of land. This area was located on the northern side of the proposed Tahmoor North, Bridge Street mine site. It was proposed to establish a vegetated earth mound for visual screening. During this survey no new Aboriginal sites were identified

Sefton (1997) completed an archaeological assessment for Austral Coal Tahmoor Colliery on the proposed Longwalls 17 to 20 application. Part of this area had previously surveyed by Sefton (1994a). This report included an area that had not been previously surveyed and included recommendations for a monitoring program to assess selected art sites for the effects of mining subsidence. The two sites identified for monitoring were *Couridjah 4* and *Couridjah 5*.

Sefton (1998) conducted an archaeological survey of Tahmoor North lease area, urban areas and railway infrastructure for Olsen Environmental Consulting Pty Ltd on behalf of Austral Coal. During this survey one shelter site was identified. This site consisted of a shelter with Potential Archaeological Deposit, which was located on the North Western side of Redbank Creek. One grinding groove site was also located on Redbank Creek (*Redbank Creek 4*).

GHD (2001) completed a draft Local Environmental Study for Picton, Tahmoor and Thirlmere. Navin Officer was commissioned as part of this assessment to undertake the desktop Aboriginal and historical archaeological component. During this desktop assessment

a total of thirty eight Aboriginal sites or Potential Archaeological Deposits were identified from past archaeological assessments. A total of 100 Part A listings and 25 provisional listings in Part B of the Wollondilly Heritage Study were identified. There were an additional 4 items added by Navin Officer to the list of heritage items as they were listed on either or both the State and Local Government registers.

Comber Consultants (2005) was commissioned to undertake a cultural heritage assessment and archaeological survey for Integral Energy's proposed Maldon to Tahmoor electricity line upgrade. During this survey no new Aboriginal sites were identified.

Biosis Research (2006) undertook an Aboriginal archaeological assessment for a proposed extension to Longwall mining at Tahmoor Colliery. This report assesses the impact of mine subsidence related to Longwalls 24 to 26 in terms of previously recorded Aboriginal sites, identified in an earlier survey of the area within the application area. There were no new Aboriginal archaeological sites identified during this survey.

Biosis Research (2007a) Biosis Research has been commissioned by Centennial Coal to undertake a brief Aboriginal and historical cultural heritage assessment of the proposed Tahmoor Colliery Transmission Line Upgrade, Tahmoor NSW. There were no new Aboriginal or historical archaeological sites identified during this survey.

Biosis Research (2007b) undertook an archaeological survey of the Bargo Gorge to inform future underground mining activities near Tahmoor NSW. The study area begins at Mermaid's Pools and stretches north along the Bargo River for approximately 2 kilometres into the steepest section of the Gorge, east of the township of Tahmoor. During this survey one previously registered Aboriginal archaeological site (52-2-2355) was relocated, although it was difficult to identify original art work due to more recent graffiti that covers almost the entire sandstone cliff line. No previously unregistered sites were identified.

Biosis Research (2008a) completed a cultural heritage assessment of three borehole locations for Tahmoor Coal's Tahmoor Colliery. Seven previously registered sites were located within this study area consisting of shelters with art, shelters with art and deposit and a single grinding groove site. None of these sites were affected by the proposed works and no new archaeological sites were identified during this field survey.

Biosis Research (2009a) undertook an archaeological assessment within the same Study Area of four borehole locations for Tahmoor Coal's Tahmoor Colliery. No new archaeological sites were identified during this survey and none of the borehole locations were close to any previously registered sites

Biosis Research (2009b) was commissioned by Xstrata Tahmoor to undertake an archaeological and cultural heritage assessment of proposed Longwalls 27 to 30 for the Tahmoor Colliery, NSW. The potential impact area of proposed Longwalls 27 to 30 encompasses an area of the township of Tahmoor and an area two km north of Redbank

Creek. The archaeological assessment included environmental and archaeological background research; consultation with the Aboriginal community; an extensive field survey investigating previously recorded sites and discovering new sites; and an impact assessment based on the modelling of subsidence effects provided by MSEC. Two previously registered Aboriginal archaeological sites were identified. These sites comprise shelters with art and deposit. A total of 4 new Aboriginal archaeological sites were identified within the Longwalls 27-30 Study Area. These site types consisted of open camp sites, potential archaeological deposits and isolated artefacts. Nine historical heritage items were identified during this survey. These items consist principally of standing structures, but there are also potential archaeological relics. Historical heritage items could be potentially included into the LEP.

4.4 Predictive Model

The archaeological predictive model has been formulated based on the results of the landform, location and type of Aboriginal sites previously recorded within the regional area, the results of the AHIMS database search and information from previous archaeological work completed throughout the region. This information has been broken down into patterns that have been compared to the character of the Study Area to allow for an understanding of Aboriginal archaeological potential.

Based on this information, the following predictive model for the Study Area has been developed, indicating the site types most likely to occur within the present Study Area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the current Study Area.

Open campsites, artefact scatters, isolated finds and raw material sources/quarries

Open campsites and artefact scatter sites can range from high-density concentrations of artefacts to sparse, low-density 'background' scatters. These represent a diversity of everyday activities, settlement, hunting and gathering and tool manufacture. Isolated stone artefact occurrences can be located anywhere in the landscape. They can represent discard or loss during transitory movement, or an eroded larger subsurface site.

The identification of these sites depends greatly on ground surface visibility, resulting in the boundaries of a site being defined by the visible extent of the artefacts on the surface. Paddock grasses and open woodland vegetation occur within the Study Area and are likely to obscure stone artefact scatters or isolated occurrences. Two areas in which isolated artefacts and open campsites have been previously located are to the northwest of the West Picton Study Area, along the basal slopes of steep spur lines, and to the northeast of the east Thirlmere Study Area within 200m of the edge of Redbank Creek. These relative frequencies suggest that where ground exposure does occur in proximity to water, there is a moderate likelihood of finding stone artefacts.

Potential Archaeological Deposits

Potential Archaeological Deposits (PADs) generally comprise stable deposits or landforms that have potential to contain intact sub-surface archaeological evidence of use or occupation. PAD areas generally have very minimal impact (natural and historic), comprise a stable landform, consist of predictable occupation locations and contain *in situ* archaeological material.

Only one PAD (52-2-3663) has been previously identified within the region, located east of the Thirlmere Study areas and north of the Tahmoor Study Areas respectively. As typical of the region, this PAD is located on the upper side slope of a ridgeline overlooking the surrounding area to the north.

Scarred and Carved Trees

Scarred trees exhibit scars caused by the removal of bark used in the manufacture of shields, canoes, containers or shelters. These occur on older trees, generally of a size from which a suitable piece of bark can be removed. Carved trees exhibit intricate geometric designs or figures by cutting the bark itself or by removing an area of bark and then cutting the underlying hardwood. Carved trees can be associated with burial places or ceremonial/initiation ground. The existence of carved trees (dendroglyphs) is extremely rare occurrence in Australia and are generally limited to south east Queensland and north eastern New South Wales (Attenbrow 1992:144). Carved trees can be associated with both burial places and initiation grounds. Etheridge (1918) describes those trees associates with burial places as taphoglyphs, and those indicative of initiation grounds as teleglyphs.

Both types of carved trees exhibit intricate geometric designs or figures carved either on the bark or by removing an area of bark and then cutting designs or figures into the hardwood. Some of the earliest reported carved trees were located near Narellan and Picton. The only scarred trees identified within the area surrounding the Study Areas are those located on Matthews Creek (52-2-2083) (northwest of the Thirlmere Study areas) and along the Picton Mittagong Rail Line, northwest of Picton (52-2-2100).

Land clearance for early agricultural purposes, including grazing, will have removed most large trees, as have periodic bush fires. Based on the current knowledge of existing vegetation within the Study Area, it is unlikely that carved or scarred trees will occur.

Axe Grinding Grooves

Axe grinding grooves are often found on large open and relatively flat areas of sandstone shelving and outcrops. Individual grooves are elongated, narrow depressions often found in sedimentary rock, such as sandstone, in association with water sources, including creeks and swamps. An axe grinding groove site occurs along a second order tributary to Stonequarry Creek (52-2-2082), south of the Picton Study Area. The geology of the Study Area does not

indicate that suitable horizontal sandstone rock outcrops will occur, and as a result there is considered to be low potential for axe grinding grooves to occur.

Burials

Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. The locations of burials can be indicated by carved trees, or become exposed in eroding or shifting sand or soft sediment deposits. Such sites hold great significance for Aboriginal people and the disturbance of burials or burial places is a very sensitive issue.

The absence of soft alluvial soil deposits within the Study Area limit the likelihood for the presence of burials. Moreover, there is also low potential for burials to be preserved in this area due to extensive land clearance and agricultural practices.

Rock shelters with art and/or deposit

Rock shelter sites include rock overhangs, shelters or caves; generally occur on, or next to, moderate to steeply sloping ground as characterised by the cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves. The sites will only occur where suitable sandstone exposures or overhangs possessing sufficient sheltered space exist. Rock shelters are known to occur along the extent of Stonequarry Creek, Myrtle Creek, Redbank Creek, Matthews Creek and the Bargo and Nepean rivers.

There are no topographical features suitable for the formation of rock shelters or overhangs within the Study Area corridor. It is therefore unlikely that rock shelters with art and/or deposit occur within the Study Area.

Aboriginal Ceremony and Dreaming Sites

Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants. These types of highly significant sites tend to occur at places where the connections and pathways between the spiritual and physical worlds occur. They are natural features of the landscape such as rock outcrops, waterholes or trees that often exist in marked contrast to their surroundings and bear a special significance because of their role in Aboriginal cosmology. Generally they are located away from habitation sites, although this is likely to require further testing when more of such site types are recorded.

Post-Contact Sites

These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area. Many of these sites can hold special significance for Aboriginal people and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with

post-contact Aboriginal use. This site type is usually known from historical records or knowledge preserved within the local community. It is considered unlikely that any additional, unregistered post-contact sites will be present within the new urban precincts.

Aboriginal Places

Aboriginal *places* may not contain any “archaeological” indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings. Often these places are significant in the living memory of a community. There are currently no known Aboriginal ‘Places’ within the Study Area.

Aboriginal Resource and Gathering Sites

Aboriginal Resource and Gathering Sites are sites where there is ethnographic, oral, or other, evidence that suggest that natural resources have been collected and utilised by Aboriginal people. These natural resources have a cultural significance and connection for the Aboriginal community, such as ochre outcrops that were used for art or ceremonial purposes. These sites are still considered important places today. There are no such known sites within the Study Area however the likelihood of these sites occurring will be identified through consultation with the local Aboriginal communities.

Site Prediction Summary for Current Study Area

In summary the site types which are likely to be identified during the archaeological field survey include:

- Surface occurrences of stone artefacts, as isolated incidences or low-medium density scatters;
- Areas of Potential Archaeological Deposit where sub-surface cultural material is likely to occur – generally in close proximity to water sources where disturbance has been minimal; and
- Mature trees that exhibit cultural scarring

5.0 HISTORICAL CONTEXT

Historical research has been undertaken to identify the historical context of the Precincts. This history incorporates an understanding of land-use, building patterns, areas of disturbance, as well, as land owner histories. This research will lead to increased understanding of the historical archaeological potential for the site.

The historic background is based on information held at the following repositories:

- State Library of NSW – Mitchell Library

The Mitchell library contains many primary source maps and plans for NSW, as well as many secondary sources that relate to the history of NSW.

- Department of Lands – Parish Maps

The Department of lands hold copies of county, town and parish maps for much of NSW. The maps contain information regarding the alienation of land, crown grants, mineral leases, resumptions and infrastructure such as road and rail corridors. This information has been used to locate known and potential historical archaeological sites.

5.1 Land-use history of the Study Area

5.1.1 Historical Overview

Pastoral Development

The arrival of the First Fleet in 1788 heralded the arrival of cattle in Australia, with five cows and two bulls included in the stock (Fowler & Knox 1988:37). Four of these cattle escaped in June of 1788 and were not seen again until 1795 in a later to be known as the Cowpastures (Lyon 1982: 2). They were located by a small scouting party when it was sent to the western mountains and discovered a small herd of approximately forty cattle (Fowler & Knox 1988:39). Ensign Barallier in 1802 noted herds of cattle of approximately 600 head in the areas of The Oaks, Stonequarry (Picton) and the Burratorang Valley (Lyon 1982:4). Governor Hunter saw the Cowpastures as a way to increase the cattle population in the new colony and was determined to protect the herd from the hungry colonists and established hefty penalties for anyone caught killing or capturing the wild herds (den Hertog 1987:7).

When Governor King came to office in 1800, he was also determined to secure the future of the wild cattle, establishing a requirement to request permission from the Governor to cross the Nepean River. This ruling continued through Governor Bligh's governance, which began in 1806.

The Macarthur and Davidson families were given unrestricted access to the Cowpastures, when they were granted selections of 5000 and 2000 acres respectively in 1803 (Lyon 1982:5), with the grants confirmed in 1806 (den Hertog 1987: 8), effectively making

Macarthur caretaker of the Cowpastures. Following a major flood event in October 1806, it was agreed that no further grants would be made within the Cowpastures, as the flood severely impacted crops and other resources on which the colony relied heavily (den Hertog 1987:8).

Governor King established three substantial estates for pasturing of the “Government Stock of Cattle and Sheep, and for purposes of Cultivation” on the Cumberland Plain (Nicolaiides 2000: 8). Between the years 1802 and 1826, there were up to 13 Government Stock Farms in operation, originally concentrated on the Cumberland Plain but as the colony expanded, stock farms were established further afield including Emu Plains, Wellington Valley, Bathurst, Moreton Bay, Port Macquarie and Norfolk Island. Farms on the Cumberland Plain included Grose Farm (now the University of Sydney), Parramatta, Toongabbie, Castle Hill, Seven Hills and Cawdor.

Governor Macquarie came to office in 1810 and decided some control over the wild cattle was required. He travelled through the Cowpastures in 1815 on his inspection tour of the western districts of the colony (Banksia 2004: 12 – 13) and noted the excellence of the countryside. As a result, several government cattle stations were established within the Cowpastures and during 1815 the majority of the cattle were herded together (den Hertog 1987: 9). Cattle stations were located at Cawdor, Brownlow (east of Camden) and The Oaks. The cattle stations operated from approximately 1813 until 1825, with the majority of the cattle moved to Bathurst in 1822.

Rail Links

The construction of a railway to Campbelltown from Sydney in 1858 resulted in a surge in the local economy of the area. The construction of the Campbelltown to Picton railway in 1860 necessitated the completion of a considerable bridge at Menangle, the largest engineering work completed in New South Wales to date (JRC Planning Services 1986:66). The further expansion of the railway to Mittagong in 1867 required a large viaduct of stone to be built over Stonequarry Creek at Picton, as well as several tunnels, which were the first rail tunnels in New South Wales (JRC Planning Services 1986:66). Duplication of the railway between Granville and Campbelltown, and Campbelltown and Picton, occurred in 1891 and 1892 respectively.

Coal Mining

Coal was first identified in Australia in 1791, when two convicts escaped into the area surrounding Newcastle. Roughly 10 years later, coal was noted in the Wollondilly region by David Collins (Collins 1802); however, a coal mine was not established in the district until 1977, when the Tahmoor Colliery was opened.

5.1.2 Picton

William Bollard was one of the earliest settlers in Picton, opening an inn on the banks of Redbank Creek by 1819 (JRC Planning 1986:101). Originally known as Stonequarry (JRC Planning Services 1986:59), the town plan was laid out in 1845, although a village reserve and burial ground had been established prior to this. By 1848, 23 houses and 120 inhabitants were located in Picton (JRC Planning Services 1986: 101), with the population increasing as rail links to the area developed (JRC Planning 1986:102).

By 1892 the town was well established and consisted of approximately five inns, four churches, two schools, a court house, a number of stores, a bank, a lands office, a School of Arts and a flour mill (JRC Planning 1986:102), with the population having increased to around 700 individuals. Commercial quantities of kerosene shale, silver and iron had also been found within this area.

West Picton Study Area

The 1890 plan of the Parish of Picton in the County of Camden shows the location of the Study Area within the village of Picton (Plate 1). It is evident from the historic maps of the area that the land boundary has not altered since the initial subdivision of the 1840s (Plate 2 and 3).



Plate 1: The 1890 plan of Picton showing the West Picton Study Area (Dept. of Lands Parish Map Preservation Project 14001703).

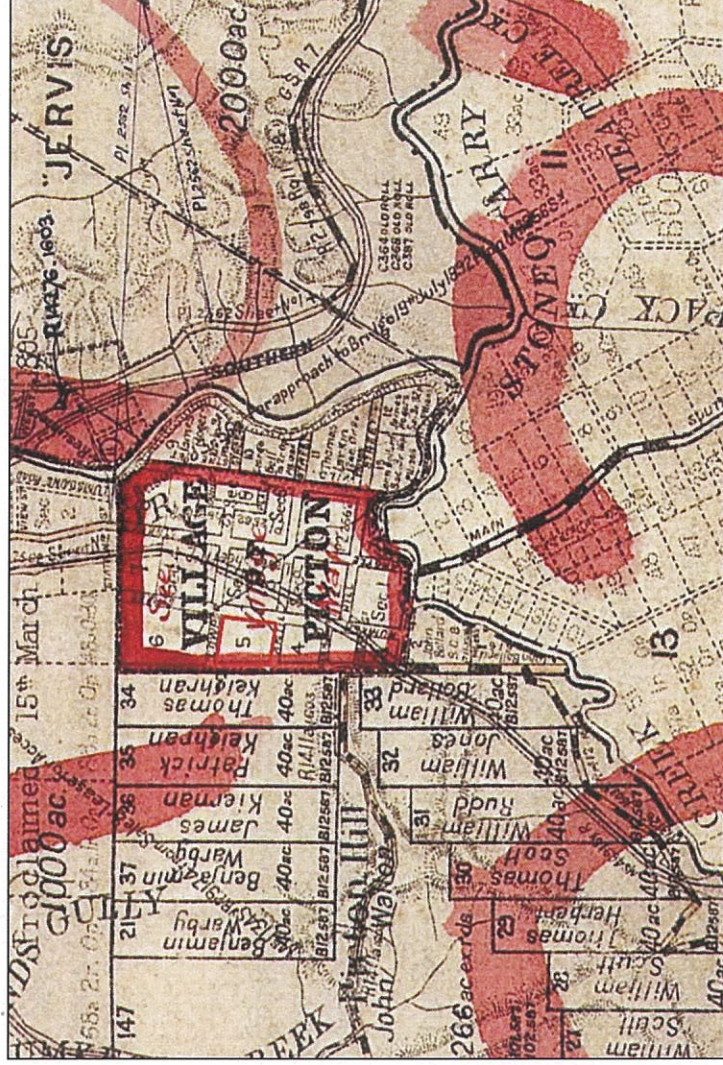


Plate 2: The 1919 plan of Picton showing the West Picton Study Area (Dept. of Lands Parish Map Preservation Project 14001801).

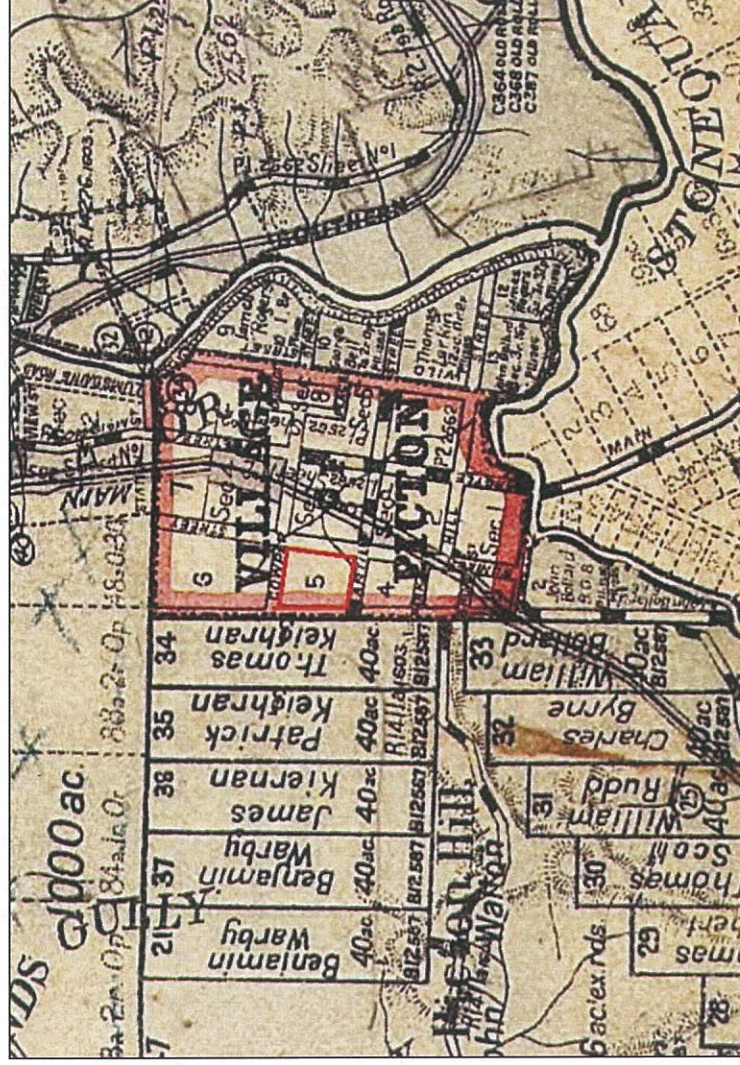


Plate 3: The 1948 plan of Picton showing the West Picton Study Area (Dept. of Lands Parish Map Preservation Project 14001901)

One property adjacent to and immediately south of the West Picton study area is listed in Schedule 5 Environmental Heritage to WLEP 2011 (I211) and consists of a weatherboard cottage located at Lot 1 DP 500116, south of the West Picton precinct.

5.1.3 Thirlmere

Thirlmere was initially settled by pastoralists in the 1820s, with the first houses consisting of slab huts with bark roofs, or tents covered with bark (Oehm 2006: 51). The town settlement did not occur until the mid 1860s, when the workers on the Great Southern Railway constructed temporary accommodation for themselves (Oehm 2006: 50). The initial railway siding was named Redbank, but was confused with Redbank at Upper Picton, and so the name Thirlmere was adopted (Oehm 2006: 50).

Early settlers in the area produced horse feed, poultry and vegetables which were used in both local trade and sent to Sydney. The town settlement was characterised by timber production, resulting in large numbers of ironbark railway sleepers and mine props (Oehm 2006: 51).

It was not until 1880 that the town began to change from a temporary to a permanent settlement, following the subdivision of a 1850s grant made to Creighton (Oehm 2006: 51). Three main subdivisions were completed and formed the basis for the current town layout. Much of the town's growth occurred between 1890 and 1914, primarily as the result of the continued development of the railway and the demand for hardwood timber. (Oehm 2006: 51).

The completion of the railway deviation and the decline in the timber industry resulted in a down-turn in the settlement's economy. In 1928, an Estonian teacher arrived in Thirlmere, and encouraged the migration and settlement of family and friends. Twenty Estonian families settled in Thirlmere during the 1930s, with an additional 120 arriving after World War II (Oehm 2006: 51). This was to be the only boom in the town's economy during the 20th century.

East Thirlmere Study Area

The East Thirlmere study area is located within the land grant made to a Mr Joseph Howard (Plate 4). The grant initially consisted of 160 acres, which was subsequently subdivided between 1937 and 1951, as shown on the Parish Maps (Plate 6).

South Thirlmere Study Area

The South Thirlmere study area is located within the Village of Thirlmere and comprises a number of small blocks spanning Thirlmere Way (Plate 4 to Plate 6). Historic Parish Maps show that the boundaries of these properties have not changed since their initial alienation in the 1850s.



Plate 4: 1894 plan of the Parish of Couridjah, showing the East and South Thirlmere Study Areas
(Department of Lands Parish Map Preservation Project 14023501)

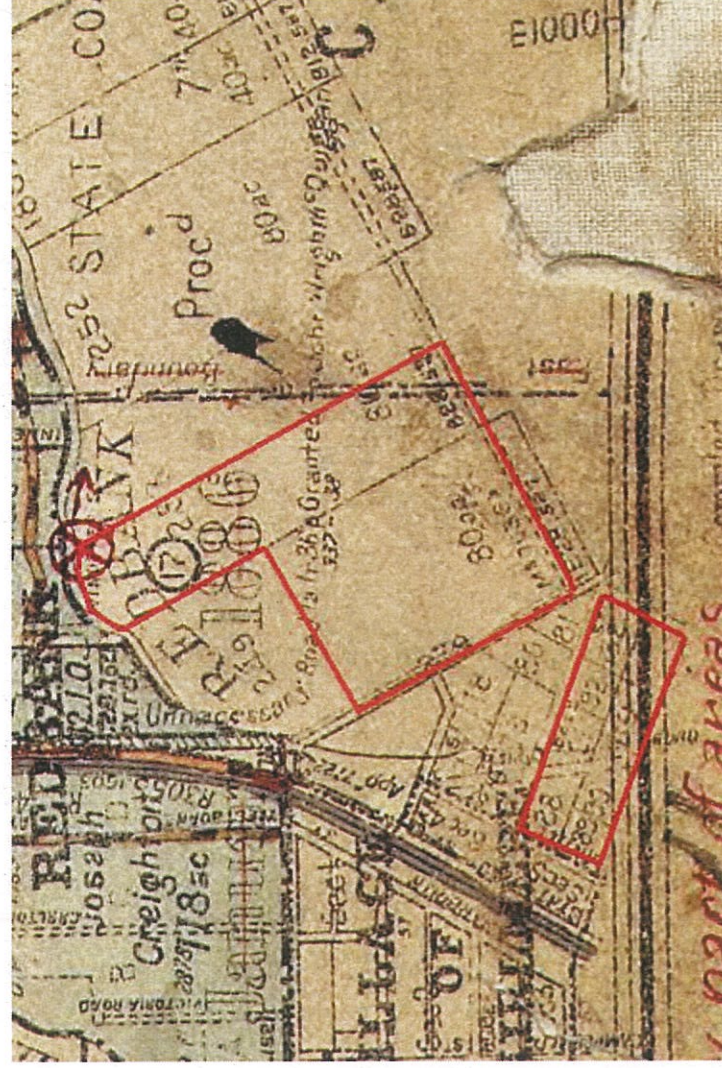


Plate 5: 1927 plan of the Parish of Couridjah, showing the East and South Thirlmere Study Areas

(Department of Lands Parish Map Preservation Project 140233501)

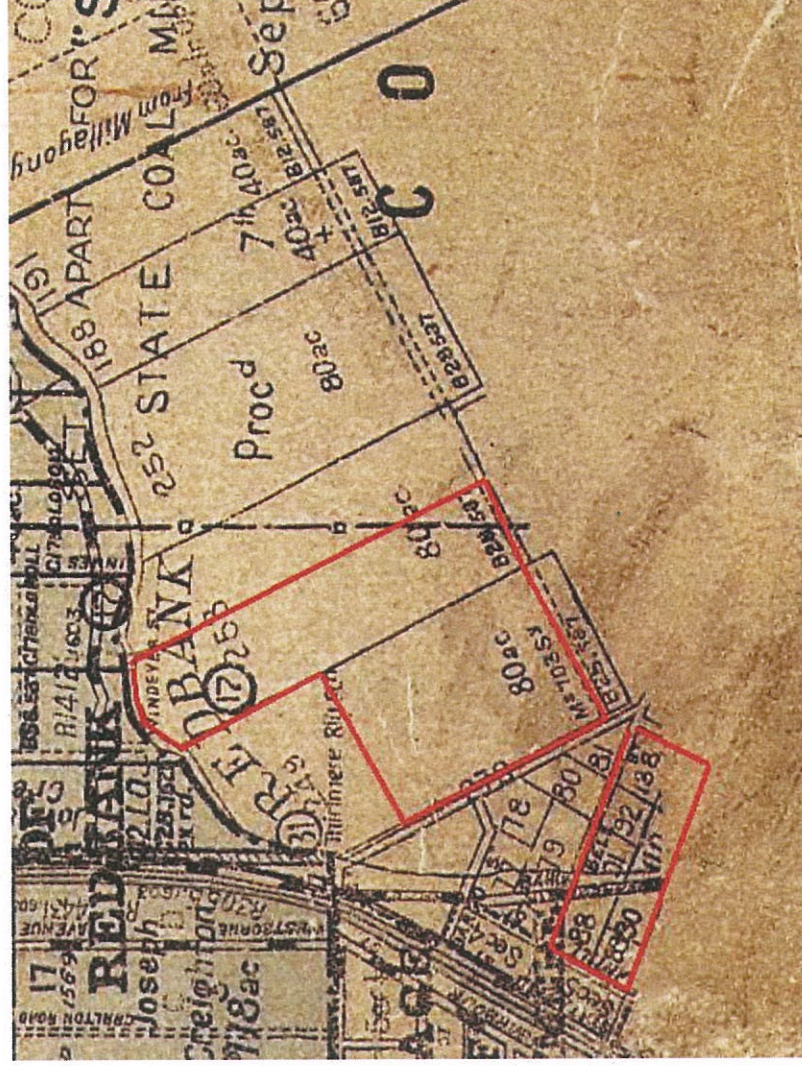


Plate 6: 1948 plan of the Parish of Couridjah, showing the East and South Thirlmere Study Areas
(Department of Lands Parish Map Preservation Project 140233501)

5.1.4 Tahmoor

The first land grants were not issued in the Tahmoor area until the 1820s. Grants of up to 2,000 acres were surveyed along Stonequarry Creek and smaller grants were issued backing onto Redbank and Myrtle Creeks and the Bargo River. The majority of recipients for these first grants were ex-convicts and their families. These initial holdings produced maize, wheat and corn, however within fifteen years the majority of these grantees had sold their properties and moved away. Soon these smaller land parcels had been consolidated into one property, which became known as the Myrtle Creek Estate (Fairfax n.d.: 'Tahmoor NSW').

At the same time the area was opened for settlement, a rough convict built road following sections of the original Cow Pastures Road (built 1805), known as the Great South Road was established through this area with the intention of connecting Sydney to its expanding southern settlements of NSW (Mylrea 2000: 43). Tahmoor soon became a staging post for travellers passing along this route and a number of inns were built near Myrtle Creek.

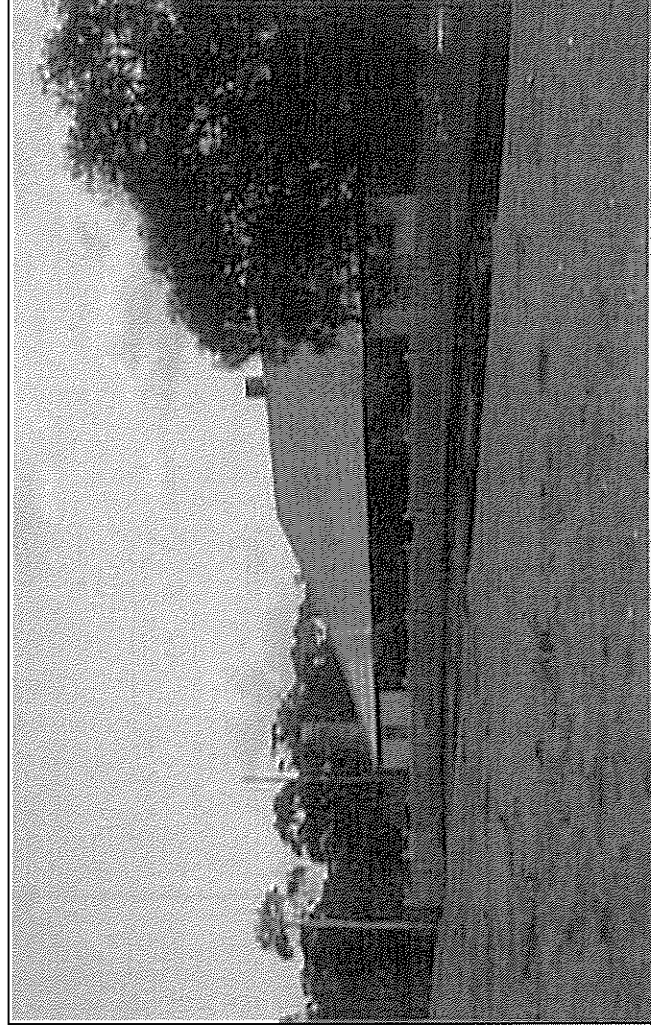


Plate 7: A view of Tahmoor Park House, taken between c1914 and c1941 (source: 'A view of Tahmoor Park House built in 1824 as "Myrtle Creek Hotel" on the main Southern Road near Bargo, NSW', State Library of Victoria, Image No. a09711).

The area was initially referred to as Myrtle Creek, though it was also called Bargo and Cordeaux before officially being named Tahmoor in 1916. A village was slow to develop, though by 1841 there were 43 people living at Myrtle Creek (Fairfax n.d.: 'Tahmoor NSW'). Further development of the area was hindered when the Picton to Mittagong railway extension bypassed Tahmoor, with the line instead crossing through neighbouring Thirlmere. The construction of the railway saw a marked decrease in the number of travellers using the Great South Road and subsequently two inns were closed. It was not until 1872 that the first government school opened for 21 children of local farmers. It was still another few years before the village was to receive a Post Office.

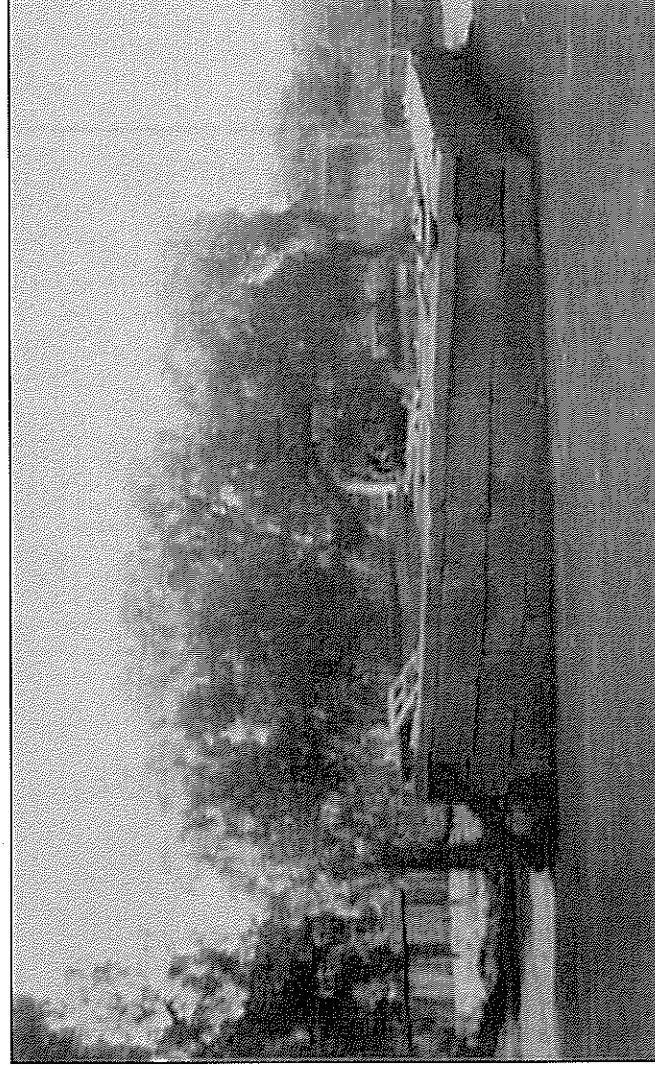


Plate 8: A view of a square stone well at the rear of Tahmoor Park House, taken between c.1914 and c.1941 (source: 'A huge stone well, 15 feet square, & built by convict labour, it is at the back of Tahmoor Park House', State Library of Victoria, Image No. a09716).

The construction of the Picton to Mittagong railway deviation, following the line of the Great South Road through Tahmoor, Bargo and Yerrinbool in 1916, marked a boom period for Tahmoor. Aware of the increase in property value from the positioning of the new railway line, a local entrepreneur named Samuel Emmett purchased hundreds of acres of land near the location of the proposed railway platform along Bargo Road. He subsequently subdivided the land into 600 building blocks and these now form the township of Tahmoor. The construction of the railway also brought hundreds of men and their families into the area as well as an urgent need for further town facilities such as a Post Office and shops. The application for a Post Office was soon approved, and after considerable debate the town was finally given the name 'Tahmoor' possibly referring to the Aboriginal word for Bronzewing Pigeon. A further subdivision of land was undertaken in 1918 and the railway was finally opened in July 1919.

In 1921 lands formerly comprising Myrtle Creek Estate were subdivided and named Tahmoor Park Estate. At this time, some of the town's basic amenities were established, a limited water supply was constructed by tapping into the Picton water supply (from Bargo Weir) and a telephone service was also soon installed. It took another 20 years however, before permanent electricity became available to the residents (Fairfax n.d.: 'Tahmoor NSW').

The town continued to grow slowly during the 1900s. It was bypassed again in the 1970s by the new freeway to the east, though the development of the coal mining industry in the 1970s helped to stabilise the town and even increase its prosperity. Tahmoor Colliery was opened in 1979 and remains in operation today. It is a major employer of residents within the region.

Today Tahmoor has the largest population in Wollondilly shire.

East Tahmoor Study Area

The East Tahmoor Study Area is comprised of a number of different original land grants – none of whose boundaries have been maintained (Plate 9 to Plate 12). The original property owners included John McGuigan (60 acres), Patrick Naughtan (50 acres), Valentine Goodwin (38 acres), Edward Doyle (50 acres), Owen Bayne (40 acres), Edward Allen (50 acres), Thomas McGuire (30 acres), William Page (30 acres), John Bent (50 acres), Owen O'Connor (40 acres) and James Smithers (50 acres). The only changes in property boundaries between 1898 and 1953 were due to the formation of new road ways through the area, which largely occurred between 1937 and 1953. Today the allotments of the area are considerably different, again, due principally to the subdivision of land and the construction of new roads to service the new allotments.

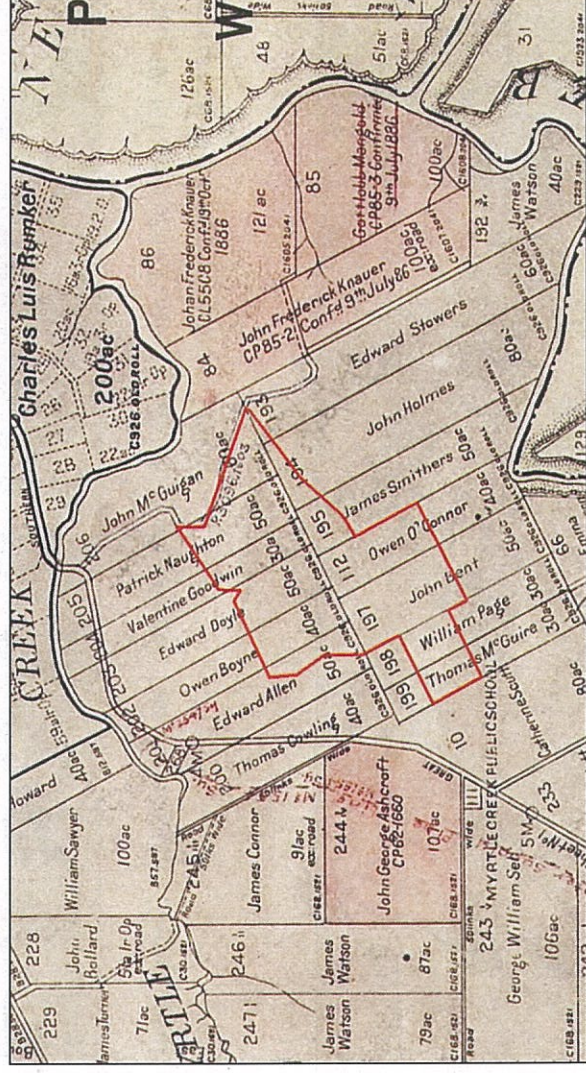


Plate 9: 1898 plan of the Parish of Couridjah, showing the East Tahmoor Study Area (Department of Lands Parish Map Preservation Project 14023601)

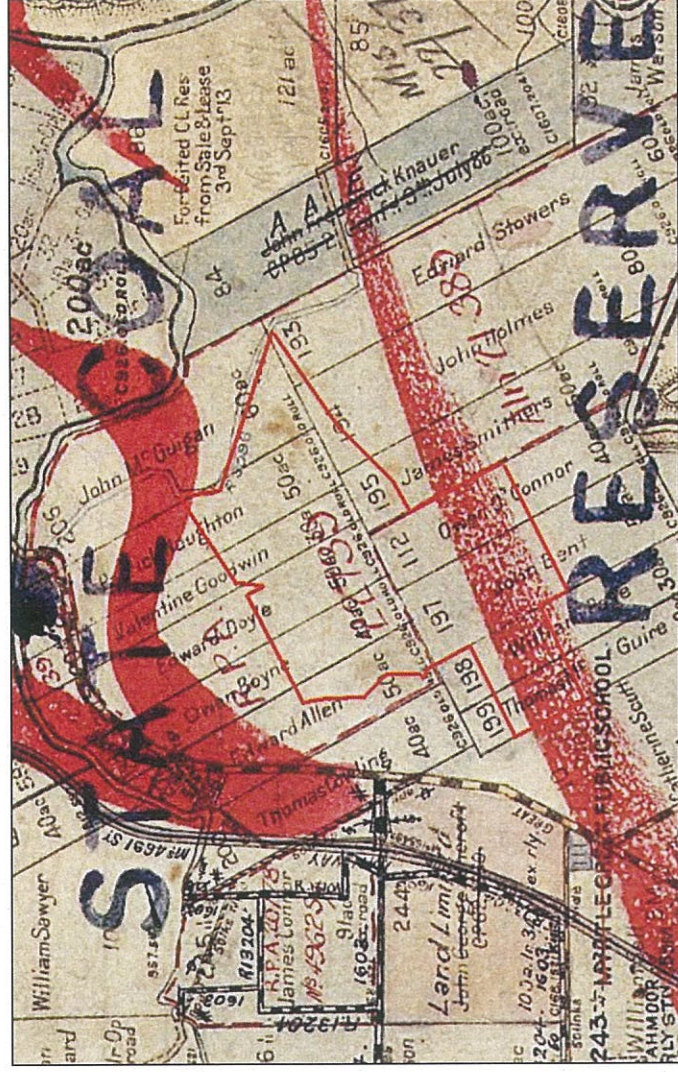


Plate 10: 1914 plan of the Parish of Couridjah, showing the East Tahmoor Study Area (Department of Lands Parish Map Preservation Project 14023601)

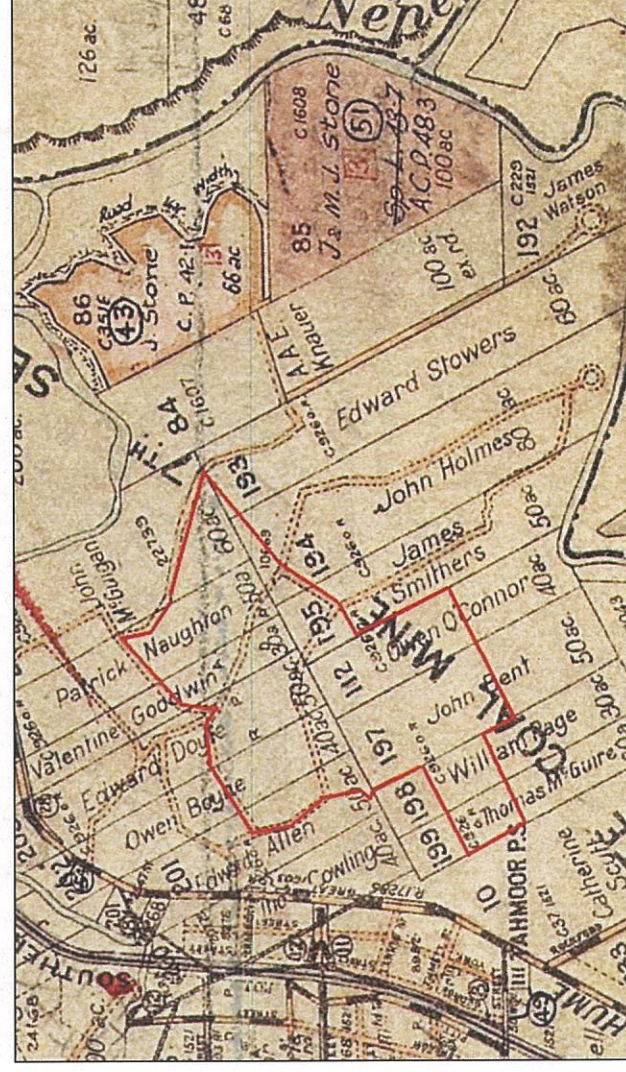


Plate 11: 1937 plan of the Parish of Couridjah, showing the East Tahmoor Study Area (Department of Lands Parish Map Preservation Project 14023601)

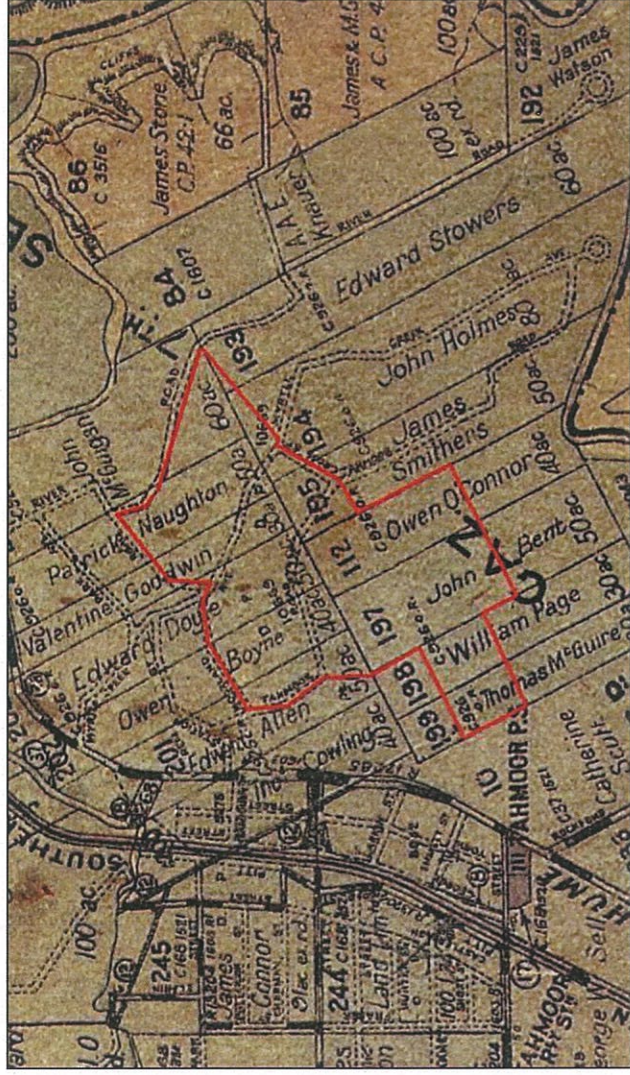


Plate 12: 1951 plan of the Parish of Couridjah, showing the East Tahmoor Study Area (Department of Lands Parish Map Preservation Project 14023601)

West Tahmoor Study Area

The West Tahmoor Study Area is located within the northern portion of James Watson's properties of 79 acres and 87 acres respectively (Plate 13 to Plate 16). The property boundary remained stable until an initial subdivision of the eastern allotment between 1917 and 1938. The subdivision remained in place until the most recent subdivision for the construction of a seniors living complex.

South Tahmoor Study Area

The South Tahmoor study area is located within the eastern portion of the original allotment assigned to a Mr George W. Sell (106 acres) (Plate 13 to Plate 16). Between 1898 and 1914, was subdivided into a number of smaller lots in the western portion of the property and two larger blocks with the Study Area to the east. Mr Sell is recorded only as the owner of the eastern portion of the property, which includes the Study Area. Following this initial subdivision, the land was reconsolidated by 1928 and remained so until at least 1951, with Mr Sell retaining ownership of the eastern portion of the site only.

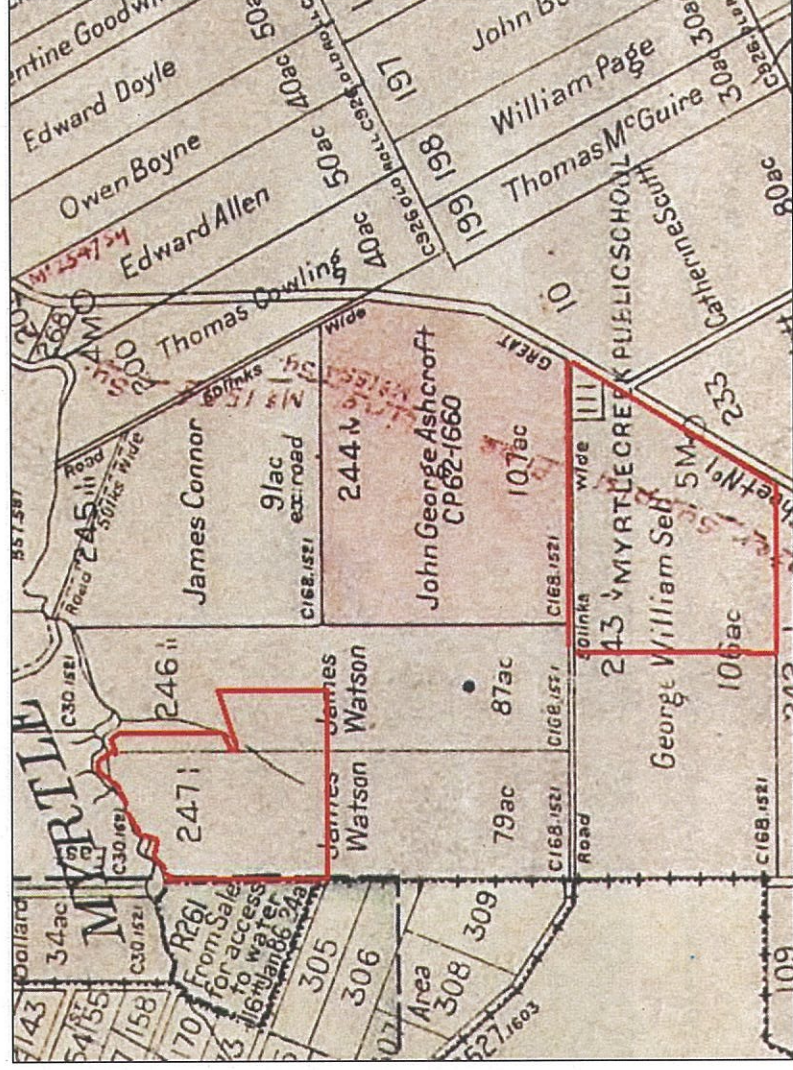


Plate 13: 1898 plan of the Parish of Couridjah, showing the South and West Tahmoor Study Areas (Department of Lands Parish Map Preservation Project 14001501)

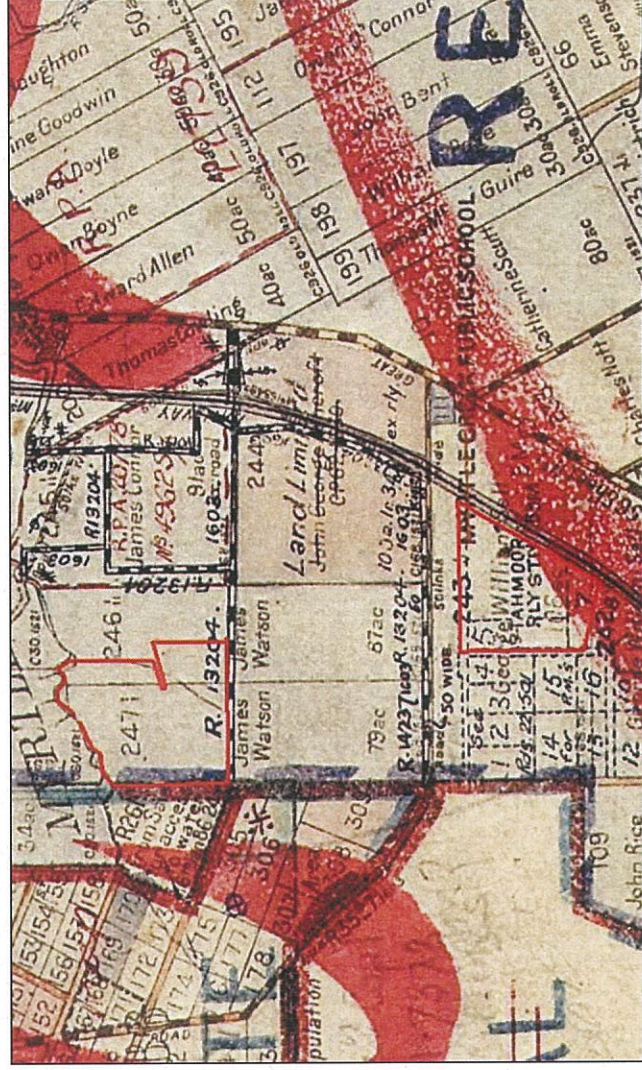


Plate 14: 1914 plan of the Parish of Couridjah, showing the South and West Tahmoor Study Areas (Department of Lands Parish Map Preservation Project 14001501)

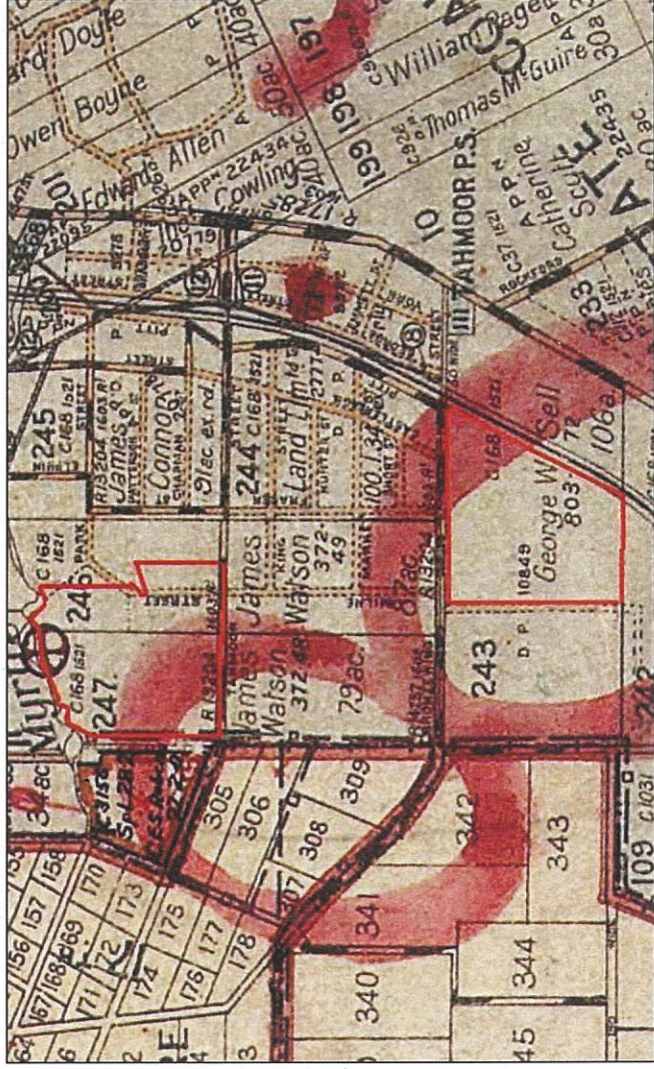


Plate 15: 1928 plan of the Parish of Couridjah, showing the South and West Tahmoor Study Areas
(Department of Lands Parish Map Preservation Project 14001501)



Plate 16: 1951 plan of the Parish of Couridjah, showing the South and West Tahmoor Study Areas
(Department of Lands Parish Map Preservation Project 14001501)

5.2 Discussion

While there are no heritage listed properties within the boundaries of each study area, one heritage item, listed on Wollondilly LEP 2011, is located immediately south of the West Picton Precinct – a weatherboard cottage located at 796-800 Thirlmere Way (Lot 1 DP 500116); and Thirlmere Railway Precinct and Thirlmere Conservation Area are located within 250 m of both East and South Thirlmere precincts.

Three houses (Lot 223 DP 10669; Lot A DP 365411; Lot 222 DP 10669) located within the East Tahmoor Study Area are estimated to date between 1914 and 1937, based on historical research such as Parish Maps and local histories of the area. In addition, a brick chimney (Lot 138 DP 751270) is situated on open paddock within the South Thirlmere precinct. No other surface features were evident although the possibility of sub-surface features is likely. Item I211 in Schedule 5 to WLEP 2011 is in close proximity to the West Picton precinct and should be considered with future redevelopment.

It should be noted that the study areas are located within an area that has been occupied by European settlers since the early 1820s and it is likely that archaeological evidence may exist within other precincts. Recommendation 3 provides guidance in the event of unexpected finds being unearthed during construction and redevelopment.

6.0 SURVEY

6.1 Survey Methods

Survey methods have been designed to locate archaeological sites within the Precincts with reference to the following information:

- Areas of potential as identified by the background research (regional site patterns when compared to the physical environment).

6.1.1 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factors that contributed most to how detectable archaeological sites were in the Study Area were visibility and exposure (see below). The specific details on the each of these constraints for the various Precincts are outlined in Table 4 to Table 9.

Visibility

In most archaeological reports and guidelines visibility refers to *ground surface visibility*, and is usually a percentage estimate of the ground surface that is visible and allows for the detection of (usually stone) artefacts that may be present on the ground surface (NSW NPWS 1997: Appendix 4). The primary factor that affects visibility is vegetation cover; however other things, such as introduced fill will also significantly hamper visibility and surface site detection. In all Precincts a thick cover of grass covered much of the grazing paddocks, resulting in very limited visibility, and therefore reducing the potential to locate isolated artefacts and artefact scatters (see Plate 17).



Plate 17: Typical visibility within the Study Area.

Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke and Smith 2004: 79, NSW NPWS 1997: Appendix 4). Overall, all of the Proposed Precincts display ground disturbance ranging from low to moderate, with much of the area used as grazing paddocks for livestock (Plate 4). Some properties have been cleared and replanted with native vegetation, while others maintain heavy leaf litter loads – both of which act to reduce exposure (Table 4 -8).

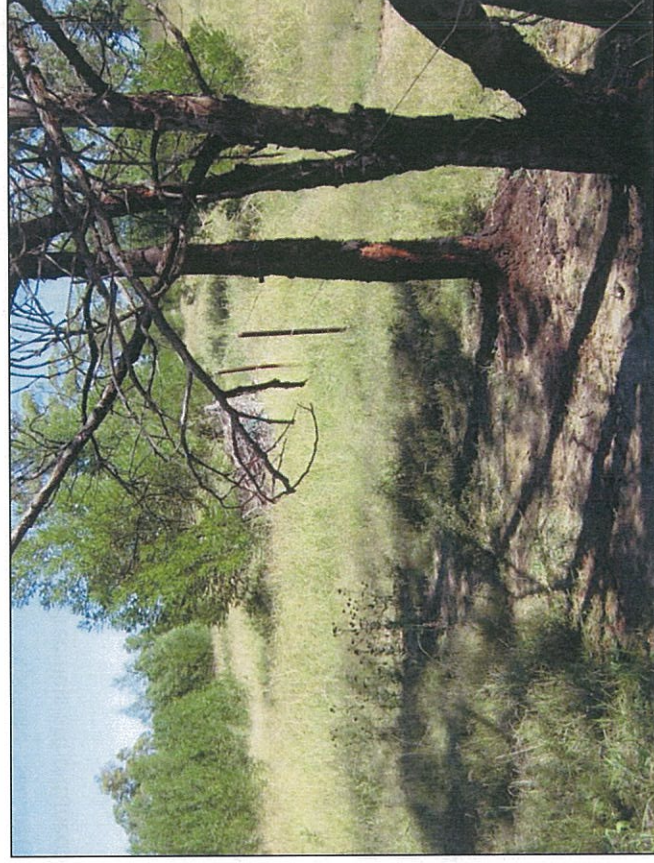


Plate 18: An exposure typical of the Study Area – scouring under tree cover.

Table 4: Survey Coverage – West Picton

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	N/A	751287	Stock pad, vehicle track	1%	1%	Flat/hills	Flat	Flat (0-5°)	Stock, cultivated	Pasture
2	21	995172	Stock pad, vehicle track	<1%	1%	Flat/hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture

Table 5: Survey Coverage – East Thirlmere

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	61	21549	Stock pad, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock	Pasture
2	59	21549	Stock pad, scald	<1%	<1%	Flat/hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
3	57	21549	Stock pad, dam, scald	1%	1%	Flat/hills	Flat	Flat (0-5°)	Stock	Pasture
4	55	21549	Stock pad	1%	1%	Flat	Flat	Flat (0-5°)	Stock	Pasture
5	53	21549	Stock pad, scald	5%	5%	Flat	Flat	Flat (0-5°)	Stock	Pasture
6	52	21549	Stock pad, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
7	54	21549	Stock pad, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
8	56	21549	Stock pad, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
9	58	21549	Vehicle track	<1%	<1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
10	60	21549	Scalds	1%	1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
11	9	245153	Scalds	1%	1%	Flat	Flat	Flat (0-5°) - Moderate (10-45°)	Vegetation clearance, Riparian	Pasture/Cleared woodland/
12	10	245153	Scalds	1%	1%	Flat	Flat	Flat (0-5°) - Moderate (10-45°)	Vegetation clearance, Riparian	Pasture/Cleared woodland/
13	11	245153	Scalds	1%	1%	Flat	Flat	Flat (0-5°) - Moderate (10-45°)	Stock	Pasture/Cleared woodland/ Riparian
14	7	245153	Erosional scalds	<1%	<1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
15	8	245153	Scalds	<1%	<1%	Flat	Flat	Flat (0-5°)	Vegetation management	Pasture/Cleared woodland
16	6	245153	Erosion	<1%	<1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
17	5	245153	Scalds	<1%	<1%	Flat	Flat	Flat (0-5°)	Vegetation management	Pasture/Cleared woodland
18	1	245153	Erosion	<1%	<1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
19	2	245153	Erosion	1%	1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland
20	3	245153	Scalds, dam	<1%	<1%	Flat	Flat	Flat (0-5°)	Stock	Pasture/Cleared woodland

Table 6: Survey Coverage – South Thirlmere

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	91	751270	Stock pad, dam	1%	1%	Flat	Flat	Flat (0-5°)	Stock	Pasture, cleared woodland
2	92	751270	Vehicle track	<1%	<1%	Flat	Flat	Flat (0-5°)	N/A	Pasture
3	138	751270	None	<1%	<1%	Flat	Flat	Flat (0-5°)	N/A	Pasture
4	139	751270	Stock pad, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock	Pasture
5	110	751270	Stock pad, vehicle track	5%	5%	Flat	Flat	Flat (0-5°)	Stock/Road or track	Pasture
6	90	751270	Scald	2%	2%	Flat	Flat	Flat (0-5°)	Road or track	Pasture
7	89	751270	Scald	10%	10%	Flat	Flat	Flat (0-5°)	Replanted forest	Pasture/Cleared woodland
8	88	751270	Stock pad, scald	10%	10%	Flat	Flat	Flat (0-5°)	Road or track/ Vegetation clearance	Pasture

Table 7: Survey Coverage – East Tahmoor

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	8	263172	Stock pad, vehicle track	5%	5%	Flat	Flat	Gentle (5-10°)	Stock	Pasture/woodland
2	7	263172	Stock pad, vehicle track	2%	1%	Flat	Flat	Gentle (5-10°)	Stock, cultivation	Pasture
3	6	263172	Stock pad, scald	2%	2%	Flat	Flat	Gentle (5-10°)	Stock	Pasture
4	5	263172	Scald	1%	1%	Flat	Flat	Flat (0-5°)	Cultivated, landscaped	Pasture/landscaped
5	4	263172	Stock pad, vehicle track	5%	5%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
6	3	263172	Stock pad, vehicle track	5%	5%	Flat	Flat	Gentle (5-10°)	Stock/Cultivated	Pasture
7	2	263172	Scald	2%	2%	Hills	Lower-Mid Slope	Gentle (5-10°)- Moderate (10-45°)	Cultivated/Track	Pasture
8	11	263172	Mechanical scrapings	2%	2%	Hills	Lower-Mid Slope	Gentle (5-10°)- Moderate (10-45°)	Cultivated	Pasture
9	10	263172	N/A	<1%	<1%	Flat	Flat	Gentle (5-10°)	Cultivated	Pasture
10	9	263172	Stock pad, vegetation scalds	2%	2%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
11	3	599365	Vehicle track	<1%	<1%	Flat	Flat	Gentle (5-10°)	Road/track	Pasture/woodland
12	2	599365	Vehicle track, scald	2%	2%	Flat	Flat	Flat (0-5°)	Stock/Cultivated/Road and tracks	Pasture
13	1	599365	Vehicle track, landscaped	2%	2%	Flat	Flat	Flat (0-5°)	Stock/Cultivated/Track	Pasture

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
14	13	826338	Vehicle track, scald	1%	1%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Road or track	Pasture
15	12	826338	Stock pad, vehicle track, scald	1%	1%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture/Woodland
16	1	623127	Stock pad, vehicle track, scald	2%	2%	Flat/ Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
	A	365411								
	222	262132								
	223	10669								
	1	360049								
17	213	10669	Scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
18	1	356118	N/A	<1%	<1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
19	212	663024	N/A	<1%	<1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
20	223	10669	Vehicle track, scald	3%	3%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Road or track	Pasture/Woodland
21	211	10669	Stock pad	<1%	<1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
22	210	597260	Vehicle track, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Road or track	Pasture
23	224	10669	Stock pad, dam	5%	5%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture/Woodland
24	225	10669	Vehicle track, dam, scald	5%	5%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Cultivated/Road or track	Pasture/Woodland

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
25	100	597260	Stock pad	2%	2%	Flat/Hills	Flat	Flat (0-5°)	Stock/Road or track	Pasture
26	101	597260	Stock pad, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture/Cleared woodland
27	102	597260	Stock pad, cultivated	2%	5%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock/Cultivated	Pasture
28	190	10669	N/A	<1%	<1%	Flat/Hills	Flat	Flat (0-5°)	Cultivated	Pasture
29	258	10669	Stock pad	5%	5%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
			257	10669						
30	59	555941	Stock pad, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
31	60	555941	Stock pad, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
32	255	740263	Stock pad, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture
33	26	740263	Vehicle track	10%	10%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture/Cleared woodland
34	25	740263	Stock pad, scald	1%	1%	Flat/Hills	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture

Table 8: Survey Coverage – South Tahmoor

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	5	1032620	Stock, vehicle track, scald	5%	5%	Flat/Hills	Flat	Flat (0-5)-moderate (10-45)	Stock/Cultivated	Pasture/Cleared woodland
2	6	1032620	Vehicle track	1%	1%	Flat	Flat	Flat (0-5)	Cultivated	Pasture
3	2	1032620	Stock, vehicle track, scald	2%	2%	Flat	Flat	Flat (0-5)	Road or Track	Pasture/Cleared woodland
4	7	16911	Vehicle track, scald	1%	1%	Flat/Hills	Flat	Flat (0-5)-gentle (5-10)	Stock/Cultivated	Pasture
5	8	16911	N/A	<1%	<1%	Flat/Hills	Flat	Flat (0-5)-gentle (5-10)	Replanted forest	Pasture/Cleared Woodland
6	1	16911	Stock, vehicle track, scald	5%	5%	Flat/Hills	Flat	Flat (0-5)-moderate (10-45)	Stock/Cultivated	Pasture/Cleared woodland
7	9	16911	Vehicle track	1%	1%	Flat	Flat	Flat (0-5)	Cultivated	Pasture

Table 9: Survey Coverage – West Tahmoor

Ref. No.	Lot Number	DP	Exposure Type (dam, vehicle track, stock movement, erosion, fence line)	Visibility %	Exposure %	Land System	Landform Elements	Slope (flat, gentle, moderate, steep)	Disturbance (grazing, cropping, stock, vehicular)	Vegetation
1	25	24376	Vehicle Track, scalds	50%	5%	Flat	Flat	Flat (0-5°)	Replanted forest/Roads or tracks/Vehicles	Pasture/Landscaped/ Riparian
2	1 125	24376	Stock pad	5%	5%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture/Landscaped
3	21	24376	Stock pad	2%	2%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture/Landscaped
	15	24376								
4	20	793897	Stock pad	2%	2%	Flat	Flat	Flat (0-5°)-gentle (5-10°)	Stock	Pasture/Landscaped

6.1.2 Measures of survey effectiveness

This is calculated by assuming that each person can assess a 5m wide corridor along each survey transect. The amount of visibility and exposure within the survey transects is then determined, and a percentage of effective ground surface survey is calculated. With a survey team of 3 people and the calculations of visibility and exposure for each precinct, the effective survey coverage was calculated to be 5% of all precincts.

6.1.3 Survey team summary

The survey was conducted over five days, on the 29 March 2010, between the 14 and 16 April 2010, and on the 29 September 2010. Georgia Roberts (Archaeologist, Biosis Research), Glenda Chalker and Kirsty-Lee Chalker (Representative of Cubbitch Barta Native Title Claimants Aboriginal Corporation), and Donna Whillock (Tharawal Local Aboriginal Land Council) attended the field survey. The survey team conducted pedestrian surveys across each of the precincts, focussing on areas of exposure around dams, tracks and scalds at the base of trees (Figure 4). A handheld GPS was carried by Georgia Roberts during the survey, and these survey transects are presented in Figure 4. Weather conditions did not hamper the survey team.

6.2 Survey Results

6.2.1 West Picton

Existing Condition

The West Picton Study Area comprises exotic grassland and replanted native forest species. The property is currently used to run horses, with the only exposures appearing along horse tracks and under fence lines. The site is considered to have been disturbed as a result of the prolonged use for farming, as well as the construction of dwellings and outbuildings. The archaeological sensitivity of the Study Area is considered to be low.



Plate 19: View west from Runkler Street

Sites discovered during the current survey

No archaeological sites, areas of sensitivity or Potential Archaeological Deposits were identified during the current survey.

6.2.2 East Thirlmere

Existing Condition

The East Thirlmere Study Area features exotic grassland as well as natural and replanted native forest species. The properties located along the northern side of Rita Street back onto Redbank Creek, with an extensive riparian corridor being present along its length. The properties are currently used as small hobby farms and rural homesteads, with the only significant exposures appearing along stock tracks, dam banks and under fence lines. The Study Area is considered to have been disturbed as a result of the prolonged use for farming, as well as the construction of dwellings and outbuildings (Plate 20- Plate 21). The archaeological sensitivity of the Study Area is considered to be low, with a moderate rating along the southern bank of Redbank Creek.



Plate 20: View southeast from Marion Street, Thirlmere



Plate 21: View southwest towards Marion Street, Thirlmere



Plate 22: View south from Redbank Creek, Thirlmere



Plate 23: View east along Redbank Creek, Thirlmere

Sites discovered during the current survey

One new site was discovered during the current survey. *Rita Street AFT-1 (52-2-3876)* is located on an erosional driveway in the southern third of the property located at Lot 10, DP 245153 on Rita Street. The artefact scatter contains five artefacts (Table 10). The artefacts were moved off the driveway to ensure that they were not damaged by the future movement of vehicles across the area.

An area of archaeological sensitivity is identified along the length of Redbank Creek, to the north of Rita Street.

Table 10: Features of the lithic items recorded within *Rita Street AFT-1 (52-2-3876)*

Form	Cortex	Platform	Termination	Length	Width	Thickness	Comments
Flake	0%	Broken	Plunge	37mm	39mm	4mm	Chert – grey/cream
Debitage	0%	n/a	n/a	22mm	7mm	2mm	Chert - orange
Core	20%	n/a	n/a	27mm	25mm	21mm	Silcrete – white/ cream
Flake	100%	Broken	Broken	19mm	15mm	5mm	Silcrete – red
Hammerstone fragment	100%	n/a	n/a	71mm	33mm	34mm	Polished surface on 1 side.

6.2.3 South Thirlmere

Existing Condition

Similarly, the South Thirlmere Study Area features exotic grassland as well as natural and replanted native forest species. The properties are currently used as small hobby farms and rural homesteads, with the only significant exposures appearing along stock tracks, dam banks and under fence lines. The site is considered to have been disturbed as a result of the prolonged use for farming, as well as the construction of dwellings and outbuildings (Plate 24: and Plate).The archaeological sensitivity of the Study Area is considered to be low.



Plate 23: View of the chimney southeast from Bell Street, Thirlmere



Plate 24: View east from Antill Street, Thirlmere.

Sites discovered during the current survey

No new Aboriginal archaeological sites, areas of sensitivity or Potential Archaeological Deposits were identified during the current survey.

An old chimney has been preserved and is currently supported with guy wires on the property located at 25 Bell Street, Thirlmere (Lot 138 DP 751270). The presence of the chimney indicates a house site, which would now be archaeological, although the status of the archaeology as “relics” (as defined by the *Heritage Act 1977*) is not known. Until an assessment is completed on this site, it should be considered to be protected as a relic and protected from impacts except in the case where a valid approval exists.

6.2.4 West Tahmoor

Existing Condition

The West Tahmoor Study Area features exotic grassland, natural and replanted native forest species and riparian vegetation along Myrtle Creek. The properties are currently used as small hobby farms, with the only significant exposures associated with stock pads and vehicle

tracks. The site is considered to have been disturbed as a result of the prolonged use for farming and the passage of vehicles and pedestrians (Plate 24 and Plate 25). The archaeological sensitivity of the Study Area is considered to be low-moderate.



Plate 24: View northeast of the park located at the end of Macquarie Place.



Plate 25: View east from the western boundary of the property at Lot 3 DP 243776.

Sites discovered during the current survey

Two new Aboriginal archaeological sites were identified during the fieldwork. An artefact scatter and an isolated find were identified within the West Tahmoor Precinct. No other sites or Potential Archaeological Deposits were identified within the other proposed Precincts.

Macquarie Place AFT-1 (52-2-3801) is located at the northern end of Macquarie Place, extending approximately 25m south of Myrtle Creek to approximately 75m north of the end of Macquarie Place. The scatter is approximately 15m at its widest point. The scatter comprises a variety of different raw materials and artefact types (Table 12).



Plate 26: *Macquarie Place AFT-1 (52-2-3801)* is located within the exposure highlighted in the image above. The exposure is located within Lot DP Macquarie place, Tahmoor.

Table 11: Features of the lithic items recorded within *Macquarie Place AFT-1 (52-2-3801)*

Form	Cortex	Platform	Termination	Length	Width	Thickness	Comments
Core	50%	n/a	n/a	39.6mm	28.3mm	21.9mm	Pink silcrete
Core	50%	n/a	n/a	19.5mm	22.6mm	14.5mm	Red ironstone
Core	0%	n/a	n/a	25.4mm	10.0mm	10.2mm	Pink silcrete
Core	0%	n/a	n/a	22.7mm	21.7mm	20.4mm	Pink silcrete
Flake	100%	Broken	Feather	16.5mm	11.4mm	6.6mm	Pink silcrete
Flake	40%	Broad	Broken	13.6mm	8.4mm	2.2mm	Red/brown chert

Macquarie Place AFT-2 (52-2-3802) is located within Lot DP. The cream silcrete isolated artefact is located approximately 10m from the southern side of Myrtle Creek (Table 12).

Table 12: Features of the lithic item recorded as *Macquarie Place AFT-2 (52-2-3802)*

Form	Cortex	Platform	Termination	Length	Width	Thickness	Comments
Flake	100%	Broad	Feather	11mm	11mm	1.4mm	Cream silcrete

Both the artefact scatter (52-2-3801) and the isolated artefact (52-2-3802) are located on a stable flat (slope 0-5°), with grass cover and native revegetation surrounding the exposure. The archaeological visibility at the site was approximately 90% at the time of recording, with the site classified as having been moderately disturbed through foot and vehicular traffic across the area.

It is recommended that further archaeological investigations be carried out within the localities of both features if either is to be impacted by future development.

Myrtle Creek, located along the northern boundary of the West Tahmoor Study Area is a known area of Aboriginal archaeological sensitivity. As such, it is recommended that further archaeological investigations be carried out is this feature, or lands within 50m of the Creek, are to be impacted by future developments.

6.2.5 East Tahmoor

Existing Condition

The East Tahmoor Study Area encompasses a large array of landscape types with corresponding variation in exposure, visibility and disturbance. Exotic grassland pastures are the most common vegetation type within the Study Area, with stands of native forest species also present. The properties are currently used as small hobby farms and rural homesteads,

with the only significant exposures appearing along stock tracks, dam banks and under fence lines. The Study Area is considered to be disturbed as a result of the prolonged use for farming, as well as the construction of dwellings and outbuildings (Plate 27 and Plate 28). The archaeological sensitivity of the Study Area is considered to be low.



Plate 27: View northeast from Tahmoor Road, Tahmoor, showing the common use of land within the Study Area.



Plate 28: View NNW showing the typical type of exposure evident within the Study Area.

Sites discovered during the current survey

No new Aboriginal archaeological sites were identified during the current survey. However a minor drainage feature was identified as having archaeological sensitivity. Further investigation of this area is recommended if impact is to take place.

Three houses (Lot A DP 365411; Lot 222 DP 10669; Lot 223 DP 10669) of potential historical value have been identified. It is estimated that these structures date between 1914 and 1937, as based on historical research such as Parish Maps and local histories of the area. None of these structures are currently listed in the Wollondilly LEP. It is recommended that if any of these structures is to be impacted or removed by future development that further historic investigations are carried out and a Heritage Impact Statement is undertaken for each house.

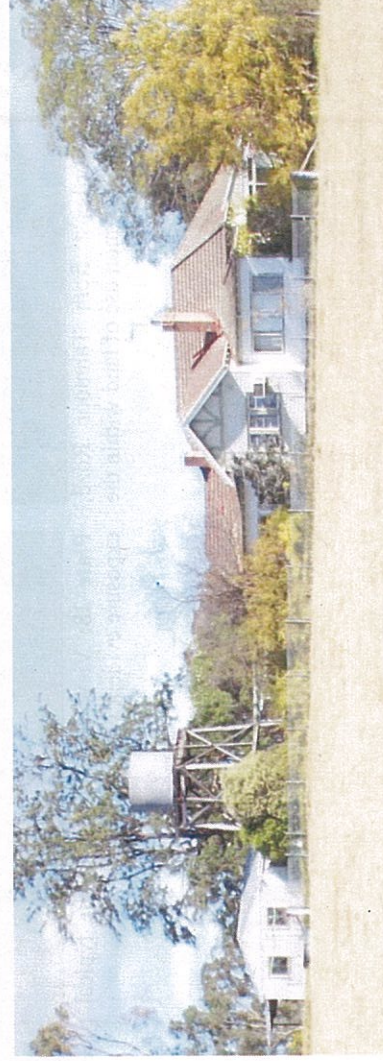


Plate 29: View south from Tahmoor Road, Tahmoor, showing the house located at Lot 222 DP 10669.



Plate 30: View south from Tahmoor Road, Tahmoor, showing the house located at Lot A DP 365411.



Plate 32: View south from Tahmoor Road, Tahmoor, showing the house located at Lot 223 DP 10669, built in the early 1920s.

6.2.6 South Tahmoor

Existing Condition

The South Tahmoor Study Area features exotic grassland and natural/replanted native forest species. The properties are currently used as small hobby farms and parkland, with the only significant exposures associated with stock pads and scalds around the base of trees. The site is considered to have been disturbed as a result of the prolonged use for farming and the construction of dwellings and outbuildings (Plate and Plate). The archaeological sensitivity of the Study Area is considered to be low-moderate.



Plate 33: View east showing the typical ground visibility of the Study Area.



Plate 34: View northeast across the drainage feature considered to be an archaeologically sensitive area.

Sites discovered during the current survey

A drainage line located in the southern corner of the Study Area is considered to be archaeologically sensitive (Donna Willock and Glenda Chalker, pers.comm.), based on the predictive model outlined earlier. Further investigation of this area is recommended if impact is to take place.

6.3 Discussion

6.3.1 Aboriginal Archaeological Sites

Regional Trends

Regional trends are dominated by open site types, such as open campsites. This reflects the level of development and archaeological survey within these areas. Previous archaeological studies adjacent to the current study area have identified mainly Open Camp Site and Rock shelters. These site types typify the area, as they are commonly associated within close proximity to water sources as well as spur line crests, which would have had the advantage of visibility of the surrounding areas. The open artefact scatter and isolated artefact identified within this study fit well within this regional trend, being located within 25m of Myrtle Creek; and the artefact scatter located along the bank of Redbank Creek (a permanent water source).

Proposed Precincts

Two new Aboriginal archaeological sites were identified during the survey of the West Tahmoor Study Area – *Macquarie Place AFT-1* (52-2-3801) and *Macquarie Place AFT-2* (52-2-3802), and one within the East Thirlmere Study Area – *Rita Street AFT-1* (52-2-3876).

As suggested in the predictive model, both these sites were located within close proximity to permanent water, in this case Myrtle Creek and Redbank Creek. Two further areas of archaeological sensitivity were identified. One within the South Tahmoor Study Area, located along an ephemeral drainage line in open woodland and one within the East Tahmoor Study Area, along the drainage line to the north of Tahmoor Road.

6.3.2 Historical archaeological sites

Three houses (Lot 223 DP 10669; Lot A DP 365411; Lot 222 DP 10669) of potential historical value have been identified within the East Tahmoor Study Area. Based on historic research and Parish Maps, it is estimated that these structures date between 1914 and 1937 and better representative examples may be listed; as such may hold low local historical value. Close inspection of these structures was not possible due to restrictions on site access. Detailed land title searches were beyond the scope of this study.

In addition, an old chimney, estimated to date between 1890 and 1915 (Federation Queen Anne period) has been preserved, currently supported with guy wires, on the property located

at 25 Bell Street, Thirlmere (Lot 138 DP 751270) within the South Thirlmere Precinct. The chimney represents part of a house, now demolished to create an archaeological site. The level of significance of the archaeological resource would define its protection under the *Heritage Act 1977*; therefore, impacts to this site are not permitted without a clear understanding of the value of the site and subsequent appropriate management. It should be noted that physical impacts to relics cannot occur without approval from the Heritage Council.

None of these structures are currently listed in the Wollondilly LEP. It is recommended that if any of these structures are to be impacted or removed by future development, that further historical and archaeological investigations are carried out and a Heritage Impact Statement be undertaken for each structure.

7.0 SIGNIFICANCE ASSESSMENT

7.1 Aboriginal Sites – Assessment of Significance

The following Aboriginal significance assessment is based on Part 1 of the *DECC Guidelines for Aboriginal Heritage Impact Assessment* (1997). These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values will be made when evaluating Aboriginal significance for sites and places.

In addition to the previously outlined heritage values, the *DECC Guidelines* also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that ‘the significance of individual features is derived from their inter-relatedness within the cultural landscape’. This means that sites or places cannot be ‘assessed in isolation’ but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and (for example) natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock ‘better understanding of the cultural meaning and importance’ of sites and places.

7.1.1 Archaeological (Scientific) Significance

Archaeological significance (also called scientific significance) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally the value of this type of significance will be determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke and Smith 2004: 249, DECC NPWS 1997). For this reason, the NSW NPWS, in summarising the situation, notes that ‘while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential’ (NPWS 1997: 26). The NPWS criteria for archaeological significance assessment are based largely on the RNE Criteria, and under the heading of ‘research potential’ include the following aspects and definitions (DECC NPWS 1997):

General site considerations, including factors such as:

- *Site intactness or integrity*: This includes the state of preservation of archaeological objects, as well as the stratigraphic integrity of the site, the taphonomic processes acting on the site (i.e. the factors that affect a site after its original use), and the impact of past artefact collections made at the site.

- *The connectedness* of the site to other sites – when considered as part of a larger assemblage or landscape the site may have greater research potential than if it was simply considered in isolation.
- *Chronological potential* refers to the potential of a site to provide a dateable framework extending back into the past. The potential antiquity of a site is also an important consideration, as older sites are relatively less common than younger sites. In many cases stratified, dateable artefact bearing deposits are sufficiently rare to be a very valuable resource.

Representativeness

Representativeness refers to the ability of a site or object to serve as a representative example of sites in the same class. This aspect of value is only meaningful when considered in conjunction with a conservation goal, and must be determined against the archaeological record at various scales of consideration - local, regional and continental for example. It takes into account site and object variability, connectedness and a consideration of what is already, and likely to be, conserved. Burke and Smith (2004: 247) define representativeness as ‘an assessment of whether or not a place is a good example of its type, illustrating clearly the attributes of its significance.’

Rarity

Rarity is, of course, closely related to representativeness (if a site is rare, it is likely to have high representative value), and will include a consideration of those issues discussed under general site considerations. In many ways, the determination of rarity is a summation of exceptional research potential, or a representative of a small class of sites or objects. Burke and Smith further describe rarity as ‘an assessment of whether the place represents a rare, endangered or unusual aspect of our history or cultural environment that has few parallels elsewhere’ (2004: 247).

Research Potential

Research potential is essentially a summation of the above values in the general, representativeness and rarity criteria (DECC NPWS 1997). Pearson and Sullivan note that Aboriginal archaeological sites are generally of high research potential because ‘they are the major source of information about Aboriginal prehistory’ (1995: 149). Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity’s history. Research potential can also refer to specific local circumstances in space and time – a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke and Smith 2004: 247-8).

When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

In addition to the research potential related value factors, the NSW DECC NPWS (1997: 32) also discuss *Educational Potential* and *Aesthetic Significance*, as items that may be included in scientific significance. The NPWS general advice is that archaeologists should give careful consideration prior to attempting to determine educational and aesthetic values (NPWS 1997: 32). We make no attempt to determine educational potential of sites under scientific assessment, but do consider educational value as a contributing factor that may be included in an assessment of social significance by the Aboriginal community.

Aesthetic values

There is a diverse yet accessible literature regarding identifying aesthetic values and determining aesthetic significance (Burke and Smith 2004: 248-9, Kerr 1996: 15-16, Pearson and Sullivan 1999: 134-8). It is generally agreed that aesthetic values are an important part of cultural heritage significance, however they are dependent on an individual's sensory response, which means determining aesthetic value is fraught with difficulty, and should be applied on a case-by-case basis as it is not always a value applicable to archaeological sites (Burke and Smith 2004: 248). However, when dealing with some types of sites aesthetic values and landscape context are an important consideration. The question 'does the place have a relationship between its parts and the setting which reinforces the quality of both', while originally proposed in an architectural context (Kerr 1996: 15), is relevant also for many sites in a local setting—such as in forests, deserts, coastlines or indeed wetlands—where there is often an important relationship between the cultural site and natural environment, which contribute to the values of a 'sense of place'.

The following sections provide statements of significance for the Aboriginal archaeological sites recorded during the field survey for the assessment. The significance of each site follows the assessment process outlined above. This includes a statement of significance based on the categories defined in the Burra Charter. These categories include social, historic, scientific, aesthetic and cultural (in this case archaeological) landscape values. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category is also proposed. Where suitable the determination of cultural (archaeological) landscape value is applied to both individual sites and places (to explore their associations) and also, to the Project Area as a whole. The nomination levels for the archaeological significance of each site are summarised below.

Macquarie Place AFT-1 (52-2-3801), *Macquarie Place AFT-2* (52-2-3802) and *Rita Street AFT-1* (52-2-3876) have all been assessed as being of low scientific significance, as they are representative in both a local and regional context, are not considered to be rare, and the location of the site affords it limited aesthetic value. These criteria are further detailed below in Table 13 below.

Table 13: Aboriginal archaeological sites recorded within 2kms of the Precincts

SITE NUMBER	DISCUSSION OF CONTRIBUTING FEATURES AND ASPECTS	ARCHAEOLOGICAL SIGNIFICANCE
52-2-3801	General: Features at this site have low value under the general criteria. The site is considered to have low potential for intact archaeological deposits. Representativeness: The site is representative of this site type. Rarity: This type of site is common in this area. Aesthetic: The location of this site affords the site limited aesthetic value.	Low
52-2-3802	General: Features at this site have low value under the general criteria. The site is considered to have low potential for intact archaeological deposits. Representativeness: The site is representative of this site type. Rarity: This type of site is common in this area. Aesthetic: The location of this site affords the site limited aesthetic value.	Low
52-2-3876	General: Features at this site have low value under the general criteria. The site is considered to have low potential for intact archaeological deposits. Representativeness: The site is representative of this site type. Rarity: This type of site is common in this area. Aesthetic: The location of this site affords the site limited aesthetic value.	Low

7.1.2 Aboriginal community or cultural values

The NSW DECCW recognises that ‘Aboriginal community are the primary determinants of the significance of their heritage’ (NSW DEC 2004). Biosis Research recognises that our role in the cultural heritage assessment process is to provide specialist skills, particularly in regard to archaeological and heritage management expertise. These specialist skills can be articulated and enhanced through consultation with the Aboriginal community, with the aim of providing a comprehensive assessment of cultural heritage significance.

The heritage assessment criteria outlined above that relate to community or cultural values include social, historic and aesthetic value. Social and aesthetic values are often closely related. Social value refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day Aboriginal community. Aesthetic values related to Aboriginal sites and places that may contain particular sensory, scenic, architectural and creative values and meaning to Aboriginal people. Historic value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives.

These aspects of heritage significance can only be determined through consultative processes with one or more Aboriginal communities. In terms of Aboriginal communities, heritage places – including those that are otherwise defined as ‘archaeological sites’ – will always attract differing values. These may include custodianship obligations, education, family or ancestral links, identity, and symbolic representation. History and traditions are important: this generation has an obligation to future generations to retain certain things as they are currently seen and understood. This includes retaining alternative understandings to those that come through scientific assessments. Heritage places are often more complex than is identified through the scientific determination of value. Cultural and social values can be complex and rich - the past is a vital component of cultural identity. Feelings of belonging and identity are reinforced by knowledge of the existence of a past, and this is further reinforced and maintained in the protection of cultural heritage.

Statement of Cultural Significance

All Aboriginal cultural heritage sites surrounding the Study Area are considered to be of cultural significance to the Tharawal Local Aboriginal Land Council and the stakeholders of Cubbitch Barta Native Title Claimants Aboriginal Corporation (Appendix 1). The sites are evidence of past Aboriginal occupation and use of the area, and are the main source of information about the Aboriginal past. In addition, any recorded (and unrecorded) pre-contact sites are of cultural significance because they are rare or, at least, uncommon site-types. In particular, many sites in the greater Wollondilly area have been destroyed as a result of land clearance and land-use practices in the historic period.

8.0 IMPACT ASSESSMENT

8.1 Proposed Rezoning

Wollondilly Shire Council proposes to rezone the land within the Precincts to Zone No. R2 – Low Density Residential Zone. This will result in the subdivision of the land and the construction of numerous new dwellings, infrastructure and landscaping. The construction of both the houses and accompanying infrastructure will impact subsurface archaeological deposits through excavation and movement of soil and the passage of large machinery and vehicles.

As discussed above, the proposed development will cause a certain level of disturbance to the proposed Precincts. However, it is likely that two of the areas which have been identified as having archaeological potential can be avoided, as they are along the boundary of the Precinct (Myrtle Creek and Redbank Creek), and are located within close proximity to an existing house structure (and therefore likely to be maintained as part of the existing parcel around that house). If any of these sites is to be impacted, which is more likely in the case of *Rita Street AFT-1* (52-2-3876), surface collection of the artefacts will be required, in association with possible subsurface testing of the area. Such provisions are to be made within a future DCP and DA.

9.0 RECOMMENDATIONS

Historical Heritage

Recommendation 1 – LEP Listed Heritage Items

- Future investigation will be required at a later stage of development as impacts related to design and construction are not known. Proposed residential development at the West Picton precinct, in the vicinity of the Wollondilly LEP listed item #I211 - Weatherboard Cottage at 796-800 Thirlmere Way (Lot 1 DP 500116), will trigger the LEP requirement for an assessment of the visual impact a development will have on the heritage item. The Wollondilly LEP 2011 makes provisions for consideration and assessment of impacts to heritage items in Part 5, Clause 5.10.

Recommendation 2 – Other Identified Heritage Items

- Items identified in Section 6.3.2 have been identified as potentially possessing heritage values. Should impacts be proposed, assessment of their significance should be undertaken followed by a statement of heritage impacts to manage change.
- Number 25 Bell Street, Thirlmere (Lot 138 DP 751270) has been identified as a site of non-Aboriginal archaeological sensitivity. Undertake additional research on this property and if appropriate consider adding to the heritage schedule of the Wollondilly Local Environmental Plan 2011. This property retains a standing chimney believed to have belonged to a building in the Federation Queen Anne architectural style.
- Further, if impacts are proposed to Lot 138 DP 751270, an archaeological assessment will be required to evaluate the likelihood of relics being disturbed. A permit application under the *Heritage Act 1977* and approval from Council may be required

Recommendation 3 - Stop work provision: Historic sites

- Should any previously unidentified historic archaeological objects or places be identified during excavation and construction within any of the precincts, all works must cease in the vicinity of the find and the following be notified:
 - Heritage Branch, Office of Environment and Heritage
 - The land owner/s
 - A qualified archaeologist

Aboriginal Heritage

Recommendation 4 – Conservation

- In the first instance, Wollondilly Shire Council should avoid impact to all registered Aboriginal archaeological sites and areas of archaeological sensitivity at the rezoning stage. Include these areas in conservation zones.
- To successfully manage Aboriginal cultural heritage within the Study Area, an Aboriginal Cultural Heritage Management Plan (ACHMP) should be developed once the Concept Design has been finalised, in consultation with relevant Aboriginal stakeholder groups and OEH. This would consider the management of Aboriginal cultural heritage and mitigate acceptable impacts at all stages of future development, including construction, vegetation remediation and rehabilitation, weed removal, flooding measures, etc.

Recommendation 5 – Further Archaeological Work

- Where registered Aboriginal archaeological sites and areas of archaeological potential cannot be avoided, additional archaeological work will be required, including impact assessments, detailed archaeological excavation and recording.
- No further archaeological work is required within all other areas where no Aboriginal archaeological sensitivity has been identified.

Recommendation 6 – Aboriginal Stakeholder Consultation

- All aspects of management and mitigation should be developed and implemented in consultation with the registered Aboriginal stakeholders and a qualified Aboriginal heritage consultant.

Recommendation 7 - Stop work provision: Aboriginal

- While Aboriginal archaeological sites or areas of potential were identified within the Study Area, it should be noted that all Aboriginal places and objects are protected under the NSW National Parks and Wildlife Act 1974. This protection includes Aboriginal places and objects which have not been identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

- Office of Environment and Heritage (OEH)
- A qualified archaeologist
- Aboriginal stakeholders

Recommendation 9 – Human Remains

Where suspected human skeletal remains are found, implement the following process:

- The remains will be reported to police and state coroner
- Wollondilly Shire Council and the land owner will be notified of the find
- Aboriginal stakeholders will be notified of the find
- OEH will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the National Parks and Wildlife Act 1974 (NSW) and the NSW NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan.

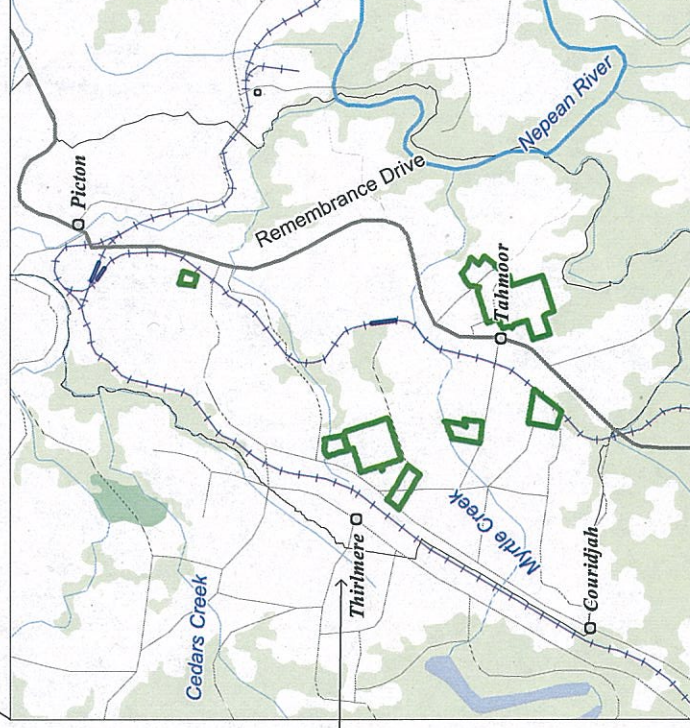
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FIGURES



Study area



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Figure 1: Location of the Study Area in a regional context

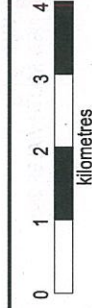
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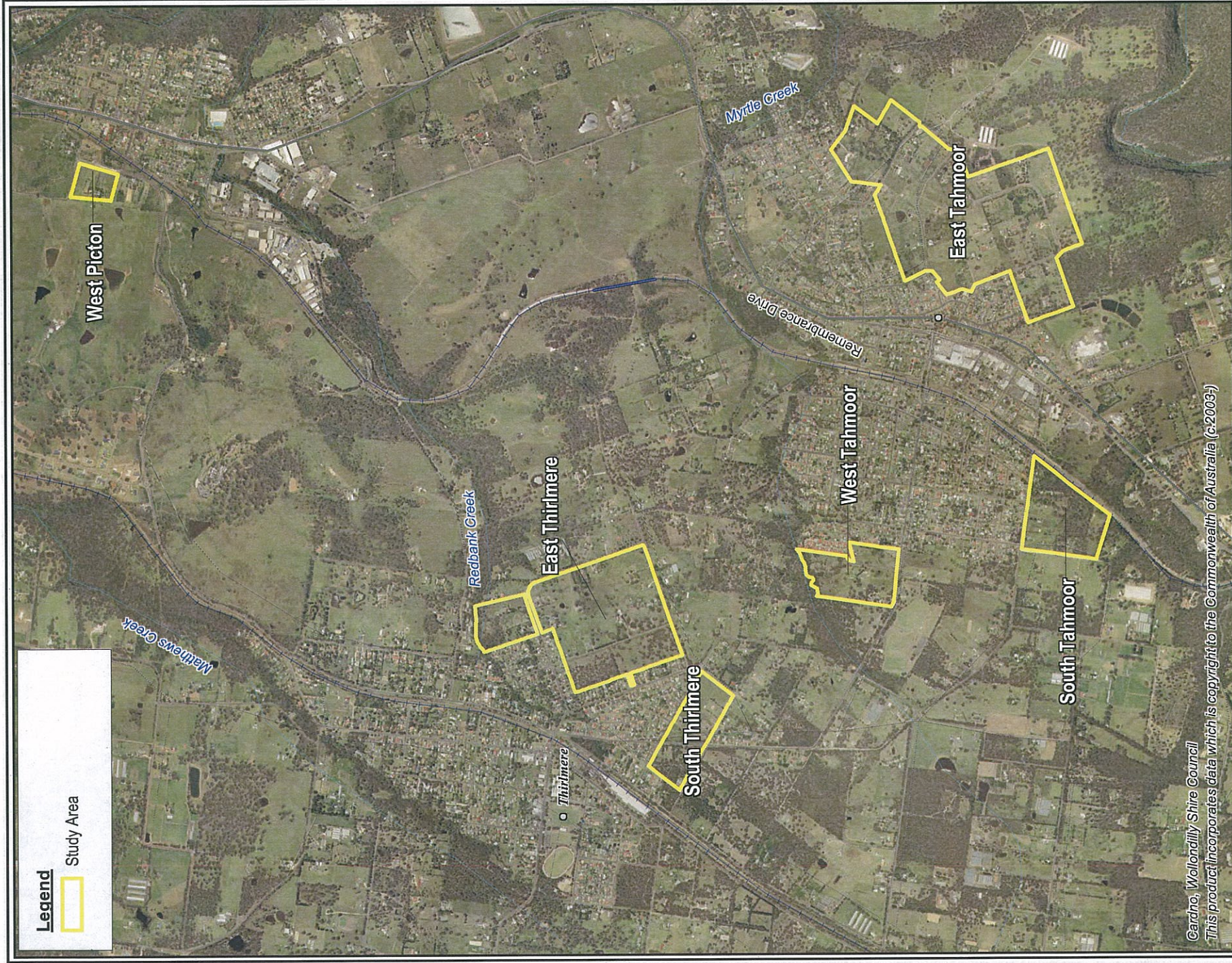
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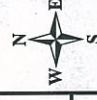
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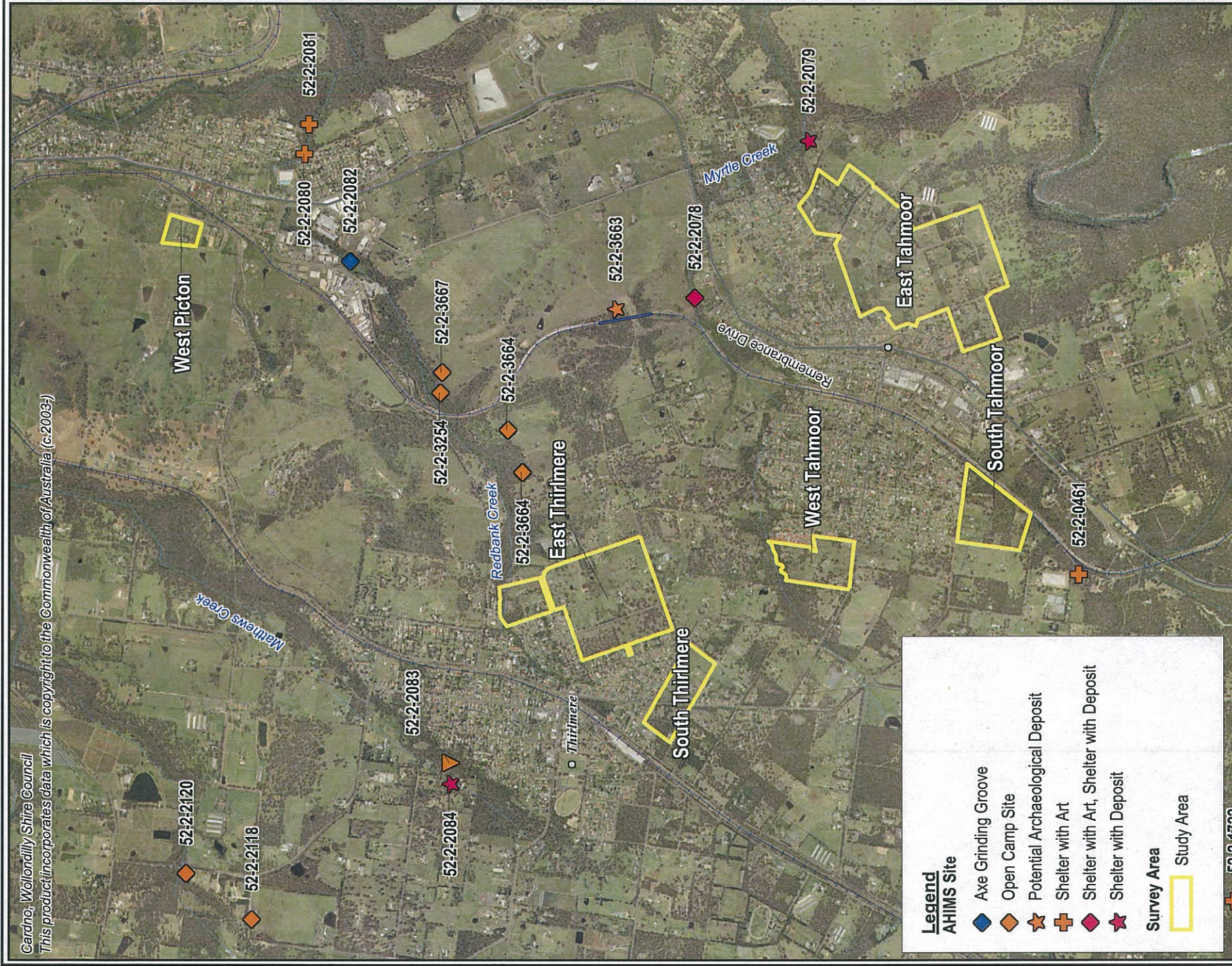


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Figure 2: Overview of the Study Area.

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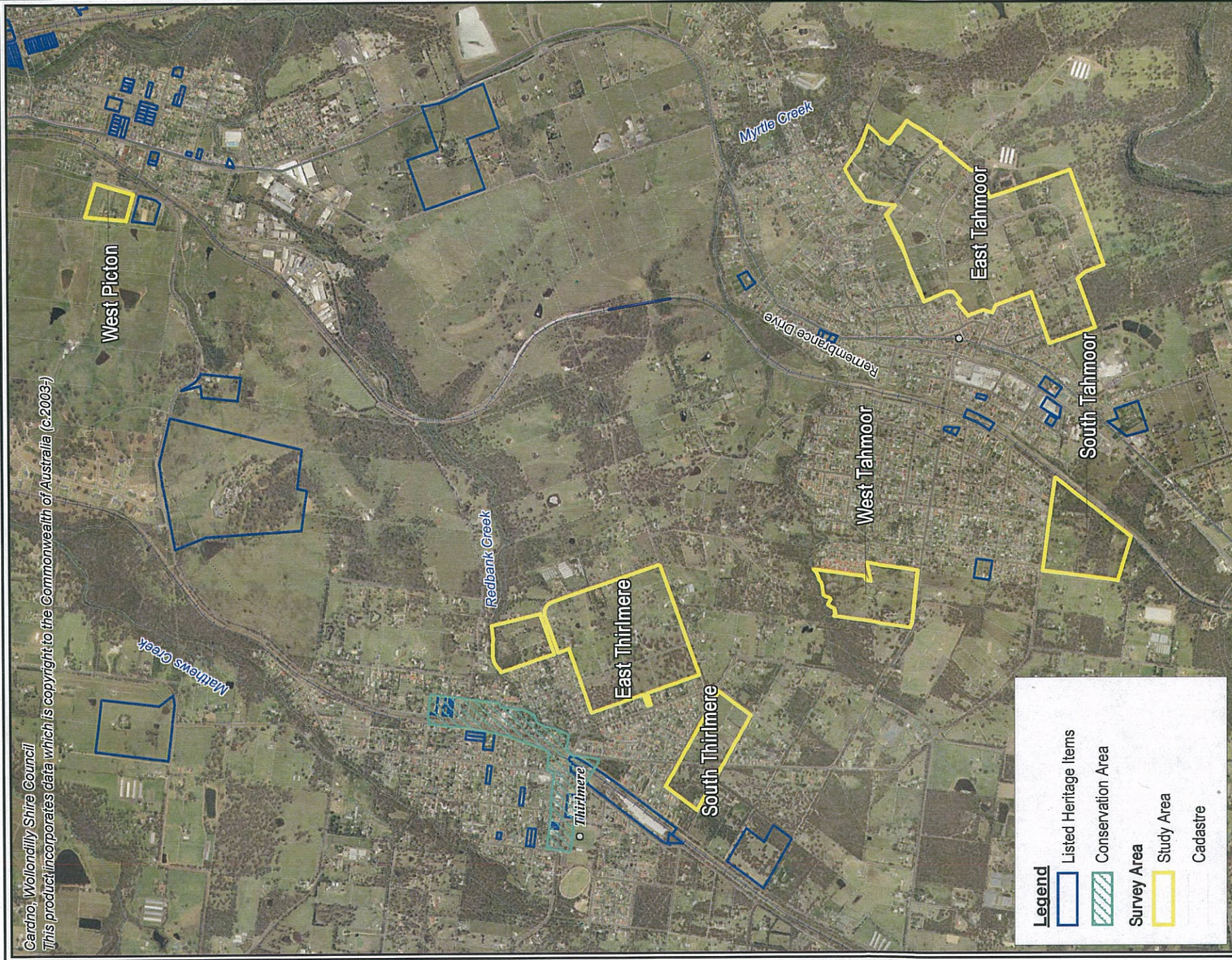
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Legend

- Listed Heritage Items
- Conservation Area
- Survey Area
- Study Area
- Cadastre

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Figure 4: Heritage items currently listed on the Wollondilly LEP 2011

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Figure 3a: Survey effort of current archaeological field assessment within each of the proposed new urban developments - West Picton.

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Date: 6 January 2011

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Location: P:\2600s\2656 - N5683\Mapings\55823 Fsb Survey Effort, East Thirlmere, WOR

Figure 5b: Survey effort of current archaeological field assessment within each of the proposed new urban developments - East Thirlmere

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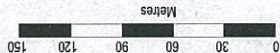


Figure 3b





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Figure 5c: Survey effort of current archaeological field assessment within each of the proposed new urban developments - South Thirlmere

Date: 6 January 2011

File number: SS823

Checked by: BWM
Drawn by: ANP

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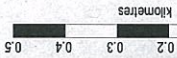


Figure 2c



Legend
Survey Track
Survey Area
Study Area



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Date: 6 January 2011
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Figure 5d: Survey effort of current archaeological field assessment within each of the proposed new urban developments - East Tahmoor

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Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 56



Legend
Survey Track
Survey Area
Study Area





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Figure 5e: Survey effort of current archaeological field assessment within each of the proposed new urban developments

Date: 6 January 2011

File number: S5683

Checked by: RBR

Drawn by: ANP

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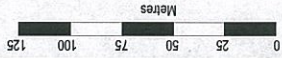


Figure 3e





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urban developments

Figure 5f: Survey effort of current archaeological field assessment within each of the proposed new

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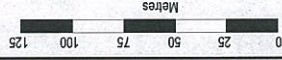
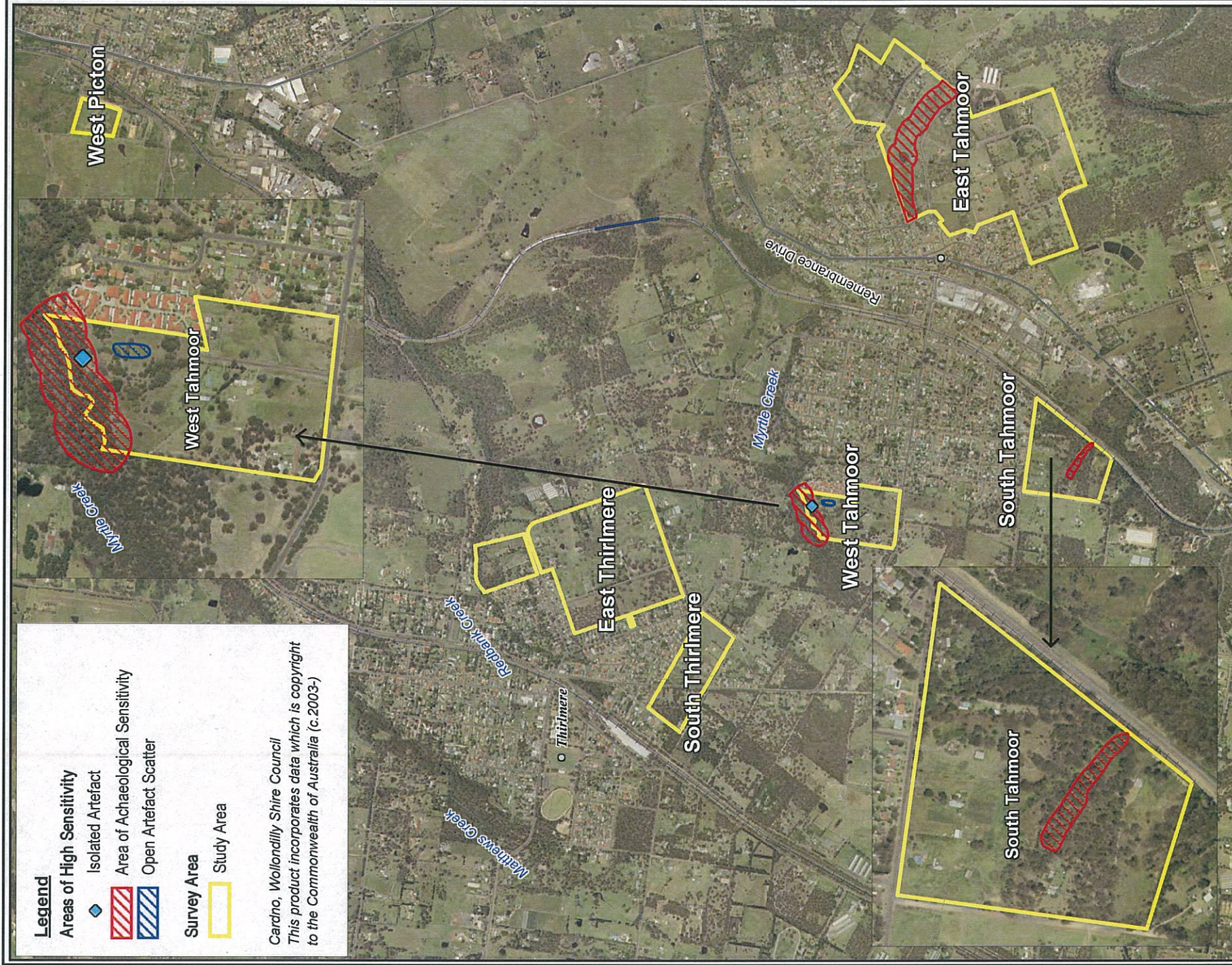


Figure 3f



Legend
Survey Area
Survey Track
Study Area



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Figure 6a: Aboriginal archaeological sites and Areas of Aboriginal archaeological significance

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Areas of High Sensitivity

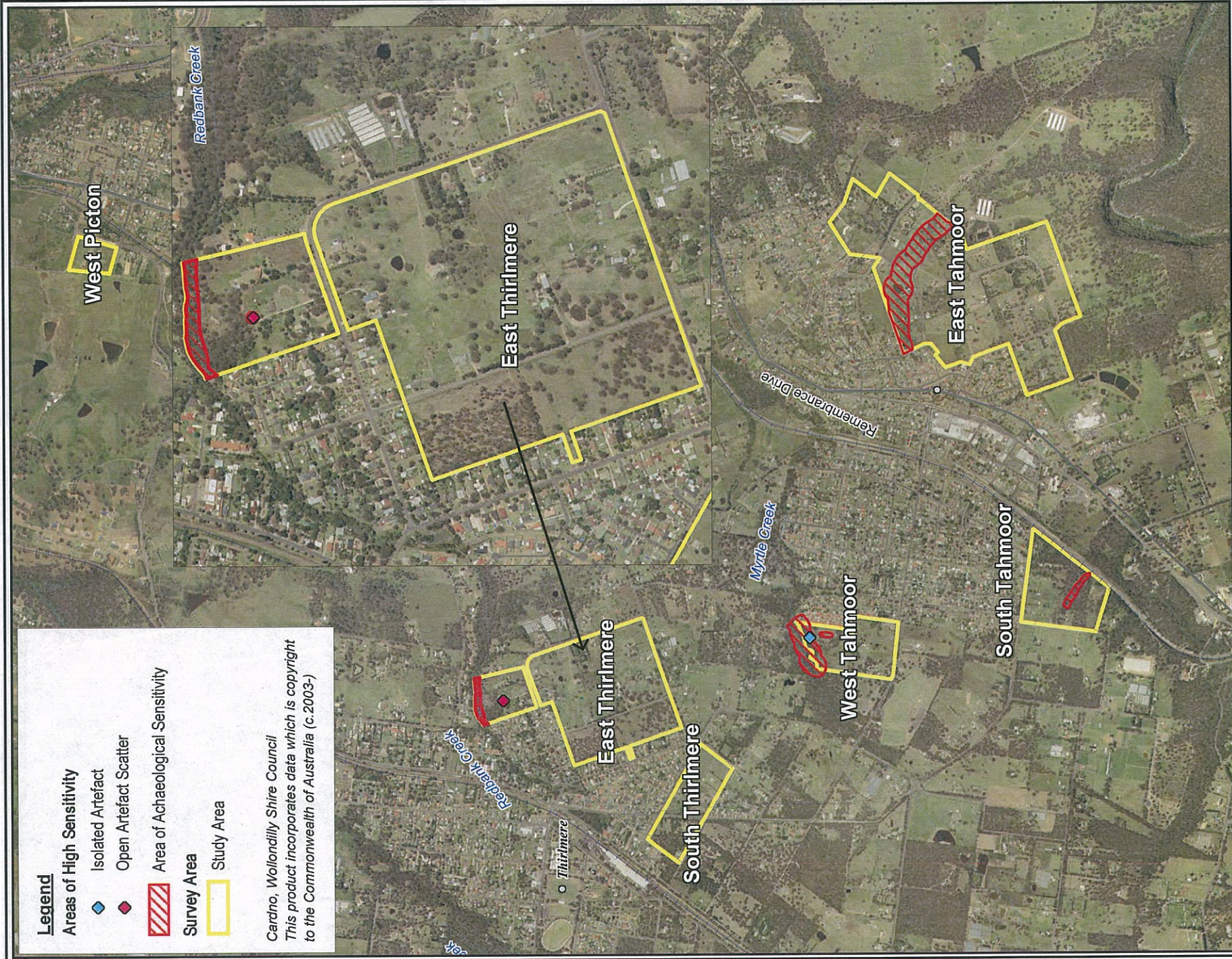
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- ◆ Open Artefact Scatter

 Area of Archaeological Sensitivity

 Survey Area

 Study Area

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Figure 6b: Aboriginal archaeological sites and Areas of Aboriginal archaeological significance - East Thirlmere variation.

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Figure 7: Areas of potential historic significance

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Drawn by: ANP

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kilometres



APPENDICES

APPENDIX 1: ABORIGINAL COMMENT TO BE INSERTED WHEN RECIEVED

APPENDIX 2: LEGISLATION

COMMONWEALTH LEGISLATION

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

In January 2004 the Commonwealth *Australian Heritage Commission Act 1975* was repealed and in its place amendments to the EPBC Act were made. The amendments were contained in three new pieces of Commonwealth Heritage Legislation. The three new Acts are the:

1. Environment and Heritage Legislation Amendment Act (No. 1) 2003 which:
 - (a) amends the Environment Protection and Biodiversity Conservation Act 1999 to include 'national heritage' as a new matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution
 - (b) establishes the National Heritage List
 - (c) establishes the Commonwealth Heritage List
2. Australian Heritage Council Act 2003 which establishes a new heritage advisory body to the Minister for the Environment and Heritage, the Australian Heritage Council, and retains the Register of the National Estate.
3. Australian Heritage Council (Consequential and Transitional Provisions) Act 2003 which repeals the Australian Heritage Commission Act, amends various Acts as a consequence of this repeal and allows for the transition to the new heritage system.

Any place that has been nominated and assessed as having cultural heritage significance at a national level can be added to the National Heritage List.

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) an action requires approval from the Federal Environment Minister if the action will, or is likely to, have a significant impact on a matter of national environmental significance. Matters of national environmental significance relating to cultural heritage are:

- World Heritage Places, and
- National Heritage Places

An action includes a project, development, undertaking, activity, or series of activities.

Actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land), and actions taken by the Commonwealth that are likely to have a significant impact on the environment anywhere in the world, may also require approval under the EPBC Act.

NATIVE TITLE ACT 1993

The Commonwealth Native Title Act establishes the principles and mechanisms for the preservation of Native Title for Aboriginal people.

Under Subdivision P of the Act, *Right to negotiate*, native title claimants can negotiate about some proposed developments over land and waters (known as 'Future Acts') if they have the right to negotiate. Claimants gain the right to negotiate if their native title claimant application satisfies the registration test conditions.

The right to negotiate applies over some proposed developments or activities that may affect native title. These are known as future acts under the Native Title Act 1993. Native title claimants only have the right to negotiate over certain types of future acts, such as mining. Activities such as exploration and prospecting on the land do not usually attract the right to negotiate.

The right to negotiate is not a right to stop projects going ahead — it is a right to have a say about how the development takes place. In some situations, the right to negotiate does not apply. In these circumstances, claimants may have the right to be notified, to be consulted, to object and to be heard by an independent umpire.

The right to negotiate is triggered when a government issues a notice to say that it intends to allow certain things to happen on land, such as granting a mining lease. This notice is called a 'section 29 notice'.

People who claim to hold native title in the area, but have not yet made a native title claimant application, have three months from the date given in the section 29 notice to file a claim if they want to have a say about the proposed development. To get the right to negotiate, the claim must be registered within a month after that.

If the right to negotiate applies, the government, the developer and the registered native title parties must negotiate 'in good faith' about the effect of the proposed development on the registered native title rights and interests of the claimants.

The parties can ask the National Native Title Tribunal to mediate during the negotiations.

If the negotiations do not result in an agreement the parties can ask the Tribunal (no sooner than six months after the notification date) to decide whether or not the future act should go ahead, or on what conditions it should go ahead.

The National Native Title Tribunal administers the future act processes under the Commonwealth legislation. The Tribunal's role includes mediating between parties, conducting inquiries and making decisions (called 'future act determinations') where parties can't reach agreements.

When the Tribunal receives a future act determination application, it must conduct an inquiry

(an arbitration) in order to determine whether the future act can be done and if so whether any conditions should be imposed.

A member of the Tribunal (or a panel of three members) will be appointed to conduct the inquiry, and will initially hold a preliminary conference and set directions for the parties to provide submissions and evidence. Members who have mediated a particular matter are not usually appointed as inquiry members. Inquiry members conduct hearings, receive submissions and evidence from the parties and take into account matters set out in section 39 of the Native Title Act such as:

- the effect of the future act on the enjoyment by the native title party of their registered native title rights and interests; their way of life, culture and traditions; the development of their social, cultural and economic structures; their freedom of access to the land and freedom to conduct ceremonies and other cultural activities; and the effect of the future act on any area or site of particular (special) significance to the native title party;
- the interests, proposals, opinions or wishes of the native title party;
- the economic or other significance of the future act;
- the public interest; and
- the presence of any existing non-native title rights and interests and use of the land by other persons (for instance, pastoralists).

ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* provides protection for Aboriginal cultural property. Whereas the State Act provides legal protection for all the physical evidence of past Aboriginal occupation, the Commonwealth Act deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. There is no cut-off date and the Act may apply to contemporary Aboriginal cultural property as well as ancient sites.

PROTECTION OF MOVABLE CULTURAL HERITAGE ACT 1986

Australia's movable cultural heritage is protected at both Commonwealth and State levels. This web site only provides information on the Commonwealth laws.

In 1970 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted the UNESCO Convention on the Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property. Australia ratified the convention by passing the *Protection of Movable Cultural Heritage Act 1986* (the Act), giving the 1970 Convention force in Australian law.

The Act regulates the export of Australia's significant cultural heritage objects. It is not intended to restrict normal and legitimate trade in cultural property and does not affect an individual's right to own or sell within Australia.

It implements a system of export permits for certain heritage objects defined by the Act as 'Australian protected objects'. Australian protected objects are objects which form part of the movable cultural heritage of Australia and which meet the criteria established under the National Cultural Heritage Control List. The Control List is located in the Regulations to the Act, and divides Australian protected objects into two classes:

- Class A objects which may not be exported
- Class B objects which may be exported if granted a permit under the Act.

A person wishing to export a Class B object is required to apply for a permit in writing. Applications are processed in accordance with the legislative process established under section 10 of the Act.

Certificates of Exemption, granted under section 12 of the Act, allow Australian protected objects that are currently overseas to be imported into Australia and subsequently re-exported. This includes Class A objects.

The Act also includes provisions that allow Australia to respond to an official request by a foreign government to return movable cultural heritage objects that have been illegally exported from their country of origin.

The *Protection of Movable Cultural Heritage Act 1986* is administered by the Minister for the Environment and Heritage. This responsibility was transferred from the Minister for Communication, Information Technology and the Arts in November 2001.

The Movable Cultural Heritage Unit in the Department of the Environment and Heritage provides the Secretariat to the National Cultural Heritage Committee

STATE LEGISLATION

NATIONAL PARKS AND WILDLIFE ACT 1974

The *National Parks and Wildlife Act 1974* provides for the protection of Aboriginal objects (sites, relics and cultural material) and Aboriginal places. Under the Act (S. 5), an Aboriginal object is defined as:

any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

This includes individual artefacts, scatters of stone artefacts, rock art sites, ancient camp sites, human burials, scarred trees, and ruins and archaeological deposits associated with Aboriginal missions or reserves.

Aboriginal places (areas of cultural significance to the Aboriginal Community declared by the Minister) are protected under Section 84 of the Act.

Aboriginal objects (any material evidence of the Aboriginal occupation of NSW) are protected under Sections 86, 87 and 90 of the Act. Section 86 of the Act identifies that a person, other than the Director-General or a person authorised by the Director-General in that behalf, who:

(a) disturbs or excavates any land, or causes any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object

is guilty of an offence under the NPW Act.

The *National Parks and Wildlife Act* requires that a permit from the Director General be obtained before archaeological fieldwork involving disturbance to an Aboriginal site is carried out. Consent is granted under section 87 and 90 of the Act. Queries and applications to excavate or disturb an Aboriginal archaeological site for purposes of archaeological fieldwork, should be directed to the relevant Planning and Aboriginal Section Manager at the appropriate Environment Protection and Regulation Branch office. For this study the relevant branch office is at Parramatta.

Section 91 of the Act requires the mandatory reporting of the discovery of Aboriginal objects, and establishes a mechanism for interim protection orders that may be used to protect objects. Identified Aboriginal objects and sites are registered with the NSW Department of Environment and Conservation (DEC) on the Aboriginal Heritage Information Management System (AHIMS). DEC administers the *National Parks and Wildlife Act 1974*.

HERITAGE ACT 1977

The *Heritage Act 1977* details statutory responsibilities for historic buildings and gardens, historic places and objects, historical archaeological sites, and historic shipwrecks. The Act is administered by the Heritage Council of New South Wales, through the NSW Heritage Office.

The aim of the Act is to conserve the 'environmental heritage' of the state, which includes items such as buildings, works, relics, moveable objects or precincts significant for historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. A 'Place' is defined as an area of land, with or without improvements and a 'Relic' is defined as any:

deposit, object or material evidence:

- (a) *which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
- (b) *which is 50 or more years old.*

An excavation permit is required for any works, excavations or activities, associated with an archaeological site. Excavation permits are issued by the Heritage Council of New South Wales in accordance with sections 60 or 140 of the *Heritage Act*.

It is an offence to disturb or excavate land to discover, expose or move a relic without obtaining a permit from the NSW Heritage Council.

139 Excavation permit required in certain cases

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

Excavation permits are usually issued subject to a range of conditions that will relate to matters such as reporting requirements and artefact cataloguing, storage and curation. A permit may be required from the Heritage Council of NSW for works or activities associated with a registered place or object.

General queries about site issues and permit applications can be made to the archaeological officers at the Heritage Office. The contact details are:

NSW Heritage Office

3 Marist Place

PARRAMATTA NSW 2150

Ph: (02) 9873 8500

Fax: (02) 9873 8599

Consultation and discussion with the NSW Heritage Office should begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The *NSW Environmental Planning and Assessment Act* will have relevance for all development projects because it requires that environmental impacts are considered in land-use planning and decision making. The definition of ‘environment impacts’ includes impacts on the cultural heritage of the project area. The Act has three relevant parts: Part III, which governs the preparation of planning instruments; Part IV, which relates to development where consent is required under an environmental planning instrument (EPI); and Part V, which relates to activity where development consent is not required but some other government approval assessments are needed.

Under the Act, local government authorities and The Department of Infrastructure, Planning and Natural Resources (formerly Planning NSW) prepare local and regional environmental planning instruments (LEPs and REPs) to give statutory force to planning controls. These may incorporate specific provisions for conserving and managing archaeological sites.

Integrated Development Assessment (IDA) was introduced under the *Environmental Planning and Assessment Act* so that all matters affecting a development application would be considered by the consent authority in an integrated way.

Integrated Development is one which requires development consent as well as one or more approvals from different government agencies. Such agencies may include NSW DEC or the NSW Heritage Council. If a development is likely to impact a heritage item, the consent authority must refer it, to NSW DEC (for Indigenous objects) or the NSW Heritage Council (for sites listed on the State Heritage Register) prior to approval determination.

The Local Government Act 1993

Under the State Local Government Act, councils can prepare local approvals policies that set out specific matters for consideration in relation to applications to demolish, build or undertake works. Archaeological sites could be considerations under such policies.

