West Belconnen Development Project Yass, NSW.

Archaeological Report

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LGA: Yass Valley

Prepared for Riverview Projects (ACT) Pty Ltd

8 May 2014

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Aboriginal Community Groups

- ACT Aboriginal and Torres Strait Islander Elected Body
- United Ngunnawal Elders Council

Registered Aboriginal Parties

- Buru Ngunawal Aboriginal Corporation
- Gunjeewong Aboriginal Cultural Heritage Corporation
- King Brown Tribal Group
- Koomurri Ngunawal Aboriginal Corporation
- Little Gudgenby River Tribal Council
- Onerwal Aboriginal Land Council
- Ngarigu Currawong Clan
- Ngunawal Heritage Aboriginal Corporation
- Yurwang Gundana Consultancy Cultural Heritage Services
- Ingram Family

Government Departments

- NNTT (National Native Title Tribunal)
- Office of the Registrar Land Rights Act (1983)
- NSW OEH
- NTSCORP
- Office of Multicultural, Aboriginal and Torres Strait Islander Affairs, ACT Government
- ACT Heritage Unit

Abbreviations

ACHAR	Aboriginal Cultural Heritage Assessment Report
AGD	Australian Geodetic Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
AR	Archaeological Report
c.	Circa
CHL	Commonwealth Heritage List
CMA	Catchment Management Authority
DA	Determining Authority
DP	Deposited Plan
EPA	Environment Planning and Assessment
LALC	Local Aboriginal Land Council
OEH	NSW Office of Environment and Heritage
RAP	Registered Aboriginal Party

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Summary

This Archaeological Report (AR) details the findings of the assessment undertaken for the proposed West Belconnen Development Project, which is located to the east of the Murrumbidgee River, along the NSW/ACT border over Lots 1,2,3,4,5,7,61 & 62 DP771051 Parish of Weetangera, in the district of Walleroo, Yass NSW. This area is bounded by the Murrumbidgee River to the West and North, Ginninderra Creek to the East and the ACT/NSW border on the south. Master planning for the West Belconnen Development is being undertaken to guide future planning and management decisions. Biosis has been commissioned by Riverview Projects (ACT) Pty Ltd (Riverview) to undertake an Aboriginal Cultural Heritage Assessment Report (ACHAR) to assist in the broad scale planning assessment.

This Project Area covers approximately 597.6ha and is divided into two main areas: the Development Area (371.6ha) which will be developed for residential purposes with associated infrastructure and the Conservation Corridor(226ha) which runs along the eastern band of the Murrumbidgee River and will not be subject to development. This Conservation Corridor will be placed into the management of a conservation trust which will be responsible for the ongoing management of the natural and Aboriginal heritage values of the Conservation Corridor.

Biosis has undertaken the following components for the AR:

- Review of previous work undertaken within the locality.
- Development of predictive model.
- Site inspections and field survey.
- Aboriginal Community Consultation.
- Report preparation.

This AR will provide supporting documentation for the ACHAR required by OEH for the determination of Aboriginal Heritage Impact Permit (AHIP) applications and assessment of impacts on Aboriginal cultural heritage as a result of any proposed development.

The potential for Aboriginal heritage sites to be found within the Project Area is indicated by the availability of resources. Archaeological site patterning in the region shows a landscape dominated by low density stone artefact scatters with high density sites located on the banks of major waterways. The predictive model for Aboriginal archaeological sites associated with the project area can be described as follows:

- Open campsites (artefact scatters) are likely to be the most common site types in the Project Area.
  - Artefact scatters are most likely to occur on level, or gently sloping, well-drained ground.
  - Isolated finds are likely to occur anywhere in the landscape.
- Grinding grooves are usually found in close proximity to water and are potentially present in the Project Area.
- Scarred trees may occur in all topographies where woodlands occur and old growth trees survive, likely as isolated paddock trees, or along the Murrumbidgee River corridor.
- Burial sites are likely to occur in landforms characterised by relatively deep profile of soft sediments such as sand and alluvium. The potential for burials along the Murrumbidgee Corridor is considered low.

Yass Valley Council is the Determining Authority (DA) and will assess the ACHAR (with this AR appended) to help them determine if the proposed development is likely to have a significant effect on the environment, including Aboriginal cultural heritage.

The Aboriginal community has been consulted about the heritage management of the project throughout its lifespan. Consultation has been undertaken with the Aboriginal community as per the process outlined in the DECCW document, *Aboriginal cultural heritage consultation requirements for proponents 2010.* Registered Aboriginal Parties (RAPs) for the project participated in the field survey and provided input into management recommendations and significance assessment.

Ten (10) Aboriginal cultural heritage sites registered with AHIMS and sixteen (16) Aboriginal sites recorded but not listed on AHIMS currently are located within the Project Area as well as in the vicinity. Forty-two (42) Aboriginal cultural heritage sites are registered with the ACT Heritage Database within 1km of the Project Area within the ACT.

The survey was conducted on the 3rd and 4th of December 2013. With follow up surveys within the Conservation Area occurring during February 2014. The overall effectiveness of the survey for examining the ground for Aboriginal sites was considered to be moderate due to varying levels of low ground surface visibility predominantly due to vegetation cover and a low frequency of exposures.

RESULTS

The field survey identified eighteen (18) previously unrecorded Aboriginal archaeological sites within the Development Area. No previously recorded sites are located within the Development Area.

Ten (10) AHIMS registered sites are located within the Conservation Area. The majority of the sites consisted of small artefact scatters with less than ten (10) artefacts or isolated finds. These sites have been assessed as holding low cultural and scientific significance. Site 57-1-0140 is a large scatter and has been assessed as holding moderate significance.

Eleven (11) previously unrecorded Aboriginal Archaeological sites were identified within the Conservation Area. The majority of these sites are of low significance with one site (WB26) being of high significance.

Three areas of (archaeological) sensitivity were identified – all associated with surface sites.

The proposed development activities within the Development Area will impact Aboriginal sites and areas of (archaeological) sensitivity directly and potentially may indirectly impact on sites within the Conservation Area if not managed appropriately.

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the Project Area and influenced by:

- Predicted impacts to Aboriginal cultural heritage.
- The planning approvals framework.
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter
  - The OEH 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW

RECOMMENDATIONS

Prior to any impacts occurring within the Project Area, the following is recommended:

Recommendation 1: Continued consultation with the registered Aboriginal parties

It is recommended that Riverview continue to inform these groups about the management of Aboriginal cultural heritage sites within the Project Area throughout the life of the project. This recommendation is in keeping with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).

Recommendation 2: Application for an AHIP for the identified Aboriginal sites WB1 – WB16, WB19, WB20, WB22 and WB23 within the Development Area. All of these sites have low potential for sub surface artefacts. The AHIP application should cover the areas of the known sites as set out in Table 6.2 and shown on figure 9.

These sites should be collected, subjected to analysis and relocated to an agreed place within the Conservation Area of the Project Area to maintain their 'connection to country'. This location must be agreed upon by the RAPs, NSW OEH and Riverview. If a location can not be agreed upon the artefacts should be cared for by the Onerwal LALC under a care and control agreement.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places or cause land to be disturbed for the purposes of discovering an Aboriginal object. NSW Office of Environment and Heritage (OEH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with EH. Once the application is lodged processing time can take between 8-12 weeks. It should be noted that there will be an application fee levied by EH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Recommendation 3: Impacts to area of PAD WB1 should be avoided. If PADWB1 within the Development zone is to be impacted a program of sub surface investigation is required to determine the presence, extent and significance of any sub surface deposits.

- Sub surface testing should consist of a series of hand excavated testpits measuring 50 cm x 50cm across the areas of the identified PADs. A detailed methodology for the sub surface investigations should be developed for approval by the RAPs for the project prior to any testing commencing.
- This sub surface testing should be in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010).

Recommendation 4: Sites and areas of PAD located within the Conservation Corridor are not subject to any proposed development impact. These sites are protected under legislation and In the event of any future action impacting on these known sites further assessment of the impacts and application for an AHIP may be required. This recommendation applies to the following sites: WB17, WB18, WB21,WB24, WB25 – WB29, 57-1-0174, 57-1-0074, 57-1-0184, 57-1-0140 and PAD WB25, WB26 and 57-1-0140.

Recommendation 5: The proposed West Belconnen Conservation Corridor is of high cultural significance to the Aboriginal Community. Ongoing liaison should be undertaken with the RAPs in regards to the management of sites within the Conservation Corridor and future planned developments that may impact cultural sites. This would involve meeting with the RAPs and discussing future developments. In the future the requirements of consultation may change and requirements should be checked with NSW OEH.

Recommendation 6: The area of the Ginninderra Creek has been assessed as holding high archaeological sensitivity. Any development that occurs in this area should be subject to sub surface testing within the development footprint to avoid damage to the archaeological record. This sub surface testing should be in

accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

Recommendation 7: Finding of low potential for cultural heritage sites or deposits across remainder of Development Area– proceed with caution.

The assessment of the Project Areas potential for cultural heritage sites and deposits is based on the field surveys and review of work completed in the immediate vicinity. This assessment has resulted in a finding of low potential across the Development Area except for the area of the Ginninderra Creekline. As a result the project can proceed with caution in areas with no known cultural heritage sites dependant on recommendations 9, 10 and 11.

Recommendation 8: Due to the nature of the archaeological record it is possible that additional cultural heritage sites exist within the Project Area which were not located during this planning field survey. As a result the RAPs have requested that a cultural heritage induction should be included in the induction package for all construction workers.

Recommendation 9: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the *NSW National Parks and Wildlife Act* 1974. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 10: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains
2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
3. Not recommence work at that location unless authorised in writing by EH.

Recommendation 11: No further archaeological work required for the Development Area once AHIP obtained from OEH

No further archaeological work is required for the Development Area should the AHIP be approved, except in the event that unexpected cultural finds are unearthed during any phase of the project (refer to Recommendation 8-10).

1 Introduction

1.1 Project Background

Riverview Projects (ACT) Pty Ltd (Riverview) propose to develop an area of land along the eastern side of the Murrumbidgee River for residential and related purposes. The land consists of undulating hills and has been historically used for pastoral purposes and is located to the north of the current Canberra suburbs of Holt and MacGregor.

Riverview aspires to develop the site at West Belconnen to achieve a vision of sustainable living, best development practice and environmental awareness. The vision is to create a community that exemplifies Worlds Best Practice in its design, construction and long term live ability. One of the goals of the development is to respect and honour the Aboriginal cultural, historical and spiritual values of the West Belconnen area. To achieve this vision an Aboriginal Cultural Heritage Assessment Report (ACHAR) and Archeological Report (AR) was commissioned with Biosis to determine the presence and significance of any Aboriginal heritage values that may be present within the Development Area and Conservation Corridor.

As a first step for the development to proceed the land parcel will require rezoning under the Yass Valley LEP 2013. As a requirement of this rezoning process the findings of the ACHAR with the AR appended will be provided as supporting documentation.

1.2 Project Area

This Project Area covers approximately 597.6ha and is divided into two main areas: the Development Area (371.6ha) which will be developed for residential purposes with associated infrastructure and the Conservation Corridor (226ha) which runs along the eastern band of the Murrumbidgee River and will not be subject to development. This Conservation Corridor will be placed into the management of a conservation trust which will be responsible for the ongoing management of the natural and indigenous heritage values of the Conservation Corridor.

1.3 Planning Approvals

The proposed development will be assessed against Part 4 of the *Environmental Planning and Assessment Act 1979* NSW. Other relevant legislation and planning instruments that will inform this assessment include:

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Environmental Planning and Assessment Act 1979* (NSW)
- *National Parks and Wildlife Act 1974* (NSW)
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Yass Valley Local Environmental Plan 2013.*

1.4 Assessment Objectives

The aim of the Archaeological Assessment was to identify, record, and assess any Archaeological sites or values that may exist within the Project Area. Based on this assessment, management recommendations will be developed to inform Riverview of its responsibilities in regards to the identified cultural heritage sites or values.

The following is a summary of the major objectives of the assessment:

- Identify and consult with Registered Aboriginal Parties (RAPS) for the project.
- Conduct additional background research in order to recognise any identifiable trends in site distribution and location.
- To search statutory and non-statutory registers and planning instruments to identify listed Aboriginal cultural heritage sites within the Project Area.
- To summarise past Aboriginal occupation in the locality of the Project Area using ethnohistory and the archaeological record.
- To formulate a model to broadly predict the type and character of Aboriginal sites likely to exist throughout the Project Area, their location, frequency and integrity.
- To conduct a field survey of the Project Area to locate unrecorded or previously recorded Aboriginal sites and to further assess the archaeological potential of the Project Area.
- To assess the significance of any known Aboriginal sites in consultation with the Aboriginal community.
- To identify the impacts of the proposed development on any known or potential Aboriginal sites within the Project Area.
- To recommend strategies for the management of Aboriginal cultural heritage within the context of the proposed development.

1.5 Investigators and Contributors

The roles, previous experience and qualifications of the Biosis project team involved in the preparation of this archaeological report are described below in Table 1.1.

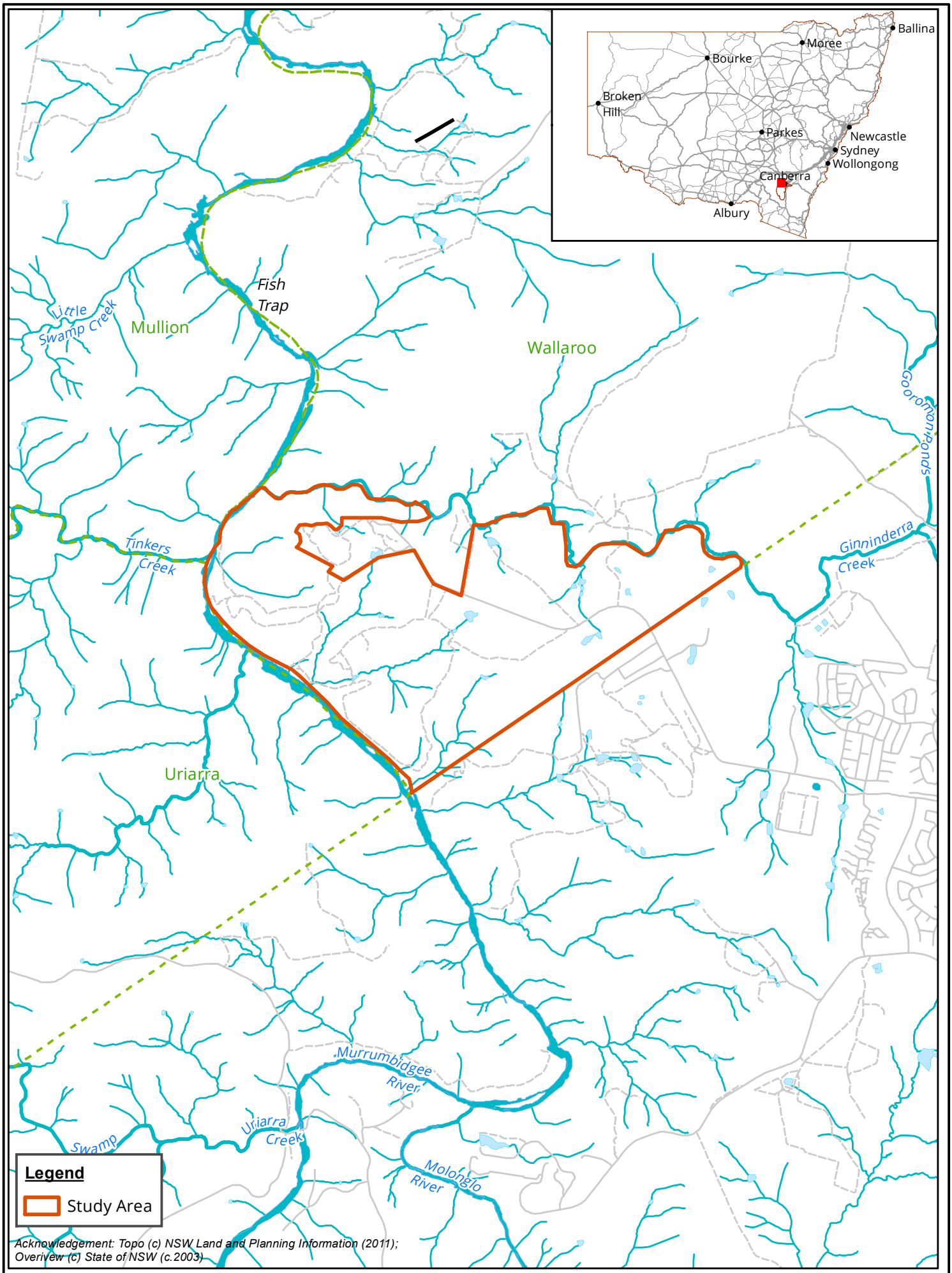
Table 1.1: Investigators and Contributors

Lyn O'Brien	Ba (Hons)	12 years experience
Lyn is a Senior Archaeologist with the Canberra office of Biosis. Lyn has worked as a consultant in archaeology for over 12 years and has been involved in numerous projects in the Hunter Valley, South NSW Coast, Perisher, Goulburn region, Wollongong, Namadgi National Park and the ACT regions. Lyn has developed strong project management skills and conducted numerous Aboriginal field surveys, community consultations, excavations, impact assessments and significance assessments. Lyn applies the NSW heritage statutory framework, heritage codes of practice and best practice approaches to managing heritage values.		Project Roles • Field Survey • Background Research • Report preparation • Aboriginal Community Consultation

Asher Ford	BA (Hons)	5 years experience
Asher is a Consultant Archaeologist with the Wollongong office of Biosis. Asher has over five years experience as a consultant archaeologist, with application to cultural heritage management for various projects throughout Victoria, New South Wales and South Australia. His skills include Aboriginal archaeological assessments, site recording, survey, sub surface testing and excavation, project research, geographic information systems (GIS), graphics and report writing. Asher has technical experience in recording artefact scatters, scarred trees, middens, axe grinding grooves, rock shelters, art sites and stone features across a range of Australian environments including the Victorian Western Volcanic Plains, Gippsland, the Victorian High Country, the Murray River, the Cumberland Plains, the Illawarra region, the Hunter Valley, the NSW Southern Tablelands and the Woomera Prohibited Area. Asher has authored and / or co-authored over 30 consultant reports.		Project Roles • Field Survey • Aboriginal community consultation; • Development of recommendations; and • Preparation of the report.

Sarah Youngblutt	MA	1 year experience
Sarah is a Field Archaeologist with the Canberra office of Biosis whilst completing her PhD at the Australian National University. Sarah has experience in excavations of Aboriginal sites; Aboriginal field surveys involving site recordings of rock shelters, scarred trees, grinding grooves, artefacts scatters and Aboriginal lithic artefact cataloguing and analysis.		Project Roles • Field Survey • Aboriginal community consultation; • Data collation • Report preparation

Alexander Beben	BA (Hons)	8 years experience
Alexander Beben is a Senior Archaeologist with Biosis Pty Ltd Wollongong office. Alex has eight years archaeological experience and has conducted over 80 heritage projects across Australia and internationally in the UK and Italy. He has extensive experience in the successful completion of assessments, archaeological surveys, excavations, permits and management plans. Alex is accomplished in obtaining approvals under the NSW National Parks and Wildlife Act 1974 and NSW Heritage Act 1977. He has operated within large multidisciplinary teams tasked with delivering Environmental Impact Assessments (EIAs) under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and Commonwealth projects under the Environment Protection and Biodiversity Act 1999 (EPBC Act).		Project Roles • Technical Review • Quality Assurance • Compliance



Acknowledgement: Topo (c) NSW Land and Planning Information (2011); Overview (c) State of NSW (c.2003)

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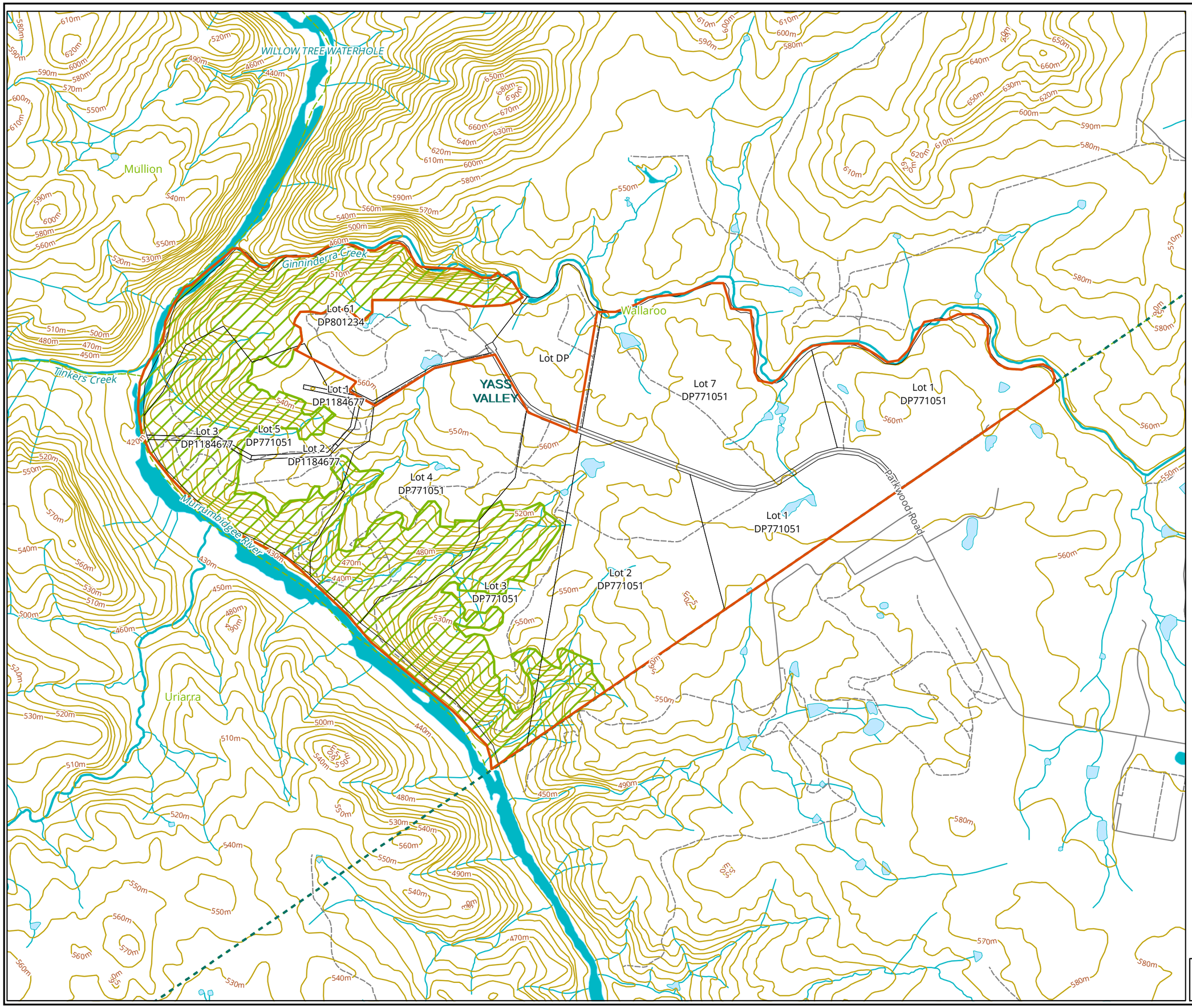
Figure 1: Location of the Study Area - in a regional context

Matter: 16832
Date: 11 March 2014,
Checked by: LOB, Drawn by: JMS, Last edited by: jshepherd
Location:P:\16800s\16832 - west belconnen\Mapping\

0 400 800 1,200 1,600
Metres

N

Scale 1:40,000 @ A4, GDA 1994 MGA Zone 55



Legend

- Study Area
- Conservation zone
- Lots

Figure 2: Location of the Study Area - NSW Lands

0 170 340 510 680 850

Metres

Scale: 1:17,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Date: 09 April 2014,
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2 Desktop Assessment

A desktop assessment has been undertaken to review existing archaeological studies for the Project Area and surrounding region. This information has synthesised to develop an Aboriginal site prediction model for the Project Area and identify known Aboriginal sites and/or Places recorded in the Project Area. This Desktop Assessment has been prepared in accordance with requirements 1 to 4 of the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

2.1 Previous Archaeological Work

A large number of cultural heritage surface (surveys) and sub-surface (excavations) investigations have been conducted throughout the Yass region of New South Wales in the past 30 years. There has been an increasing focus on cultural heritage assessments in NSW due to ever increasing development, along with the legislative requirements for this work and greater cultural awareness of Aboriginal cultural heritage.

The majority of sites located in the region consist of open scatters with no dateable material. Analysis of the morphology of lithic artefacts (Flood 1980:248) places them in the post Bondaian phase within the last 4500BP. Pleistocene-age Aboriginal sites include a rock shelter at Birrigai Rockshelter which dates to 21,000 BP showing occupation of the area (Flood *et al* 1987). Other rock shelters from the region date from 3700BP at Nursery Swamp, and 770BP at Yankee Hat 2 (Flood 1980:248, Flood 1996:36).

2.1.1 Regional overview

A number of Aboriginal cultural heritage investigations have been conducted for the Canberra/Yass region. Models for predicting the location and type of Aboriginal sites with a general applicability to the region and thus relevant to the Project Area have also been formulated as a part of these investigations.

Flood in 1973 undertook pioneering work on the exploitation of the Southern Uplands by Aboriginal people. This research focused on the seasonality of occupation and the exploitation of the Bogong Moth during the summer months. This research was published in 1980 and further refined in 1984. Flood (1980) presents five occupation sites within the southern highlands. The Canberra region corresponds to lowland areas in Floods landscape division. These landform divisions correlate with the availability of seasonal resources and allow for the following statements to be made in relation to the use of certain Aboriginal sites within a broad landscape context:

- Large lowland base camps – occupied year round.
- Medium lowland camps – occupied regularly at time of year.
- Valley camps at altitudes between 745-1160m - transport routes and summer camping areas.
- High summer camps at elevations of 1160-1525m – summer camps and Bogong moth collection sites.
- Camp sites above 1525m - Bogong moth and ceremonial sites.

Based upon the above Flood (1973) built the following site location model:

- Within one km of a water source and the majority of sites within 100m.
- Above creek lines out of flash flood, wet soil and mosquitos.
- Aspect to prevent attack by allowing view of approach.

- Close to material to build shelters and food resources.

Flood believed that due to the severe climate of the southern uplands in the Pleistocene that Aboriginal occupation only occurred during the warmer Holocene due to population pressure (1980:279-281). This view was overturned by the excavation and dating of the Birrigai Rockshelter which dates to 21,000 BP showing occupation of the area during the Pleistocene (Flood *et al* 1987).

Bowdler in 1981 argued that the Daisy Yam and Lerps were a stable food of equal or more importance than the Bogong which was an occasional ceremonial food. However the site location model developed by Flood was supported by Bowdler's findings. Beveridge in 1883 recorded the use of lerps amongst the Indigenous people of the lower Murrumbidgee:

> *An Aboriginal can easily gather 40lbs weight of it in a day ...they thrive on it ... Should the lerp harvest extend over six or eight weeks, which it frequently does, the Aborigines become quite fat and sleek* (Beveridge 1883 in Carr and Carr 1981:27).

Barz and Winston Gregson in 1981 undertook a study of the Murrumbidgee River corridor for the NCDC. This survey covered 100 square kilometres and located numerous open artefact scatters, the majority of which were located on spurs, saddles or terraces within 150m of the Murrumbidgee River. These site locations supported Floods model. They recommended that further work on the Murrumbidgee catchment be undertaken due to the rich sites that were located in the area.

Anderson in 1984 undertook detailed analysis and field survey of the Uriarra Catchment to the west of the Project area for his Honours Thesis at the Australian National University. He located numerous artefact scatters which were generally located on creek banks. This was a result of his survey strategy that focussed on creek lines based on the findings of Barz and Winston Gregson. His results refined the site location model to predict that sites tend to be located close to reliable water and at the ecotone boundary between resources. Anderson located numerous sites which he divided into four clusters:

- Dingo Flats;
- Middle Reaches;
- Uriarra Station; and
- Murrumbidgee/Swamp River confluence.

He concluded that the area at Dingo Flats was the main focus to harvest the Bogong Moths and that the middle reaches would have been used as a wintering site as it is low enough to provide protection from westerly gales off the snowline and provided the highest overlap of resources. Flood (1981:160) also considered Dingo Flats to be a centre for Bogong Moth gathering.

White and Cane (1986) completed an investigation into the Aboriginal settlement of the Yass Valley in response to development pressure threatening a probable Aboriginal burial site at Oak Hill (51-1-0043). This site had been threatened several times previously and a body of oral evidence (from the Yass Aboriginal Community) had been gathered to support the findings. Archaeological research had been undertaken on this site by Sullivan (1982), and Koettig (1986) previously. To resolve the validity of the claim White and Cane were commissioned to investigate the ethnography and archaeology of the region by the NWPS. The report detailed the formation of the Aboriginal reserves in the Yass Valley and the connections of the descendant families along with traditional lifeways that had been displaced. A discussion of burial practises for the Yass area was documented along with the fight that the local families had maintained to preserve the burial sites. The report was focused on the post occupation history of the Yass valley rather than the previous period of Aboriginal possession and does not include a discussion of site models or use of the valley.

Navin Officer Heritage Consultants (1991) conducted an initial survey in a proposed residential area in Oakey Creek. Investigations identified four isolated finds located along creeklines.

Navin Officer Heritage Consultants (1992) conducted further research at the residential in Oakey Creek to investigate reported Aboriginal burials. Investigations identified evidence to support the existence of the burials, but determined further archaeological assessment, including subsurface testing, would need to be carried out to confirm whether several features within the area were indeed burials.

Access Archaeology (**1992)** completed a large survey project for the Uriarra Pine Forest (located approximate 11kms west of the Project area). This work resulted in the recording of 32 sites consisting primarily of surface artefact scatters, some of which were large, containing in excess of 50 artefacts. These sites were largely located in proximity to drainage lines /ephemeral creek lines and along the graded access roads where clear areas of ground surface visibility were present.

Oakley and Saunders (1988) undertook an assessment o the proposed route of a fibre optic cable along Yass Valley Way to the Barton Highway. The area was highly disturbed and no sites were recorded even though the alignment covered areas of potential at O'Brien Creek and Yass River.

Archaeological Heritage Surveys (2000) recorded a low density campsite of 8 artefacts in the fibre optic cable easement close to the Yass River and a large site of over 50 artefacts 50m north of a registered site 51-5-003 on a creek bank.

Navin Officer Heritage Consultant (2001) assessed the Yass electricity substation for heritage values located a small low density scatter along a spur crest. The spur crest was allocated moderate potential for deposits .

Archaeological Heritage Surveys (2003) undertook an assessment of the East Yass Residential Subdivision covering 60ha on the outskirts of the township of Yass. One low density artefact scatter was located along the crest of a low knoll in an area of disturbance caused by the construction of a water tank. The site consisted of two quartz flakes.

NSW Archaeology (2009a) completed a large scale assessment for the Yass Dam Raising project for the NSW Department of Commerce. The area of the Yass Dam was considered to represent an area of low archaeological sensitivity and potential. 4 low density scatters were located but were not considered to be associated with sub surface deposits. The proximity to the Oak Hill Camp burial sites (site 51-1-0043) was noted and a recommendation to avoid the area was made.

NSW Archaeology (2009b) completed a large scale assessment for the proposed Yass Valley Wind Farm which covered an area of approximately 137 ha at Carrols Ridge, 458ha at Coppabella Hills and 488ha at Marilba Hills. Sites were recorded along crest rides which were the focus of survey all consisting of low density scatters considered to hold low potential for sub surface deposits. A program of selective salvage of sites was recommended for the project area.

2.1.2 Local Overview

Previous archaeological studies have been undertaken in the vicinity of the Project Area mainly in relation to the development of the area for residential housing and associated electrical or water infrastructure. Other studies completed for the region relate to the management of the cultural resource along the Murrumbidgee River or to works associated with the Lower Molonglo sewer works. A brief overview of the most relevant studies is presented below.

Barz in 1980a undertook an archaeological assessment and survey of the proposed 132kV transmission line from Ginninderra to Ettamogah. Sites located during this survey consisted of small artefact scatters and isolated finds, none of these sites are located in the West Belconnen Project area.

Barz in 1980b undertook a further archaeological assessment of the Canberra/Royalla 330kVtransmission line. This survey located small artefact scatters and resulted in the finding that sites were located close to water supplies. Two of these artefact scatters are located within the Project Area (CR1 and CR2). Field survey consisted of walking the alignment in criss-cross pattern and paying particular attention to eroded areas. A total of 20 Indigenous sites were identified during the survey.

Barz and Winston in 1981 completed a survey of the Murrumbidgee River corridor to determine the location of sites and to map the values of the River. A model of utilisation of the river frontage and corridor was formulated predicting sites to be located in close proximity to the river and in areas providing access to the resources. Numerous sites were located along the length of the Murrumbidgee reflecting its importance as a fixed resource point for water, fish, water fowl, yabbies and other resources. Two sites within the Project Area were located during this survey, sites MRC122 and MRC123. These sites consist of respectively a stone artefact scatter and a rockshelter site. At the time of the original recording of the rockshelter site Barz records the occurrence of surface artefacts and the potential for sub surface deposits in association with the rockshelter which is located atop a high spur with commanding views of the area.

Barz in 1985 completed an assessment of sites within the Murrumbidgee River Corridor for the NCDC following on from her work in 1981. This information was later used to develop the NCDC sites of significance volume no 6 for the region. Three important sites are recorded in the immediate vicinity of the Project Area. These are SU9 – Aboriginal quarry near Woodstock – a red jasper quarry; SU10 – Aboriginal rock paintings near Woodstock and SU12 – Strathnairn Aboriginal Site which was recorded as MRC123 in 1981 by Barz.

Canberra Archaeology Society (1988) conducted an archaeological assessment of Ginninderra Falls Park, ACT for a private research project. During investigations 1 artefact scatter was identified on a slope bordering sandy flats on the west bank of the Murrumbidgee River. This site is located within the boundaries of the current Project Area.

Navin Officer in 1991 undertook preliminary archaeological surveys and assessment for the proposed West Belconnen Urban Release Area. This study comprised three areas A, B & C. The survey coverage was low during this assessment due to the grass coverage and tight time frames. Predictive modelling reflecting a concentration on the drainage and creek lines was developed for the Project area.

Packard in 1992 completed an assessment for the Lower Molonglo Water Quality Control Centre. This assessment surveyed the route of a proposed trunk sewer and located five small sites (2 artefact scatters and three isolated finds). Overall low visibility across the Project Area hampered the effectiveness of the survey but the results reflected a concentration on drainage features.

Kelton in 1992 undertook an assessment for the area surrounding the Belconnen Station. This assessment concentrated on the structure of the historical wool shed located on the property. Several small Aboriginal sites were located in areas of exposure surrounding the built structures.

Kuskie and Boot for South East Archaeology in 1992 undertook a detailed survey of the proposed development areas in West Belconnen surveyed by Navin Officer in 1991. This covered an area of approximately 240ha and is located on the north - eastern side of the current Project Area. Numerous Aboriginal heritage sites were located mainly in association with drainage lines feeding into Ginninderra Creek or on elevated terraces above Ginninderra Creek. The assessment resulted in classifying the area of 100m on either side of Ginninderra Creek as highly sensitive and a recommendation that the area is not to be impacted. Recommendations were made that if impacts were to occur then further investigations including sub surface investigation would need to be undertaken to determine the sensitivity for the riparian zone.

South East Archaeology (1992) completed an archaeological assessment for the proposed route of an optical fibre cable between Cootamundra and Hall approximately 10kms to the north east of the Project Area. This route covered 152kms and located 7 small sites consisting of artefact scatters and isolated finds. Landforms within 300m of watercourses on level spurs, low ridges or gently slopes were accorded high sensitivity. Testpitting was undertaken on these landforms on the north and south sides of the Yass River but no artefacts were located during the sub surface program.

Williams (1992) conducted an archaeological survey in Hall, near Bungendore, NSW for a proposed optical fibre cable route. During investigations 16 artefact scatters were identified, 11 of which within 100m of a water source.

Boot and Kuskie for South East Archaeology in 1994 undertook these sub surface investigations along the riparian corridor of the Ginninderra Creek and Gooromon Creek. Twenty three test pits were excavated revealing one large sub surface site and confirming the predicted value of high sensitivity for the area. A recommendation of no impacts to the area was again made.

Navin Officer Heritage Consultants in 1994 completed an archaeological survey for the route of the Proposed West Belconnen Trunk Sewer Stage 1. This survey area was located on the southern bank of Ginninderra Creek for 1.5km to the junction of Ginninderra Creek and Gooromon Ponds. The survey resulted in the identification of three cultural heritage sites consisting of two isolated finds an one small scatter of 14 flakes within an area of sheet and gully erosion (WTBS1,WTBS2 and WTBS3). A recommendation for surface collection was made and an assessment that low potential for sub surface sites was made.

Archaeological Heritage Surveys (Saunders) in 1995 undertook an assessment for the Second Stage Of works in West Belconnen. This assessment resurveyed areas originally studied by Kuskie and Boot in 1992, relocating many of their sites. No additional sites were located and the predictive model formulated by Kuskie and Boot was upheld and strengthened by this re-assessment.

Navin Officer Heritage Consultants (1998) conducted a field survey at Hall Showground for proposed remedial works. During investigations two artefact scatters were identified on the banks of Halls Creek.

Archaeological Heritage Surveys (1999) conducted an archaeological assessment of Lot 22, Parrish of Wallaroo, NSW for a proposed landfill site. No sites were identified during investigations.

Navin Officer Heritage Consultants (1997) conducted an archaeological assessment of the Ginninderra Red Gravel Quarry, Lot 61, NSW to provide a Statement of Environmental Effects. During investigations, four artefact scatters, one possible scarred tree and one isolated find were identified in disturbed contexts within 500m of Ginninderra Creek. They concluded that the spurline to the Murrumbidgee River was of moderate to high archaeological sensitivity.

Navin Officer Heritage Consultants (2000) conducted an archaeological assessment of the areas within the Ginninderra Falls Tourist Park. The field survey located no European heritage sites, nine additional Aboriginal sites comprising seven open artefact scatters and two isolated finds. Eight of those sites were assessed as low local archaeological significance based on the limited number of artefacts and limited potential for undisturbed subsurface cultural material to be associated with the sites. It was recognised that small, disturbed artefact scatters are locally and regionally common.

Following the Canberra bushfires **in 2003 Charles Dearling and Sam Mackay** undertook an assessment of the current Project Area. This field survey located numerous surface scatters and isolated finds within the Project Area but clustered along the banks of Ginninderra Creek and the junction to Gooromon Ponds. Site cards for the recorded locations were deposited with the Act Heritage Unit but no formal report was completed on site patterning or cultural significance.

Archaeological Heritage Surveys (2007a) undertook a heritage assessment as part of the MacGregor West development for the proposed off site works. This area is located to on the southern boundary of the current Project Area Recommendations of the report were for geomorphological assessment and sub surface testing of areas of identified potential along Ginninderra Creek, specifically MW5/PAD (Dearlings CLWB30) which would be impacted by the construction of water holding ponds and water infrastructure.

Navin Officer Heritage Consultants (NOHC) undertook the sub surface testing of MW5/PAD in 2008, excavating sixteen pits and recovering high numbers of artefacts with frequent occurrence of backed artefacts. They concluded that the recovered artefacts represented an intact assemblage but with evidence of bioturbation, and size sorting reflecting a mixed stratigraphy. It was considered that the site had moderate significance from the information potential of the intact artefact assemblage. Salvage of the site was recommended in large scale disturbance was likely to occur.

As a result of this recommendation **NOHC in 2009** undertook a large scale salvage excavation of MW5/PAD in the areas of the construction impact for the proposed truck sewer. Forty nine 1 x 1m test pits were hand excavated resulting in an assemblage of 1370 artefacts. The artefacts showed spatial patterning with areas of intensive lithic manufacture with concentrations of microblade reduction and microblade technologies. Retouched flakes were often found located away from manufacturing debris, indicating that these areas may have been utilisation areas rather than lithic manufacture (NOHC 2009:46). The area to the east of the site was designated a conservation zone requiring salvage if any construction impacts are to occur in the future. This site has some of the highest density of artefacts in the ACT region and signage is now erected at its site on the southern side of the fire trail on the south of Ginninderra Creek.

Archaeological Heritage Surveys (2007b) was engaged to undertake the cultural heritage assessment for MacGregor West Estate 2 for the Village Building Group covering an area of approximately 70ha commonly known as the Parkwood horse paddocks. This survey area is located directly to the south west of the current Project Area. Four previously recorded sites by Dearling occurred within the Project Area which could not be relocated due to vegetation cover. This assessment resulted in two small isolated finds being located consisting of isolated artefacts including an edge ground stone hatchet. Salvage of artefacts was recommended.

The MacGregor West Estate 2 was assessed by **Biosis Research in 2009a**. This area is located to the east of Estate no 1 and is located to the south east of the current West Belconnen Project Area. The field survey in 2009 resulted in the identification of five low density scatters and seven areas of potential archaeological deposit located on mid and upper slopes. These seven areas of PAD were subsequently test-excavated (2009b) to determine their potential. No artefact densities were located with findings reflecting low density and sparse distributions.

Australian Museum Business Services in 2012 undertook an assessment for development along Walleroo r

Road Hall on behalf of the Department of Finance and Deregulation. Eleven Aboriginal sites were identified consisting of five artefact scatters and six isolated finds. The majority of the sites were within 150m of Gooromon Ponds. This survey area lies directly north east of the Project Area. A focus on the elevated terraces above Gooromon Ponds was theorised and supported by the evidence.

2.1.3 AHIMS site analyses

A search of the OEH Aboriginal Heritage Information Management System (AHIMS) database (Client Service ID: 111587) undertaken on the 13/9/2013 identified five (5) Aboriginal archaeological sites within the Project area and a 1km buffer centred on the proposed Project Area. All of these registered sites are located *within* the Project Area (Figure 3). Table 2.1 provides details of the registered sites located within the Project Area. The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. AHIMS search results are provided in Appendix 1

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 2.1. Location of AHIMS registered sites within 1km of Project Area

Site Name	Recorded by	Site Type
57-1-0074	Canberra Archaeological Society 1988	Artefact Scatter
57-1-0139 – GFTP9	Navin Officer Heritage Consultants 2000	Artefact Scatter
57-1-0140 – GFTP8	Navin Officer Heritage Consultants 2000	Artefact Scatter
57-1-0144 – GFTP3	Navin Officer Heritage Consultants 2000	Artefact Scatter
57-1-0184 – GFTP7	Navin Officer Heritage Consultants 2000	Artefact Scatter

A comparison of the Aboriginal cultural heritage sites registered within the 1km buffer of the Project Area with the reports for the region indicates that a number of previously identified sites are missing from the database. Sites located by NOHC 2000 (GFTP1, 2. 4, 5, 6) are missing from the AHIMS search but are listed on the AHIMS register. Sites located by Boot in 1996 (artefact scatter and possible scarred tree) and Saunders 1997 (three artefact scatters and three isolated finds) are not listed in AHIMS or appearing on the site search. These sites are outside of the current Project Area within the boundary of the Red Quarry located on Parkwood Road. AMBS 2010 also identified WR06 (IF), 07 (IF), 08 (IF), 09(AS) and 10 (AS) within 1km of the project area at Gooromon Ponds. These sites along with their available details and originally recorded locations are provided in Table 2.2.

For the assessment it would appear that a further five (5) sites listed on AHIMS occur within the current Project Area (ten sites in total) with a further twelve (12) sites not currently listed on AHIMS but recorded by previous researchers within 1km of the Project Area.

Table 2.2. Recorded sites in vicinity of Project Area

AHIMS No	Site Name	Recorded By	Site Type	Grid Location (redacted)
57-1-0146	GFTP1	NOHC 2000	IF	
57-1-0145	GFTP2	NOHC 2000	AS	
57-1-0141	GFTP4	NOHC 2000	IF	
57-1-0142	GFTP5	NOHC 2000	AS	
57-1-0143	GFTP6	NOHC 2000	AS	
Unknown	GRQ – IF1	NOHC 1997 (Saunders)	IF	
Unknown	GRQ – IF2	NOHC 1997 (Saunders)	IF	
Unknown	GRQ- IF3	NOHC 1997 (Saunders)	IF	
Unknown	GRQ1	NOHC 1997 (Saunders)	AS	
Unknown	GRQ2	NOHC 1997 (Saunders)	AS	
Unknown	GRQ3	NOHC 1997 (Saunders)	AS	
Unknown	GRQ4	NOHC 1997 (Saunders)	AS	
Unknown	WR06	AMBS 2010	IF	
Unknown	WR07	AMBS2010	IF	
Unknown	WR08	AMBS2010	IF	
Unknown	WR09	AMBS2010	AS	
Unknown	WR10	AMBS2010	AS	

A simple analysis of the Aboriginal cultural heritage sites provided to date which are located within the 1km buffer of the project area results in the following:

- The majority of the sites consist of small artefact scatters or isolated finds. Site data is displayed in Table 3.
- The majority of the sites are located on lower slopes or creek flats directly adjacent to permanent water.
- The majority of the sites consist of less than 5 artefacts.

The AHIMS dataset, now that additional sites have been added, is considered to represent accurately the located sites in the area and to provide a reliable and relatively robust model of occupation as results from several assessments appear consistent and predictable in their findings.

2.1.4 ACT Heritage Register Recorded Sites

To provide context for the Project Area a search of the ACT Heritage Register was undertaken for the area within 1km of the Project Area was undertaken through the AHIMS Database. This resulted in a finding of 42 sites having previously been recorded within 1km of the Project Area. These sites are listed in Table 2.3below and are shown on Figure 3.

Table 2.3: ACT Heritage Register Search Results

Site Name	Recorded By	Site Type
CR 2	Barz 1980b	Artefact scatter
MRC122	Barz & Winston Gregson 1981	Artefact scatter
CR 1	Barz 1980b	Artefact scatter
BS1	McKay 2003 – site recording form	Artefact Scatter
CLSN4	Dearling 2003	Artefact Scatter
MRC123	Barz & Winston Gregson 1981	Ab rock shelter
CLSN2	Dearling 2003	Artefact Scatter
CLSN5	Dearling 2003	Isolated Find
CLSN3	Dearling 2003	Isolated Find
CLWB35	Dearling 2003	Artefact Scatter
CLWB34	Dearling 2003	Artefact Scatter
CLWB36	Dearling 2003	Artefact Scatter
BSIF2	Kelton 1992	Isolated find
CLWB33	Dearling 2003	Artefact Scatter
BSIF1	Kelton 1992	Isolated find
BSIF2	Kelton 1992	Isolated find
BSAS1	Kelton 1992	Artefact scatter
CLWB23	Dearling 2003	Artefact Scatter
CLWB24	Dearling 2003	Artefact Scatter
CLWB25	Dearling 2003	Artefact Scatter
CLWB27	Dearling 2003	Artefact Scatter
CLWB28	Dearling 2003	Artefact Scatter
CLWB29	Dearling 2003	Artefact Scatter
CLWB30	Dearling 2003	Artefact Scatter

Site Name	Recorded By	Site Type
CLWB31	Dearling 2003	Artefact Scatter
CLWB32	Dearling 2003	Artefact Scatter
WB-B-C1/1	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/2	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/3	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/4	Kuskie and Boot - South East Archaeology 1992	Artefact scatter
WB-B-C1/5	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
Wb-b-C1/6	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/7	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/8	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/9	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/10	Kuskie and Boot - South East Archaeology 1992	Artefact Scatter
WB-B-C1/IF1	Kuskie and Boot - South East Archaeology 1992	Isolated Find
WB-B-C1/IF2	Kuskie and Boot - South East Archaeology 1992	Isolated Find
WB-B-C1/IF4	Kuskie and Boot - South East Archaeology 1992	Isolated Find
WBTS1	Navin Officer 1994	Isolated Find
WBTS2	Navin Officer 1994	Isolated Find
WBTS3	Navin Officer 1994	Artefact Scatter
WB-C-C1/9	Kuskie and Boot 1995	Sub surface testing

Figure 3 - Previously recorded Indigenous sites (redacted)

2.2 Ethnography

2.2.1 Ethnohistory context

Ethnography is the use of past sources to inform the lifeways of traditional peoples. Ethnography consists of three main sources:

- first hand explorer or settlers accounts of Indigenous people at the time of contact;
- first hand accounts of Indigenous life when the effects of European possession had started to impact on traditional practices; and
- anthropological studies of Indigenous traditional practices.

For the NSW region all of these sources are present with the most valuable being the accounts of early settlers and explorers through the region.

Knowledge of traditional Indigenous social organisation and language groups in the Canberra region is restricted to a small number of written and oral historical documents, as post-contact occupation and dispossession have resulted in the loss of much information (Gillespie 1984). Through dispossession of land and subsequent loss of many oral histories, many historians have only been able to piece together splintered accounts of Indigenous life, mainly through nineteenth century European ethnographic observations. We do know that prior to European occupation Indigenous people occupied south eastern Australia according to a system of land custodianship and had a complex kinship system.

2.2.2 Indigenous groups within the locality of the Project Area

It has been noted that there is a high correlation between drainage basins and tribal territories in the southern uplands (Flood 1980: 109). As the region features some of the strongest relief on the Australian continent this is not unexpected, as the various river systems provide both reliable sources of resources and easily recognisable territorial boundaries. Generally, custodial lands are based on water catchments of larger rivers. The creeks and rivers enable better communication. Groups within a catchment belong to a cultural group who share a common language and beliefs. The resources of the Canberra landscape could only sustain small groups who would move from tablelands to mountains depending on the season and resource availability. Seasonal movement is considered to have been a significant aspect of life for the Indigenous people throughout south-eastern Australia. Many resources are seasonal, and areas where summer camps were held could be depleted of resources. Movement to fresh resources was required. In addition, groups travelled to neighbouring areas to participate in ceremonial activities and large gatherings would have also depleted resources in those camps.

The Wiradjuri language occupies and immense region in New South Whales. Spanning from central to southern NSW, it is the language that is spoken over the greater extent of the territory than any other tongue (Matthews 1904:284). The tribes speaking the Ngunawal language span from Goulburn to Yass and Burrowa, also extending southerly to Lake George and Goodradigbee (Matthews 1904:294).

The Bogong moth that inhabits the mountain areas in great numbers was an important food source for the local Indigenous people, and it is believed the people travelled great distances during summer months to exploit this resource and participate in related ceremonial activity (Flood 1980: 111-112). At these times groups in the area are likely to have co-operated and participated in each others ceremonies, as utilisation of the resource would have meant that groups would have more than likely crossed boundaries in their travels. Groups were able to trade with neighbours, and obtain resources from other areas, including the coast (Avery 1994).

Much of the information on the Indigenous people of the region was written in the 1900s and is considered to be questionable (Avery 1994). As a result, the boundaries of custodial lands of cultural groups of the Southern Tablelands and Canberra region are unclear. Tindale (1974) places the Project Area within the boundary of the Ngunnawal people although close to the boundary with the Ngarigo to the south of the Molonglo and Murrumbidgee River junction. Horton's 1996 study of Indigenous boundaries also confirmed this division making the Project Area close to the junction for these groups.

It is currently recognised by the ACT Government that the Ngunnawal are the Traditional Owners of the Australian Capital Territory. Through the years, the Ngunnawal have been forced to disperse and have been unable to continue a traditional lifestyle, but the descendants still continue to live in the Canberra region today.

2.2.3 Customs and Lifestyle

Many hunting and gathering methods were employed by the Ngunawal. Govett described the practice of fire stick farming to herd the kangaroos for hunting – this also has the benefit of encouraging new growth and attracting kangaroos to specific areas (1973:23). These observations on Aboriginal life are consistent with the later remembering's of MacAlister (1907:88). Other methods, such as spearing emus and fish were also employed . When the vagaries of the weather became too unpredictable for hunting in once reliable sources, the Ngunawal people grew to depend on the Bogong moths in late spring each hear, making the annual trek to the mountains (Gillespie 1984: 45). Kangaroos, wallaroos, wallabies and wombats were preferred because of their great supply, though smaller game such as opossums, fish, birds, eggs, yams, berries, honey, grubs and seeds were also consumed regularly.

John Lhotsky recorded the dress consisting of '*...a girdle with a small sort of apron formed of fringes before and behind...a few of the strong young men wore a sort of armlet upon their left arms, made of twisted hair of kangaroos, and which was a sort of distinction for brave warriors'.* Lhotsky recorded some individuals with perforated nostrils adorned with reeds. He additionally observed the practice of fashioning nets and preparing opossum skins for cloaks, though cloaks appeared to be reserved for higher ranking members (1834:43).

All reports regarding habitations used by the Aboriginal inhabitants indicate simple, non-robust structures, comprised of green bushes with leaves sloping downwards against a low branch of a tree, supported by two poles. The interior of these structures contained a few skins for bedding, bark dishes and some stripped knobs from trees, used to hold water and foods (Gillespie 1984: 47).

Records indicate that the Yass Blacks occasionally had up to two wives, provided that the male remain responsible for his first wife. Evidence also suggests betrothal to be common, as well as the marriage of a younger woman to an older man. This act was justified as a method of protection against the advances of younger, less disciplined men (Gillespie 1984: 49).

One initiation ceremony, by the Ngunawal people, was conducted in what is now the Australian Capital Territory on Tidbinbilla Mountain. There young men aged 17-20 underwent the ceremony by having his front tooth knocked out. There is little recorded of this particular ceremony as it was conducted with great secrecy (Gillespie 1984:50).

Burial practices in the NSW area consisted of two main methods: the body was either placed in a hollow tree from above, or it was buried in a seated position in a pit dug into the ground, with the body tied up and knees drawn towards the abdomen. The grieving process consisted of great wailing by the relations, including the practice of cutting one's head with a tomahawk until blood flowed from the lacerations. Generally it was believed that the dead would come to life again for hunting, hence all personal affects were left with the individual. Very occasionally, a grave would be dug at the base of a carved tree. Names of the dead are very

carefully avoided on the graves and the locations are intentionally avoided by tribal members, as they believe the spirit of the dead still haunts the location of the burial place (Gillespie 1984: 48).

Contact between Aboriginal groups was often violent with frequent fighting. Reverend Hurst, in 1842, mentions the inability of the different tribes to associate peacefully for any length of time (MacAlister 1907: 90). Thomas Franklin, a pioneer from the Yass district witnessed:

> *'a battle fought between about 1000 men, the Queanbeyan, Monaro and Upper Murray blacks being pitted against the Murrumbidgee and Lachlan blacks'*.

Preparations for such battles took weeks to prepare, signals of which consisted of raising smoke during the day and fires at night from high peeks, visible from most areas (Gillespie 1984: 52). Despite these conflicts the dispersed clans of a 'tribe' and Aboriginal groups met amicably periodically for ceremonial events.

Matthews recorded coastal and inland groups attending each others ceremonies including people from the Shoalhaven and Yass groups being present at Queanbeyan and Braidwood where an annual occurrence with member of the Wiradjuri, Ngunawal, Ngarigo and Walgalu tribes attending (Flood 1980). These interactions were governed by ceremonies of welcome and protocols for guests to follow while in country.

Music was an important part in the corroboree with clapping sticks being struck together to mark time and harmonies being sung in unison with the group (Lhotsky 1979:109, Govett 1977:29).

2.2.4 Early contact with Europeans

The first contact between Indigenous people and Europeans would have occurred in the 1820's. Although Throsby, Smith, Vaughn and Wild explored the area in 1820, naming the region the Limestone Plains, they did not encounter any Indigenous groups, only spotting fires in the distance (Gillespie 1984). Groups near Yass and Lake George did interact with the incoming pastoralists and it often ended in violence. As the traditional hunting grounds were subsumed for stock grazing and land was cleared for pasture and agriculture, the ability of groups to subsist by traditional methods declined. Indigenous people adapted by either moving further away from settlements or utilising resources from the pastoralists. These resources were obtained by force, in exchange for work or given freely by pastoralists (Avery 1994).

The relationship between pastoralists and Indigenous groups was often brutal and violent. For example, a number of stockmen began to kidnap Indigenous girls and as a result there were retaliatory attacks on pastoral stations and stockmen (Gillespie 1984). The resentment and frustration suffered by the Indigenous groups at the loss of their way of life and the treatment by the settlers would have also caused threats and shows of aggression.

The relationships between pastoralists and Indigenous people were not all negative. Gillespie (1984) states that the Palmer, Davis and Wright pastoral families in the Ginninderra Area had very good relationships with their workers, as well as the Indigenous community. A t the Ginninderra Station, north of the Project Area, William Davis' cricket team had a large number of Indigenous players. Terence Murray at Yarralumla had good relations with the local Indigenous tribes who assisted him in the exploration of the Southern Alps allowing him to establish an outstation at "Coolamine'. Murray was fluent in several Indigenous languages (Wilson 1968).

Whilst many Indigenous people moved away from the settlements and continued a traditional lifestyle, many more stayed close. Some traditions continued, such as corroborees, fore example one took place at Reidsdale, north east of Hall, and another near Ginninderra Station in 1853, where 200 people attended (Gillespie 1984). The pastoral stations continued to be places where Indigenous people could find work and provisions. A 'fringe camp' is noted in the early 1900s near Lanyon (Kabaila 1997: 25) and first hand accounts from settlers in the district show the frequent visits from groups to either continue cultural practises or to ask for food and clothing. A blanket distribution centre was located at Janevale at Tuggeranong.

2.3 Landscape Context

It is important to consider the local environment of the Project Area in any heritage assessment. The local environmental characteristics can influence human occupation and associated land use and consequently the distribution and character of cultural material. Environmental characteristics and geomorphological processes can affect the preservation of cultural heritage materials to varying degrees or even destroy them completely. Lastly landscape features can contribute to the cultural significance that places can have for people.

2.3.1 Topography and Hydrology

Landform elements, as defined by Speights (2009), likely to be present in the Project Area are hill slopes, hillcrests, drainage depressions and stream beds, with potential for the occasional foot slope, alcoves, valley flats, gullies or terrace. The majority of the Project Area is an erosional landscape with the major geomorphological processes likely to be sheet wash, sheet flow and surface wash. An alluvial landscape is present along the banks of Ginninderra Creek and the Murrumbidgee River.

2.3.2 Geology

The current Project Area is made up of two separate geological groups. The northern most section of the Project Area extends into the Laidlaw Volcanics group, while the middle and southern sections of the Project Area lie within the Deakin Volcanics group. The geology of the landscape is mostly made up of Silurian volcanics, a rock type common in the Canberra area. In addition to the Silurian volcanics the geological landscape of the Project Area also includes various tuffs with some minor inclusions of siltstone, shale, sandstone and limestone. A common geological feature of the area is highly weathered bedrock (Jenkins 2000). The geology of the Project Area is shown on Figure 4.

2.3.3 Soil Landscapes

The soil landscape of the West Belconnen Project Area falls within three separate soil landscapes. A large amount of the Project Area is part of the Burra landscape, running closest to the Murrumbidgee, while a smaller section in the north east is part of the Williamsdale soil landscape with the Ginninderra Creek Group running along the length of the creekline. The location of the soil landscapes that makeup and surround the Project Area can be seen in Figure 5.

The Burra Group soils are moderately deep and well drained Kurosols and Chromosols and are a transferral landscape. Shallow earthy sands (Lithosols) exist on crest and upper slopes. Red and Brown Kandosols and Kurosols occupy mid slopes and most lower slopes. Brown Chromosols and Kurosols are along minor drainage lines and on some lower slopes (Jenkins 2000: 44)

The Williamsdale Group contains moderately deep well drained Yellow Chromosols on Red and Brown Kandosols on upper rises and fan elements. Moderately to very deep Sodosols on lower rises and fan elements (Jenkins 2000: 132). These soils are hard setting and erodible and also part of a transferral landscape. The topsoils are typically acidic.

Along the length of Ginninderra Creek lies the Ginninderra Creek Group, part of an alluvial landscape. This group consists of deep imperfectly drained sodic Brown Chromosols on the slope margins and deep alluvial soils on the floodplain. These soils are highly erodible with poor drainage and represent flood hazards as water logging can occur easily (Jenkins 2000:73)

2.3.4 Landscape Resources

Flora species present within the Project Area would have provided a range of resources for Aboriginal people. Food, tools, shelter and ceremonial items were derived from floral resources, with the locations of many campsites predicated on the seasonal availability of resources. The different types of eucalypts were useful in many respects (Percival and Stewart 1997). The oils from the leaves and gum were used medicinally and the wood was used to make implements, whilst bark strips were utilised in weaving.

These vegetation communities supported a range of faunal resources that would have been utilised by Aboriginal peoples. Terrestrial and avian resources were not only used for food, but also provided a significant contribution to the social and ceremonial aspects of Aboriginal life.

The fauna that may have been found within the area include larger species such as kangaroos, wombats, possums, koalas and avian species such as cockatoos. There are also a number of reptile species in the area, including lizards, skinks and snakes. The nearby water course, especially the Murrumbidgee River would have provided additional resources such as crayfish, fish and platypus

2.3.5 Land Use History

The explorer Charles Sturt was granted the Project Area on returning from his expeditions along the Darling and Murray River Systems (1828-1830). The grant consisted of 5000 acres and was received and selected by Sturt in 1837. The 5000 acres covered an area of gently sloping land with sheltering ridges. The selection fronted onto the permanent water sources of the Murrumbidgee River and was bounded to the north by the Ginninderra Creek and by the Molonglo River on the south (EMA 2012:10).

It is not known if Sturt ever resided at the property which was purchased by Charles Campbell in 1838. The property was renamed 'Belconnen' and the land was cleared of native vegetation and opened up for sheep grazing. The Kilby family were assisted Scottish migrants who worked for the Campbell Family. In 1895 they purchased the land overlooking the junction of Ginninderra Creek and the Murrumbidgee as a conditional purchase from the crown. The land covered 90 ha on the southern side of Ginninderra Creek and covering the Ginninderra Falls, the 1904 Parish Map of Ginninderra shows the land enclosed by the Ginninderra Creek and Murrumbidgee Rivers to be held by J.Kilby. The area has remained as pastoral ground until the present (EMA 2013:9).

The northern portion of the Study Area (on the western side of Parkwood Road) was operated as the Ginninderra Falls Tourist Park from the late 1990s to 2004 when it was closed to the public. During its operation two walking trails, carpark and picnic facilities at the upper gorge, a lower access road (graded) and toilets at a stretch along the Murrumbidgee River ideal for swimming and picnicking were constructed. A small sand mining quarry also operated along this stretch of the river briefly and the Red Gravel Quarry commenced operation on Lot 61 DP801234 in 1980 and still operates on the western side of Parkwood Road.

Apart from these small areas of alternative uses the majority of the Project Area has been minimally impacted being used for pastoral activities and is currently used for cattle grazing.

Plate 2.1. Ginninginderry (Ginninderra) Plains, New South Wales. Painting by Robert Hoddle between 1832-1835.(NLA: VN3423118)

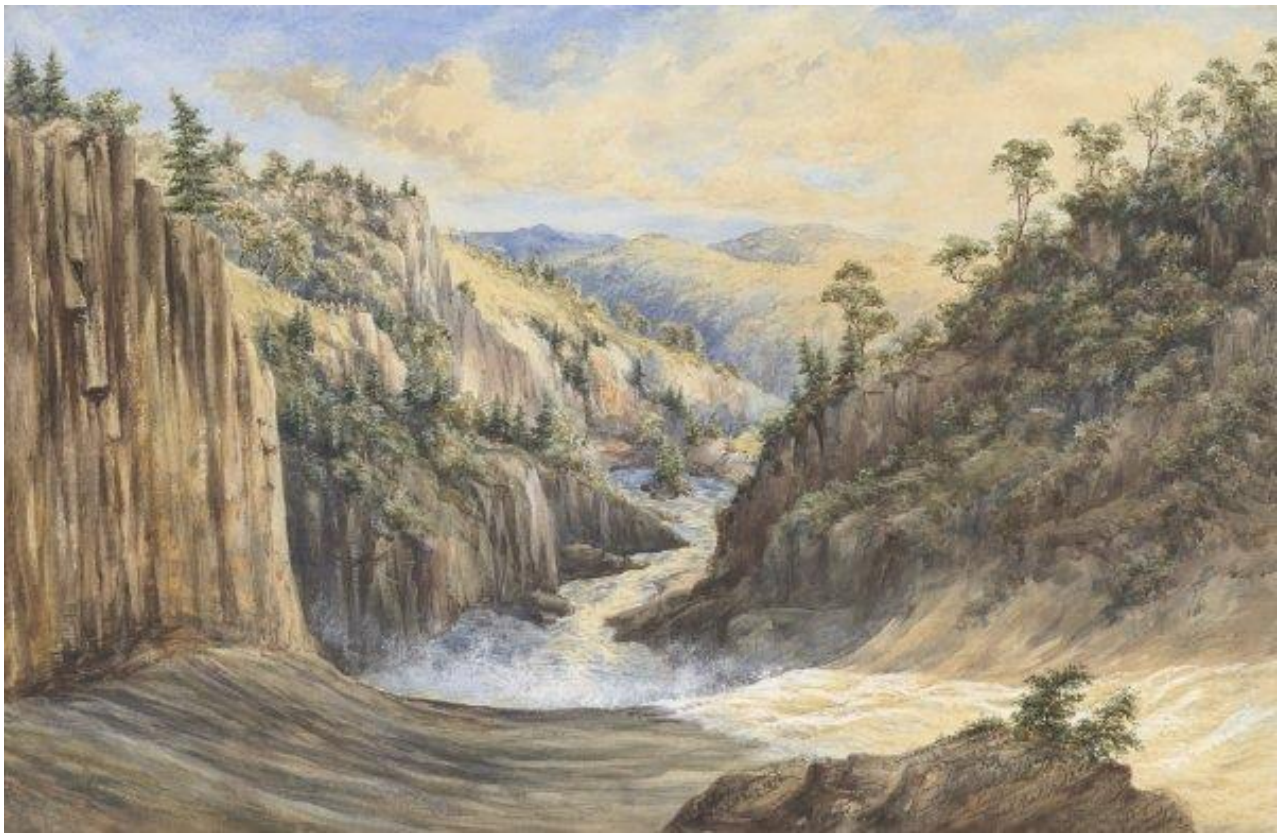
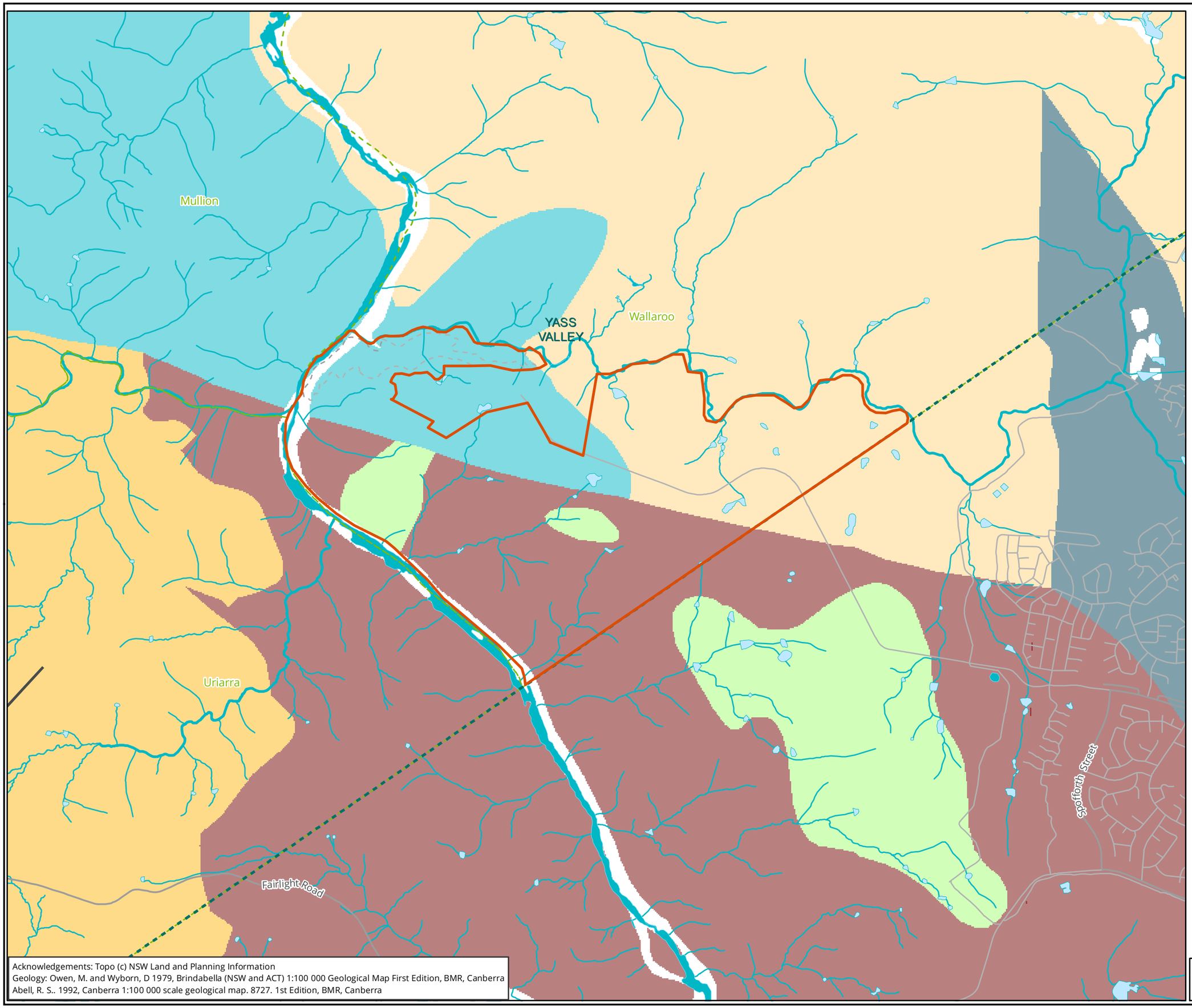


Plate 2.2. The Ginindarra (Ginninderra) Creek, looking to Murrumbidgee hills, County Murray, N.S. Wales, 30th Aug., 1875. Painting by Gordon Cummings (NLA- an4441035-V).



Legend

- Study Area

Geological Units (1:100,000)

- Deakin Volcanics
- Ginninderra Porphyry
- Laidlaw Volcanics
- Uriarra Volcanics
- Walker Volcanics
- unnamed
- water

Figure 4: 1:100,000 geological units near the Study Area - NSW Lands

0 250 500 750 1,000 1,250

Metres

Scale: 1:25,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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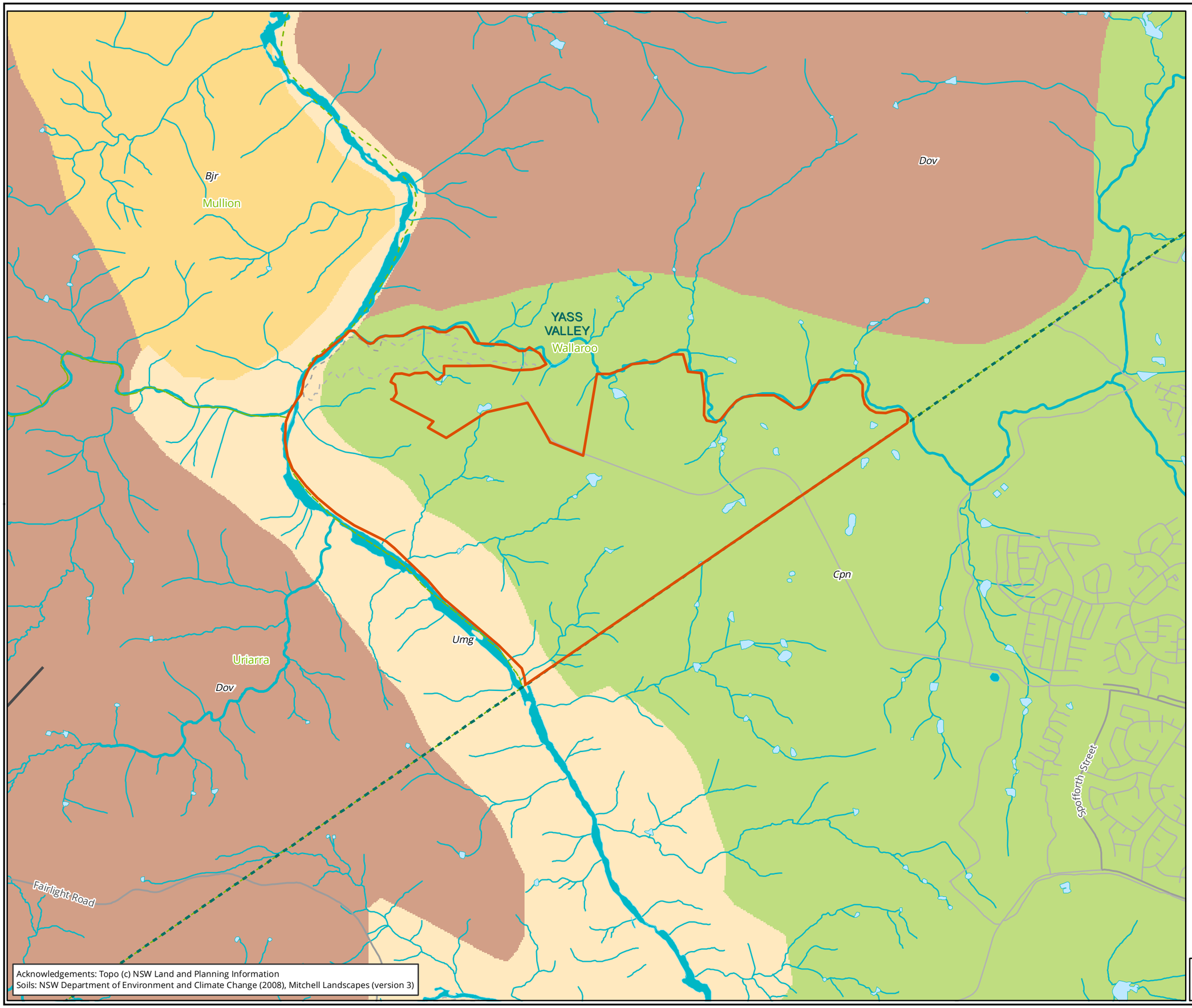
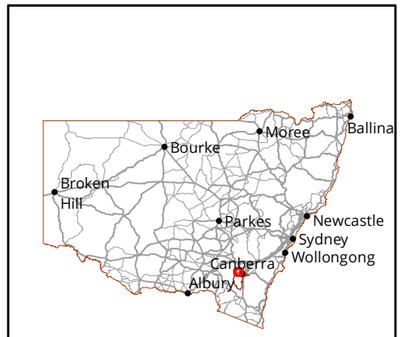
Acknowledgements: Topo (c) NSW Land and Planning Information
Geology: Owen, M. and Wyborn, D 1979, Brindabella (NSW and ACT) 1:100 000 Geological Map First Edition, BMR, Canberra
Abell, R. S.. 1992, Canberra 1:100 000 scale geological map. 8727. 1st Edition, BMR, Canberra

Matter: 16832,
Date: 11 March 2014,
Checked by: LOB, Drawn by: JMS, Last edited by: jshepherd
Location:P:\16800s\16832 - west belconnen\Mapping\16832_F3_Geology.mxd





Legend

Study Area

Soil Landscapes (1:250,000)

- Burrinjuck Ridges
- Canberra Plains
- Doura Volcanics
- Upper Murrumbidgee Gorge

Figure 5: 1:250,000 soil landscapes near the Study Area - NSW Lands

0 280 560 840 1,120 1,400

Metres

Scale: 1:25,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

N

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Acknowledgements: Topo (c) NSW Land and Planning Information
Soils: NSW Department of Environment and Climate Change (2008), Mitchell Landscapes (version 3)

Matter: 16832,
Date: 15 January 2014,
Checked by: LOB, Drawn by: JMS, Last edited by: jshepherd
Location:P:\16800s\16832 - west belconnen\Mapping\16832_F4_Soil.mxd

2.4 Local and Regional Character of Aboriginal Land Use

Floods regional assessment (Floods 1980) and ethnographic accounts for the Southern Tablelands region indicate that lowland areas were occupied all year round with seasonal travel routes and camps to exploit Bogong Moth resources and conduct ceremonies in more elevated areas. The regional distribution of Aboriginal cultural material suggests that occupation in lowland areas of the Southern tablelands was concentrated around water and sand bodies (Koettig 1983, Packard 1992), which would have provided important food and material resources to Aboriginal people (MacAlister 1907, Govett 1977). Stratified deposits with dates indicating Pleistocene occupation of the Southern Tablelands have been identified in rock shelters (Flood et al 1987, Navin Officer 2003) Ethnographic accounts indicate that Aboriginal people travelled widely throughout the area and would gather regularly for ceremonial purposes (MacAlister 1907, Wyatt 1972, Lhotsky 1979, Gillespie 1984).

Aboriginal site distribution modeling for the local Area completed by Kuskie and Boot in 1992, NOHC in 1992 and refined in 2009, supported the larger southern tablelands modelling, indicating that Aboriginal land use was focused around major watercourses and nearby landforms, such as lower slopes, with cultural material appearing less frequently on other landforms. Excavation programs by NOHC in 2009 to the east of the Project Area along Ginninderra Creek confirmed their predictions , with a wider regional study by AMBS (2010) also supporting its validity.

The ethnohistory and spatial distribution of Aboriginal sides in the Yass Valley and the surrounding area of the ACT suggests that higher artefact distributions will be centred around major waterways and nearby high points. These locations were the focus of repeated visits and most likely used as camping areas by Aboriginal people. Major waterways provided access to food and material resources, while elevated areas would have provided views of the surrounding landscape to monitor nearby bands while still being close to major waterways. The lower densities of sites and artefacts present on plains and hills away from watercourses is most likely a result of Aboriginal people moving through these areas for travel and food gathering, but not returning frequently or on a long term basis.

2.5 Predictive Model

2.5.1 Landform Sensitivity

A predictive model has been developed to broadly predict the type and character of Aboriginal culture heritage sites likely to exist(ed) throughout the Project Area and where they are more likely to be located. The model is based primarily on the findings of previous work, the landscape context and ethnohistory of the locale.

Based on desktop research the following predictive statements are made for the Project Area:

- The majority of the Project Area is located on a gentle undulating landscape, with the primary landforms being creek flats lower slopes, middle slopes and crests. Two major water courses which flow permanently with water are located on the boundaries of the Project Area, the Murrumbidgee River and Ginninderra Creek. The potential for large scale sites to occur next to these water sources is considered high.
- The low lying landforms of the Ginninderra Creek are likely to have alluvial deposits caused my sheet wash and stream flow. Erosion is likely to have occurred through landuse history and evidence of high levels of geomorphology activity is evident. It is considered that the soil profiles would have low potential to have retained Aboriginal cultural material within the floodplain.

- Creek terraces, lower slopes and flats situated above the Ginninderra Creek are considered to have high archaeological potential as they provided optimal camping in close association with permanent water supply.
- Aboriginal site distribution in the region indicates that larger denser areas of cultural material are located along major waterways and nearby landforms, with sparser less frequent cultural material being located on landforms further away from water.
- The Project Area also contains high steep rises from the Murrumbidgee which drop sharply to the River frontage. This area of steep hills away from water supplies is likely to have been visited as groups moved through the landscape and camped in the surrounds but would not be a focus of activity. Potential in this area is considered to be low. Sites within this region should consist of isolated finds and small dispersed scatters.
- River flats along the Murrumbidgee River provide access to clear stretches of water, swimming pools and fishing spots. These areas should have been a focus of Aboriginal utilisation and the presence of large sites should be evident in the archaeological record. However the river channel is active and flood activity may have removed traces. An alluvial depositional surface is also present on this landform which may have obscured or displaced evidence of past utilisation. Potential within this region is considered to be high.
- Soil landscapes associated with landforms in the Project Area and land use history indicate that soil profiles with the potential for subsurface cultural material are likely to exist and need to be investigated.
- Scarred trees have the potential to occur within any remnant woodland sections or as isolated trees.
- Artefact scatters and isolated finds are likely to be the main category of site identified within the Project Area.

2.5.2 Site Prediction Model

A predictive model for site types most likely to be encountered during the survey across the present Project Area was also developed for the project based on the following information:

- Site distribution in relation to landscape descriptions within the Project Area.
- Consideration of site type, raw material types and site densities likely to be present within the Project Area.
- Findings of the ethnohistorical research on the potential for material traces to present within the Project Area.
- Potential Aboriginal use of natural resources present or once present within the Project Area.
- Consideration of the temporal and spatial relationships of sites within the Project Area and surrounding region.

The site prediction model is detailed in Table 2.4. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the Project Area.

Table 2.4: Aboriginal Site Prediction Statements

Site Type	Site Description	Potential
Flaked Stone Artefact Scatters and Isolated Artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	High: Stone artefact sites have been previously recorded in the region across a wide range of landforms, The topography of the area and the ease of access to the Murrumbidgee River and Creeks make the area valuable.
Shell Middens	Deposits of shells accumulated over either singular large resource gathering events or over longer periods of time.	Very Low: Shell middens are located in vicinity of permanent water sources which provide habitat for shellfish species. The upper reaches of the Murrumbidgee are not known for native shellfish though they occur in the lower reaches. No known sites are reported.
Quarries	Raw stone material procurement sites.	Low: Non known outcrops or source quarry occur in the vicinity. There is a low possibility of quarry sites being located.
Potential Archaeological Deposits (PADs)	Potential sub surface deposits of cultural material.	Moderate: PADs have been previously recorded in the region across a wide range of landforms. They have the potential to be present in undisturbed landforms.
Scarred Trees	Trees with cultural modifications	High: mature native trees have survived within the Project Area and may retain cultural scars.
Axe Grinding Grooves	Grooves created in stone platforms through ground stone tool manufacture.	Extremely low: The geology of the Project Area lacks suitable horizontal sandstone rock outcrops for axe-grinding grooves. Therefore there is low potential for axe grinding grooves to occur in the Project Area.
Burials	Indigenous burial sites.	Low: Indigenous burial sites are generally situated within deep, soft sediments, caves or hollow trees or on top of hilltops. The rolling hilltops of the Project Area may be suitable for burials..

Site Type	Site Description	Potential
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by 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.	Moderate: The sites will only occur where suitable rock exposures or overhangs possessing sufficient sheltered space exist. One known rockshelter site with deposits occurs within the Project Area. .
Indigenous Ceremony and Dreaming Sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Indigenous informants.	Low: There are currently no recorded mythological stories for the Project Area; however the Murrumbidgee is of importance to the ceremonial life of the Aboriginal community. Consultation with Stakeholders will be undertaken to determine the presence of Indigenous ceremonial sites.
Post-Contact Sites	These are sites relating to the shared history of Indigenous and non-Indigenous people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Indigenous use.	Very Low: There are no post-contact sites previously recorded in the Project Area or historical sources for the region.
Indigenous Places	Indigenous places may not contain any “archaeological” indicators of a site, but are nonetheless important to Indigenous 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..	Moderate: The Murrumbidgee River is a major feature of the landscape and importance to the Aboriginal Community There are currently no recorded Indigenous associations for the Project Area. Consultation with Stakeholders will be undertaken to determine the presence of Indigenous associations.

2.5.3 In Summary

Based on the predictive site models the following statements are applicable to the Project Area:

- Open campsites (artefact scatters) are likely to be the most common site types;
- Artefact scatters are most likely to occur on level, or gently sloping, well-drained ground in association with major waterlines or drainage features;
- Larger sites will occur near the major water courses of the Murrumbidgee River or Ginninderra Creek;
- Isolated finds are likely to occur anywhere in the landscape;
- Scarred trees are likely to occur in all topographies where old growth trees survive, likely as isolated trees;
- Rockshelter sites may occur wherever suitable rock outcrops exist; and
- Burial sites are likely to occur in landforms characterised by relatively deep profile of soft sediments such as sand and alluvium and on hilltops. The rolling high hilltops of the Project area may be suitable for burials.

The locations of the registered sites across the Project Area reflects the utilisation of the Riverine landscape with concentrations on the landscape features that would have provided shelter from wind, access to water and ease of travel through the landscape.

3 Archaeological Survey

The degree of archaeological survey which was undertaken over the project area varied across the two main divisions of the Development Area and the Conservation Corridor. The Development Area will be subject to impacts and as such the aim was to ensure a high coverage of landforms and identification of any cultural heritage sites present to ensure their recording and formulation of mitigation strategies prior to any impacts occurring. Within the Conservation Corridor the aim was to record any known sites, target areas of high potential and request additional information from the RAPs to provide a context for the significance assessments and management recommendations for the sites located within the Development Area. As the survey differed across the two areas they will be detailed below under separate headings. The division of these two areas is shown in Figure 2.

3.1 Archaeological Survey Aims – Development Area

A field survey of the Project Area was undertaken on the 3 & 4 December, 2013. The survey methods were intended to assess and understand the landforms and to determine whether any archaeological material from Aboriginal occupation or land use exists within the Project Area.

The principle aims of the survey were to:

- Provide Registered Aboriginal Parties (RAPs) an opportunity to view the Project Area and to discuss previously identified Aboriginal object(s) and/or place(s) in or within close proximity to the Project Area;
- To undertake a systematic survey of the Project Area across all landforms ensuring a high survey coverage of the area prior to any development occurring;
- Identify and record Aboriginal archaeological sites visible on the ground surface; and,
- Identify and record areas of potential archaeological deposits (PADs).

3.2 Sampling Strategy – Development Area

The size of the Project Area allowed for 100% survey coverage of the Project Area. This does not mean that 100% of the ground surface was examined only that 100% of all landforms present within the Project Area were sampled. Despite the predictive model stating that some areas were of higher potential it was a requirement of the project and the wishes of the RAPs that all areas and landforms would be subject to pedestrian transect survey. A high number of transects was undertaken in the Development Area as sites within this area will be subject to direct impact. All RAPS participated in the Development Area survey but only three RAPS requested to be present on the survey of the steep/hilly Conservation Corridor.

3.3 Survey Methods – Development Area

The archaeological survey was conducted on foot with a field team of three (3) Biosis archaeologists and twelve (12) representatives of the RAPS. A further Biosis staff member was present to assist RAPS with transport, water and rest if required.

Recording during the survey followed the archaeological survey requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) and industry best practice methodology. Information recorded during the survey included:

- Survey Units along landforms.
- Start and end points of each transect.
- Aboriginal objects or sites present in the Project Area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform.
- Photographs of the area indicating landform.
- Evidence of disturbance.
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.
- Photographs of any above cultural sites.

Where possible, Identification of natural soil deposits within the Project Area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units; landform, vegetation coverage, ground surface visibility and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

3.4 Archaeological Survey Aims – Conservation Corridor

Within the Conservation Corridor the aim was to record any known sites, target areas of high potential and request additional information from the RAPs to provide a context for the significance assessments and management recommendations for the sites located within the Development Area. No impacts are planned to occur within the Conservation Corridor as part of the development of the adjoining area.

The principle aims of the survey were to:

- Provide Registered Aboriginal Parties (RAPs) an opportunity to view the Project Area and to discuss previously identified Aboriginal object(s) and/or place(s) in or within close proximity to the Project Area.
- To undertake visits to known sites and assess current condition.
- Target areas of high potential to survey for any unrecorded sites.
- Identify and record Aboriginal archaeological sites visible on the ground surface.
- Identify and record areas of potential archaeological deposits (PADs).

3.5 Survey Methods – Conservation Corridor

Due to the planned lack of impact to this area the survey consisted of a targeted visit to previously located sites and pedestrian transects across indicative landforms targeting areas of high potential. Recording followed the archaeological survey requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) to provide consistency with the survey of the Development Area. Information recorded during the survey included:

- Survey Units along landforms.
- Start and end points of each transect.
- Aboriginal objects or sites present in the Project Area during the survey.
- Survey coverage.
- Any resources that may have potentially have been exploited by Aboriginal people.
- Landform.
- Photographs of the area indicating landform.
- Evidence of disturbance.
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.
- Photographs of any above cultural sites.

Despite the targeted nature of the survey and the predictive model stating that some areas were of higher potential at the end of the survey all of the landforms present within the Conservation Corridor had been subject to pedestrian transect survey, resulting in 100% coverage of the landforms.

3.6 Survey Constraints

Field survey was undertaken across the Project Area but was limited to area that could be accessed. An area to the north of the Conservation Corridor on the west of Parkwood Road could not be accessed due to the wishes of the landholder. This limitation did not affect the overall effectiveness of the survey which was targeted at the Development Area with the Conservation Corridor providing additional context for any identified sites.

Field surveys are developed to identify the presence of unknown cultural heritage sites within a defined area, and are constrained by the field conditions at the time of the undertaking of the survey. Factors that influence the effectiveness of field survey include:

3.6.1 Ground Surface Visibility

Ground Surface Visibility (GSV) is an average amount of the physical ground that could be viewed at the time of survey, and is expressed as a percentage of a square metre. Low levels of GSV are a major factor in obscuring archaeological materials. Ground surface visibility can be defined as how much of the surface is visible and what other factors (such as vegetation, gravels or leaf litter) may limit the detection of archaeological materials (Burke and Smith 2004: 79). The higher the level of ground surface visibility, the more easily sites can be identified; therefore areas with high levels of ground surface visibility will have a better representation of sites than areas where the ground surface is obscured.

3.6.2 Disturbance

Physical ground disturbance that occurs within the area has been noted. Closely associated with ground surface visibility is ground surface exposure, which looks at the prevailing sedimentation conditions on the site. It looks at whether the ground surface of the site is aggrading, eroding or stable; and the kinds of exposures that are apparent as a result of these processes (Burke and Smith 2004: 79). Recent studies have identified that erosional surfaces have the highest level of artefact exposure, while the lowest level is on depositional surfaces (Fanning and Holdaway 2004: 269). Whether the Project Area is located on erosional or depositional surfaces will then be reflected in the density of identified sites for the area.

3.7 Aboriginal Participation

The archaeological field inspection of the Project Area was conducted by Lyn O'Brien, Sarah Youngblutt, and Asher Ford (Biosis Pty Ltd) who were accompanied by representatives of each of the RAPs.

The representatives contributed input into the survey methods and management recommendations, and have been asked to provide comment on the cultural significance of the locality and any archaeological objects or areas that are recorded during this survey.

In addition representatives were asked for any information on the significance of the Murrumbidgee River, movements through the region and ceremonial sites that may be located in proximity to the Project Area.

Full details of the consultation process and comments received from the RAPs are provided in the Aboriginal Cultural Heritage Assessment Report (ACHAR) for the project.

4 Results of Archaeological Investigations

4.1 Project Area Survey Coverage

Archaeological survey was conducted on December 3 and 4, 2013 for the Development Area with a field team of 3 Biosis staff and 12 RAPs. Pedestrian transects were walked across landforms with the 15 surveyors walking five to ten metres apart. Eighteen (18) Aboriginal sites and two (2) area of PAD were identified in the Development area.

Archaeological survey was conducted on December 3, 4, 7 and 14 2013 with a field team of 1 Biosis staff and 2 – 4 RAPs depending on attendance for the Conservation Corridor. Pedestrian transects were walked across landforms with the 15 surveyors walking five to ten metres apart. Eleven (11) previously unrecorded Aboriginal sites with one associated area of PAD were identified within the Conservation Corridor. Six previously recorded sites are located within the Conservation Corridor, one with an area of associated PAD.

A total of 85 transects were completed for the project area across 6 main landforms with the surveyors walking five to ten metres apart. The locations of the completed transects are shown on Figure 6 and details of transects, complete with start and end points, are provided in Appendix 2.

Landforms that were present within the study area consisted of:

- Hill slopes. (Plate 4.1)
- Ridge Crest (Plate 4.2)
- Creek flats. (Plate 4.3)
- River flats.(Plate 4.4)

The distribution of the landforms across the Project Area is also shown on Figure 6.

Indicative photos of landforms are presented below.

Plate 4.1 – Ridge Crest

Plate 4.2 – Hill Slopes

Plate 4.3 - Creek Flats

Plate 4.4. River Flats

4.2 Development Area

Generally the survey effectiveness was limited by poor ground surface visibility within the Development Area due to dense vegetation and thick grass cover. Long grass and vegetation was present over the majority of the gently undulating landforms of hill slopes and ridge crests. GSV within these areas was considered low at less than 5%. Frequent exposures did however occur throughout these landforms, ranging from linear exposures of vehicle tracks and stock tracks to confined areas of erosion on dam banks and areas frequented by stock or kangaroos. Transmission line installation has also resulted in areas of exposure at the base of towers and vehicle trails along the alignments which cross over the Project Area in three main transmission lines.

Within the landforms of hill slopes and ridge crests paddocks to the east of Parkwood Road and to the south of the first farm entrance road were grazed and provided high levels of visibility with sparse vegetation, numerous exposures in the form of vehicle and stock impact trails, and areas of erosion around dam banks and drainage lines. GSV within this area was considered to be moderate at levels of 60% with exposures holding a GSV of 90%.

The landform of the creek flats provided high levels of exposure with a high GSV of over 90% for much of the creek length along the immediate banks. Away from the waters edge long grass reduced GSV down to a background level of less than 10%. Exposures were not common along this landform except in areas frequented by stock for access to water.

River Flat landforms did not occur within the Development Area.

4.3 Conservation Corridor

GSV within the Conservation Corridor was generally moderate with low levels of grass coverage under areas of tree coverage on the mid to upper slopes. Mid to upper slopes were also generally rocky. Lower slopes had been cleared and had a higher coverage of grass and vegetation. Conditions on the landforms within the Conservation Corridor were similar to those of the Development Area with the additional landform of River Flats River flats varied from areas of clear ground under Casuarinas to dense vegetation. Vehicle trails and walking trails ran parallel to the River frontage for much of the Conservation Corridor providing linear exposures across this landform.

4.4 Survey Coverage

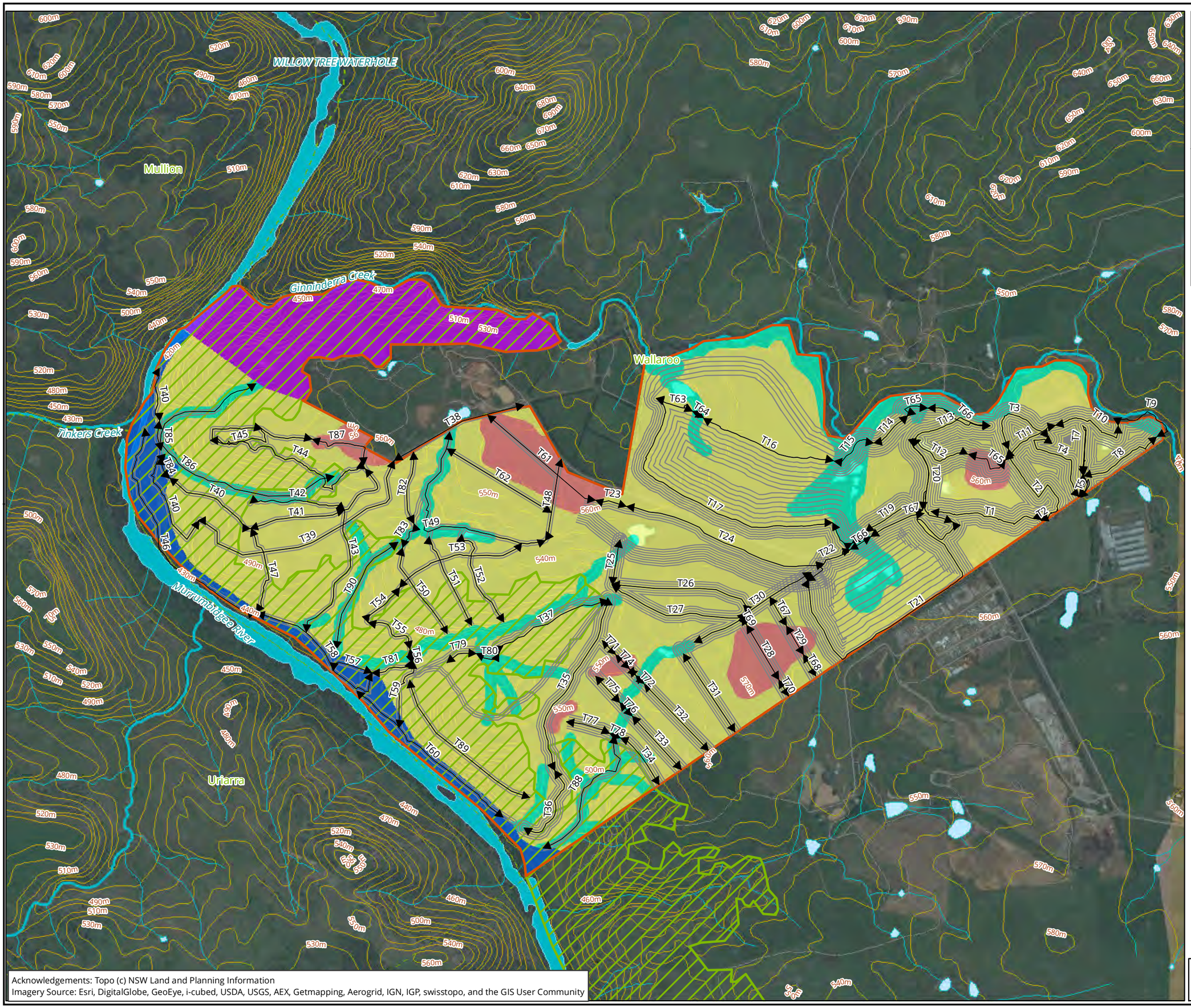
The details of the pedestrian transects completed for the survey are provided in Appendix 2. 85 transects were completed in total across the project area. The location of the transects are shown in Figure 6. Survey coverage varied across the different landforms of the project area depending on the varying levels of GSV and access due to slope steepness. The survey coverage for each of the survey units across the project area has been calculated using the method outlined in the Code of Practice and is provided in Table 4.1. Landform summary and a summary of effective survey coverage for the Project Area provided in Table 4.2.

Table 4.1: Survey Coverage

Survey Unit	Landform	Survey Unit area (ha)	Visibility %	Exposure %	Effective Coverage Area (ha)	Effective Coverage %
SU1	Creekflats	7.01	80%	15%	0.84	12%
SU2	Creekflats	17.65	70%	10%	1.24	7%
SU3	Slopes	52.2	80%	30%	12.52	24%
SU4	Crest	2.8	80%	5%	0.12	4%
SU5	Creekflats	4.8	90%	60%	2.59	53%
SU6	Slopes	22.6	95%	20%	4.294	19%
SU7	Slopes	56.23	90%	5%	2.53035	4.5%
SU8	Slopes	123.74	95%	10%	11.7553	9.5%
SU9	Crests	8.24	95%	2%	0.15656	1.9%
SU10	Creekflats	9.52	70%	30%	1.9992	21%
SU11	Crests	1.43	90%	1%	0.01287	0.9%
SU12	Crests	1.01	90%	2%	0.01818	1.8%
SU13	Creekflats	1.64	60%	25%	0.246	15%
SU14	Creekflats	12.78	60%	40%	3.0672	24%
SU15	Slopes	57.6	80%	10%	4.608	8%
SU16	Crests	11.05	90%	5%	0.49725	4.5%
SU17	Creekflats	8.5	60%	50%	2.55	30%
SU18	Slopes	69.8	90%	25%	15.705	22.5%
SU19	creekflats	6.86	90%	50%	3.087	45%
SU20	crests	2.63	60%	30%	0.4734	18%
SU21	Riverflats	22.08	95%	30%	6.2928	28.5%

Table 4.2: Landform Summary

Landform	Landform Area (ha)	Area effectively surveyed (ha)	% of Landform Effectively Surveyed	Number of Aboriginal Sites	Number of Artefacts or Features
Ridge Crests 5%	27.19	1.28	4.7%	2	3
Hill Slopes 77%	390	51.41	13.18%	18	28
Creek Flats 14%	69.52	15.61	22.45%	6	11
River Flats	22.06	6.29	28.5%	10	150+



Legend

- Study Area
- Conservation zone
- Survey transects
- Survey coverage

Landform

- No access
- River flat
- Creek flats
- Simple slope
- Crest

Figure 6: Survey effort, NSW Lands

0 150 300 450 600 750

Metres

Scale: 1:15,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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4.5 Newly Identified Sites – Development Area

20 Aboriginal sites were identified during the two days of field survey. All of these sites consisted of isolated finds or small artefact scatters with less than 10 artefacts. The majority of the sites were located on mid slopes. All of the sites were located in close proximity to water though not directly on the creeklines but sited above them on level terrain. The location of these sites is in accordance with the predictive model for the region and previous recorded sites. Each of these sites is described in detail in Section 4.9 and shown on Figure 7.

4.6 Previously Recorded Sites – Development Area

The Development Area has never been subject to archaeological survey previously and as a result no sites had previously been identified within the Development Area.

4.7 Newly Identified sites – Conservation Corridor

9 previously unrecorded Aboriginal Cultural Sites were located within the Conservation Corridor. Areas of exposure decrease within the Conservation Corridor which has been left closer to its original state except in areas where sand mining or tourist operations have been located in the past. These areas of disturbance are the locations of the previously recorded sites within the Conservation Corridor.

Other disturbance that has occurred in the Conservation Corridor consists of the grading of vehicle access tracks to the River which generally follow spurlines or zig zig downslopes to the gentle river flats. These access roads are the main locations along which sites were recorded, especially the large sites of 57-1-0140 and WB26 in the Conservation Corridor. Each of these sites is described in detail in Section 4.9 and shown on Figure 7.

4.8 Previously Recorded Sites – Conservation Corridor

Unlike the Development Area the Conservation Corridor has been previously surveyed, resulting in the identification of six sites (CAS 1988, Saunders 1997 and NOHC 2000). Of these recorded sites five appear on the AHIMS register for the area. The details of these previously recorded sites and their current condition at the time of the field survey are discussed in the following sections.

4.8.1 57-1-0139 – Artefact Scatter (redacted)

Originally recorded as a low density artefact scatter by NOHC in 2000 (GFTP9) and consisting of two discreet scatters of artefacts at a distance of 40m apart. Exposure A was approximately 30m in length and consisted of 4 artefacts, exposure B was smaller in size and contained 5 artefacts.

Access was not possible to this portion of the Project Area on the day of field survey. A further visit to this site location will be undertaken if required at a later date.

4.8.2 57-1-0140 – Artefact Scatter and PAD. (redacted)

Originally recorded as a low density artefact scatter (GFTP8) by NOHC in 2000 , the current survey has identified a large continuous low density artefact scatter.

At the time of original recording the site was estimated to extend 500m from the recorded located and to consists of thirteen (13) artefacts. It was noted that the provenance of these artefacts is uncertain as material has been brought into the area and placed on the road from the nearby red gravel quarry and on other local areas. The site extended along the spurline to the basal area which has been subject to disturbance with the construction of toilet facilities and water tank. To the north, along the banks of the Murrumbidgee, sand mining has been undertaken which has resulted in disturbance to the area previously recorded as site 57-1-0184.

Recorded artefacts along this area continued from 57-1-0140 to connect with previously recorded site 57-1-0074 and 57-1-10184. Ground surface visibility on the track was good at 80%, while visibility of the track was very limited (<5%). Exposed soils were relatively shallow silts, loams and fine gravels over clays.

Table 4.3. Location of PAD 57-1-0140 (redacted)

Table 4.4. Details of Site 57-1-0140 (redacted)

4.8.3 57-1-0141 – Isolated Find (redacted)

Originally recorded by NOHC 2000 as an isolated find (GFTP4). The site consists of a river pebble fragment. Despite a search of this location no cultural material was identified.

4.8.4 57-1-0142 – Artefact Scatter (redacted)

Originally recorded by NOHC 2000 as a low density open artefact scatter (GFTP5). Two artefacts were recorded within a small area of exposure caused by the uprooting of a tree. This site could not be relocated on the day of field survey.

4.8.5 57-1-0143 – Artefact Scatter (redacted)

Originally recorded by NOHC 2000 as a low density open artefact scatter (GFTP6). Despite a search of this location no cultural material was identified.

4.8.6 57-1-0144 – Artefact Scatter (redacted)

Originally recorded as an open artefact scatter (GFTP3) by NOHC in 2000 the sites consists of nine (9) artefacts.

Access was not possible to this portion of the Project Area on the day of field survey. A further visit to this site location will be undertaken.

4.8.7 57-1-0074 – Artefact Scatter (redacted)

Originally recorded by the Canberra Archaeological Society in 1988 the site was described as a large open site. This site was recorded as Exposure B of Site 57-1-0184 by NOHC in 2000 (GFTP7) who considered it to be part of the same site complex. At the time of the recording by NOHC twelve artefacts were recorded.

No artefacts were identified within the exposure recorded by NOHC on the day of field survey despite high visibility levels within this area. This area would appear to be affected by flood levels and surface artefacts may have been removed by intervening flood events since their recording.

4.8.8 57-1-0184 – Artefact Scatter (redacted)

Originally recorded by NOHC in 2000 as a low density artefact scatter (GFTP7) in two discreet exposures. It was considered by NOHC to be one site which would have extended over the area of the sand mining activity originally prior to its removal. At the time of recording this northern exposure of the site was recorded to contain 2 artefacts.

No artefacts were identified within the exposure recorded by NOHC on the day of field survey despite high visibility levels within this area. This area would appear to be affected by flood levels and surface artefacts may have been removed by intervening flood events since their recording.

4.9 Site Descriptions

A total of 29 previously unrecorded sites were located during the field survey. Site locations are listed in the Table 4.1below and details of each site identified are presented under the individual site number in the following sections. Site locations are shown on Figure 7.

Table 4.5. Results of field survey (redacted)

4.9.1 WB1 – Artefact Scatter and PAD (redacted)

WB1 is an artefact scatter and PAD. Four (4) flaked stone artefacts were recorded on the ridge in combination with ceramic and glass fragments that have been broken up by ploughing although no building foundations are evident. Although no diagnostic features for flaking were identified on broken glass fragments, RAP representatives felt that some pieces may have been worked by Aboriginal people. Glass and ceramics including blue transfer print wares and some older gin bottle fragments as well as modern glass bottle fragments.

Ground surface visibility was poor (<10%) with limited exposures. Although very shallow, exposed surface soils were fine and silty with small to moderately sized river cobbles being noted on the slopes of the ridge. The proximity of the ridge to Ginninderra Creek makes it a likely point for an open camp site and there is a high potential for further Aboriginal cultural material to be present. Details of the identified artefact are provided in Table 4.6 with site location shown in Plate 4.7 with sample artefact shown in Plate 4.8.

Table 4.6. Details of Site WB1 (redacted)

4.9.2 WB2 - Artefact Scatter (redacted)

WB2 is a small artefact scatter. Artefacts include a tuff and silcrete core, and a silcrete backed blade. It is likely that artefacts have been moved downslope via surface wash from the surrounding ridges. Visibility on the exposed dam surface was very good at 100%, but poor outside of the exposures (<5%). The soils exposed in this section included silt intermixed with fine gravels and clays.

Details of the identified artefact are provided in Table 4.8 with site location shown in Plate 4.9 with sample artefact shown in Plate 4.10.

Table 4.8. Details of Site WB2 (redacted)

4.9.3 WB3 – Isolated Find (redacted)

WB3 is an isolated artefact, consisting of a silcrete flake. Ground surface visibility was good along the exposure at 100%, with shallow fine silts and loams over clays being exposed.

Details of the identified artefact are provided in Table 4.9 with site location shown in Plate 4.11 with identified artefact shown in Plate 4.12.

Table 4.9. Details of Site WB3 (redacted)

4.9.4 WB4 – Isolated Find (redacted)

WB4 is an isolated artefact, consisting of a chert core. Ground surface visibility was very limited at <5%.The landform has a commanding view to the north but is located over one kilometre from the nearest reliable water source, Ginninderra Creek.

Details of the identified artefact are provided in Table 4.10 with site location shown in Plate 4.13 with identified artefact shown in Plate 4.14.

Table 4.10. Details of Site WB4. (redacted)

4.9.5 WB5 – Isolated Artefact (redacted)

WB5 is an isolated artefact, consisting of a tuff core. Ground surface visibility on the track was good at 50%, while visibility of the track was very limited (<5%). Soils exposed along the farm track are very shallow silty loams over shale, with many exposed shale outcrops.

Details of the identified artefact are provided in Table 4.11 with site location shown in Plate 4.15 with identified artefact shown in Plate 4.16.

Table 4.11. Details of site WB5. (redacted)

4.9.6 WB6 – Isolated Find (redacted)

WB6 is an isolated find of a single artefact. Ground surface visibility on the track was good at 80%, while visibility of the track was very limited (<5%). Exposed soils are relatively shallow and consist of fine silts and gravels located over shales, shale is exposed in some areas.

Details of the identified artefact are provided in Table 4.12 with site location shown in Plate 4.17 with identified artefact shown in Plate 4.18.

Table 4.12. Details of Site WB6. (redacted)

4.9.7 WB7- Artefact Scatter (redacted)

WB7 is an artefact scatter, consisting of a silcrete angular fragment and tuff core. Ground surface visibility on the track was good at 100%, while visibility of the track was very limited (<5%). Raw material of silcrete and tuff is located along the built up farm track and it is possible that more cultural material is present.

A further artefact (silcrete multifacial core) was located. GSV was estimated at 80% within the area of exposure with a background visibility off the vehicle track was less than 5%. Details of the identified artefact are provided in Table 4.13 with site location shown in Plate 4.19 with sample artefacts shown in Plate 4.20.

Table 4.13. Details of site WB7. (redacted)

4.9.8 WB8 - Isolated Find (redacted)

WB8 consists of a single find of a black silcrete multidirectional core. GSV within the area of exposure was good at 80% with some grass coverage. Background GSV away from the area of exposure and across this section of paddocks was fair with ground visible between grasses estimated at 40%.

Details of the identified artefact are provided in Table 4.14 with site location shown in Plate 4.21 with artefact shown in Plate 4.22.

Table 4.14. Details of Site WB8. (redacted)

4.9.9 WB9 – Isolated Find

WB9 consists of a single artefact located in a large area of circular exposure with a high GSV of 90%. This area of exposure measured approximately 15m x 6m and appeared to be the result of grass slashing and then vehicle impacts. Large round bales (or were they wire) were stacked to the northwest of the exposure. GSV away from this area of exposure was low in this area due to the presence of long vegetation estimated at less than 5%. Details of the identified artefact are provided in Table 4.15 with identified artefact shown in Plate 4.23.

Table 4.15. Details of site WB9 (redacted)

4.9.10 WB10 - Isolated Find (redacted)

Site WB10 consists of a single grey silcrete flake. Usewear was evident along the right lateral margin. Visibility within the vehicle tracks was moderate at 60% due to vegetation with a background visibility away from the exposure of less than 5%.

Details of the identified artefact are provided in Table 4.16 with site location shown in Plate 4.24 with identified artefact shown in Plate 4.25.

Table 4.16. Details of Site WB10 (redacted)

4.9.11 WB11 – Isolated Find (redacted)

Site WB11 consists of a hammerstone. GSV was high in this area of linear exposure estimated at 90% with a background GSV of 60% for the grazed paddock.

Details of the identified artefact are provided in Table 4.17 with site location shown in Plate 4.26 with identified artefact shown in Plate 4.27.

Table 4.17. Details of Site WB11. (redacted)

4.9.12 WB12 – Artefact Scatter (redacted)

GSV in the area of the vehicle access track was 70% with a background visibility away from the exposure of less than 5% due to vegetation cover. The site consisted of two quartz flakes.

Details of the identified artefact are provided in Table 4.18 with site location shown in Plate 4.28 with artefacts shown in Plate 4.29.

Table 4.18. Detail of Site WB12 (redacted)

4.9.13 WB13 – Artefact Scatter (redacted)

The site consists of 3 quartz flakes.

Details of the identified artefact are provided in Table 4.19 with site location shown in Plate 4.30 with artefacts shown in Plate 4.31.

Table 4.19. Details of Site WB13 (redacted)

4.9.14 WB14 - Isolated Find (redacted)

A number of flakes have been removed resulting in the shape of a preform hatchet blank. These scars may also have resulted from flake removals with the cobble being a core.

Details of the identified artefact are provided in Table 4.20 with site location shown in Plate 4.32 and artefact shown in Plate 4.33.

Table 4.20. Details of site WB14. (redacted)

4.9.15 WB15 – Isolated Find (redacted)

GSV within this exposure was total at 100% and the exposure was estimated to continue for a length of approximately 20m with a average width of 50cm. Background visibility in this section of the Project Area was low with tall grass cover. GSV away from the area of bank exposure is estimated at less than 5%.

Details of the identified artefact are provided in Table 4.21 with site location shown in Plate 4.34 with identified artefact shown in Plate 4.35.

Table 4.21. Details of Site WB15 (redacted)

4.9.16 WB16 - Artefact Scatter (redacted)

WB 16 is located approximately 100m to the north of site WB6 on a hillcrest overlooking the Murrumbidgee River to the south. Ground surface visibility on the track was good at 80%, while visibility of the track was very limited (<5%). Exposed soils are relatively shallow and consist of fine silts and gravels located over shales, shale is exposed in some areas.

Ground surface visibility on the track was good at 80%, while visibility of the track was very limited (<5%). Exposed soils are relatively shallow and consist of fine silts and gravels located over shales, shale is exposed in some areas.

Details of the identified artefact are provided in Table 4.22 and Plate 4.36 shows site location, GSV and the identified artefact s are shown in Plate 4.37.

Table 4.22. Details of Site WB16. (redacted)

4.9.17 WB17 – Isolated Find (redacted)

WB17 consists of a single artefact.

The details of the identified artefact are provided in Table 4.23 below and shown in Plate4.39. Site location is shown in Plate 4.38.

Table 4.23. Site WB17 Artefact Detail (redacted)

4.9.18 WB18 – Isolated Find (redacted)

Areas of exposure were patchy along this section of old track with a general GSV of 40%. The detail of the identified artefact are provided in Table 4.24 and shown in the following plates.

Table 4.24. Site WB18 Artefact Details (redacted)

4.9.19 WB19 – Artefact Scatter (redacted)

Exposure in this area of the Dam edge was high at 95% which extended around the entire dam and banks area. Two artefacts were identified at this location and a possible hammerstone. Details of the artefacts are listed in Table 4.25 below and the artefacts and site location are shown in the following plates.

Table 4.25. Site WB19 Artefact Details. (redacted)

4.9.20 WB20 – Artefact Scatter (redacted)

Two artefacts were located on the road separated by approximately 15m. The details of the artefacts are listed in Table 4.26 below and the following plates show the site location and artefacts identified.

Table 4.26. Details of Site WB20 (redacted)

4.9.21 WB21 – Isolated find (redacted)

Exposure was constant over this area with a background visibility of 70%. The location of the saddle is shown in Plate 4.46, site location in Plate 4.47 and the artefact in plate 4.48. The details of the identified artefact are provided in table 4.27 below.

Table 4.27. Artefact Details WB21. (redacted)

4.9.22 WB22 – Isolated Find (redacted)

GSV was estimated at 85%. The details of the identified artefact are listed in table 4.28 below and site location and artefact are shown in the following plates.

Table 4.28. Site WB22 Artefact Details (redacted)

4.9.23 WB23 – Artefact Scatter (redacted)

This area of disturbance measured approximately 20m x 8 m wide and held a high visibility of 90%. Three quartz artefacts were identified a this site location but they may be in a secondary location due to the present of imported fill. The details of the identified artefacts are listed in Table 4.29 below and the site location and artefacts are shown in the following plates.

Table 4.29. Site WB 23 Artefact Details (redacted)

4.9.24 WB24 – Isolated Find (redacted)

Ground surface visibility along this stretch of road was high with natural gravels decreasing GSV to 80%. The details of the identified artefact are provided in Table 4.30 below with the artefact and site location are shown in the following plates.

Table 4.30. Site WB24 Artefact Details (redacted)

4.9.25 WB25 – Artefact Scatter and PAD (redacted)

The site will be larger than recorded due to the surface visibility conditions. There is high potential for sub surface artefacts to be located within this landform. Artefact density is over 100 in total with an average density of 5per m2 decreasing to 1per m2 in lower density areas. A sample of artefacts were recorded and photographed for identification purposes. The details of the sample artefacts are listed in table 4.31 below. Details of all artefacts recorded are listed on the site cards at Appendix 3. Site locations are shown in plates 4.55 to 4.57. Sample artefacts are shown in Plates 4.58 to 4.59.

Table 4.31. Artefact Details Site WB26 (redacted)

Table 4.32. Location of PAD extent (redacted)

4.9.26 WB26 – Artefact Scatter and PAD (redacted)

Eleven artefacts were identified here within two main concentrations. The site will extend larger than the defined boundaries as site extents were determined by GSV on the day of field survey. The potential for sub surface deposits to be present within this landform is considered to be high. Details of identified artefacts are listed in Table 4.33 with the site location and identified artefacts shown in the following plates.

Table 4.33. Artefact Details Site WB26 (redacted)

Table 4.34. Location of PAD extents (redacted)

4.9.27 WB27 – Isolated Find (redacted)

Visibility along the linear exposure of the road was high at 85% with GSV away from the road being low at 15% but with a high rate of exposures (35%) caused by stock impacts, erosion and patchy grass coverage. Areas under the Casuarinas which line the River frontage were obscured by branches and leaf litter but had little grass coverage. The details of the identified artefact are provided in Table 4.35 below and site location and identified artefacts are shown in the following plates.

Table 4.35. Artefact Details Site WB27 (redacted)

4.9.28 WB28 – Isolated Find (redacted)

Visibility conditions here were similar to WB28. The details of the identified artefact are shown in Table 4.36 below. Site location and artefact are shown in the following plates.

Table 4.36. Artefact Details WB28 (redacted)

4.9.29 WB29 – Artefact Scatter (redacted)

GSV along this section of linear exposure which is the vehicle track was estimated at 70%. Away from the linear exposure the background visibility is very low at less than 5%. Details of the identified artefacts are listed in Table 4.37 below. Site location and artefacts are shown in the following plates.

Table 4.37. Artefact Details Site WB29 (redacted)

4.10 PADs (redacted)

Four areas of PAD were identified during the field survey of the Project Area (Wb1, WB25,WB26 and 57-1-0140). These PAD areas are associated with large surface sites and conform to the predictive modelling. Detailed descriptions of these areas of PAD are provided in Section 4 under their individual site designation.

4.11 Discussion of Results (redacted)

The distribution of sites across the two sections of the Project Area (Development Area and Conservation Corridor) conforms to the predictive modelling for the landscape which was based on the previously recorded sites and archaeological reports for the vicinity.

No difference in the material composition or artefact types was evident from a comparison between the Development Area and Conservation Corridor. Silcrete was the most popular material being 42% in the Conservation Corridor and 32% in the Development Area. Silcrete was followed by Quartz in both areas. Flakes accounted for 53% in the Development Area and 82% in the Conservation Corridor. Cores represented a larger proportion of the assemblages in the Development Area.

The potential for significant archaeological sites to remain within the landscape undetected is considered to be low as predictive modelling and the results of the field survey indicate that the development area holds low potential to contain large artefactual sites. The Conservation Corridor is higher in potential for further sites to occur, but even in this area of potential all of the recorded sites consist of small open artefact scatters with less than 10 artefacts. Scatters of this size hold low archaeological significance, though they may be culturally important to the Aboriginal Community.

An assessment of the significance of the identified sites within the Project Area has been completed and is detailed in the following section.

Figure 7 - Results of the field survey - NSW lands overview (redacted)

Figure 7.1 - Results of field survey - detail (redacted)

Figure 7.2 - Results of field survey - detail (redacted)

Figure 7.3 - Results of field survey - detail (redacted)

5 Scientific Values and Significance Assessment

The two main values addressed when assessing the significance of Aboriginal sites are cultural values to the Aboriginal community and archaeological (scientific) values. This report will assess scientific values while the Aboriginal Cultural Heritage Assessment Report will detail the cultural values of Aboriginal sites in the Project Area.

5.1 Introduction to the Assessment Process

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia International Council on Monuments and Sites (ICOMOS) Burra Charter (Australia ICOMOS 1999). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values are provided as background and include:

- **Historical significance** (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.
- **Aesthetic significance** (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.
- **Social significance** (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.
- **Scientific significance** (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The cultural and archaeological significance of Aboriginal and historic sites and places is assessed on the basis of the significance values outlined above. As well as the ICOMOS Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by NSW Environment and Heritage (formerly OEH).

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 should be made when evaluating archaeological and cultural significance for Aboriginal sites and places.

In addition to the previously outlined heritage values, the OEH guideline 2010 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.

Although other values may be considered – such as educational or tourism values – the two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and their archaeological or scientific significance to archaeologists. The determinations of archaeological and cultural significance for sites and places should then be expressed as statements of significance that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance.

5.2 Archaeological (Scientific Significance) Values

Archaeological significance (also called scientific significance, as per the ICOMOS Burra Charter) 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 is 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, NPWS 1997b). The NPWS criteria for archaeological significance assessment are based largely on the ICOMOS Burra Charter.

Research Potential

Research potential is assessed by examining site content and site condition. Site content refers to all cultural materials and organic remains associated with human activity at a site. Site content also refers to the site structure – the size of the site, the patterning of cultural materials within the site, the presence of any stratified deposits and the rarity of particular artefact types. As the site contents criterion is not applicable to scarred trees, the assessment of scarred trees is outlined separately below. Site condition refers to the degree of disturbance to the contents of a site at the time it was recorded.

The site contents ratings used for archaeological sites are:

0 - No cultural material remaining.

1 - Site contains a small number (e.g. 0–10 artefacts) or limited range of cultural materials with no evident stratification.

2 - Site contains a larger number, but limited range of cultural materials; and/or some intact stratified deposit remains; and/or are or unusual example(s) of a particular artefact type.

3 - Site contains a large number and diverse range of cultural materials; and/or largely intact stratified deposit; and/or surface spatial patterning of cultural materials that still reflect the way in which the cultural materials were deposited.

The site condition ratings used for archaeological sites are:

0 - Site destroyed.

1 - Site in a deteriorated condition with a high degree of disturbance; lack of stratified deposits; some cultural materials remaining.

2 - Site in a fair to good condition, but with some disturbance.

3 - Site in an excellent condition with little or no disturbance. For surface artefact scatters this may mean that the spatial patterning of cultural materials still reflects the way in which the cultural materials were laid down.

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.

The following sections provide statements of significance for the Aboriginal archaeological sites recorded during the sub-surface testing 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.

Representativeness

Representativeness refers to the regional distribution of a particular site type. Representativeness is assessed by whether the site is common, occasional, or rare in a given region. Assessments of representativeness are subjectively biased by current knowledge of the distribution and number of archaeological sites in a region. This varies from place to place depending on the extent of archaeological research. Consequently, a site that is assigned low significance values for contents and condition, but a high significance value for representativeness, can only be regarded as significant in terms of knowledge of the regional archaeology. Any such site should be subject to re-assessment as more archaeological research is undertaken.

Assessment of representativeness also takes into account the contents and condition of a site. For example, in any region there may only be a limited number of sites of any type that have suffered minimal disturbance. Such sites would therefore be given a high significance rating for representativeness, although they may occur commonly within the region.

The representativeness ratings used for archaeological sites are:

- 1 - common occurrence
- 2 - occasional occurrence
- 3 - rare occurrence

Overall scientific significance ratings for sites, based on a cumulative score for site contents, site integrity and representativeness are:

- 1-3 low scientific significance
- 4-6 moderate scientific significance
- 7-9 high scientific significance

Each site is given a score on the basis of these criteria – the overall scientific significance is determined by the cumulative score. This scoring procedure has been applied to the Aboriginal archaeological sites identified during the field survey. The results are presented in Table 5.1.

5.2.1 Statements of Archaeological Significance

The following archaeological significance assessment is based on Requirement 11 of the *Code of practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). Using the assessment criteria detailed in Scientific Values and Significance Assessment, an assessment of significance was determined and a rating for each site was determined. The results of the archaeological significance assessment are given in Table 5.1 below.

Table 5.1: Scientific significance assessment of archaeological sites recorded within the Project Area. (redacted)

Table 5.2: Statements of scientific significance for archaeological sites recorded within the Project Area. (redacted)

6 Impact Assessment

Master planning for the West Belconnen Development is being undertaken to guide future planning and management decisions. This CHA aims to assess the heritage values of the entire area to minimise impacts to any heritage values that exist within the Project Area.

The Project Area has been divided into two areas: the Development Area and the Conservation Corridor. Any sites that have been found to occur within the Development Area will be subject to impacts from the proposed residential development of the region. Although the Conservation Corridor is to be managed for its natural and heritage values indirect impacts still have the potential to occur if management strategies to minimise impacts are not followed.

Any development works that occur within the Project Area have the potential to impact on cultural heritage sites which are located through the landscape of the West Belconnen Development Project.

6.1 Predicted Physical Impacts

Impacts that may occur as a result of the development which have the potential to disturb cultural heritage sites and/or subsurface deposits include:

- Removal of topsoil across the development area.
- Landscaping works, including reshaping of slopes and installation of drainage works.
- Construction of urban roads, and suburban infrastructure.
- Construction of shopping and commercial facilities.
- Building of pedestrian, bike and recreational trails.
- Building recreational facilities such as toilet blocks,, playgrounds and carpark.
- Underground infrastructure such as sewerage, gas or water.
- Upgrading of fire trails and fire services facilities within the Conservation Corridor.

A summary of impacts for each of the sites is provided below in Table 6.1.

The impacts to the sites vary depending on their location within either the Development Area or Conservation Corridor. Sites within the Development Area cannot avoid impacts as residential development will impact all areas where sites within the Conservation Corridor will not be impacted by the development and will be managed in the future to protect and conserve their heritage values. At this time no known indirect impacts will occur in the vicinity of the identified sites. If in the future planning proposes works (ie pedestrian walking trails along river) that may result in indirect impacts further assessments will be required to assess and mitigate impacts.

The potential degree of impact that the proposed development may have on each of the identified sites has been assessed and the findings of the assessment are presented in Table 6.1 below.

Table 6.1: Summary of potential archaeological impact (redacted)

6.2 Avoidance and Mitigation Measures

The West Belconnen Project has undertaken the following steps to attempt to minimize their impact on Aboriginal Cultural Heritage Values within their project Area:

- The most archaeologically sensitive areas have been incorporated into a conservation area running along the length of the Murrumbidgee River called the Conservation Corridor;
- Pedestrian surveys and consultation has been undertaken for the entire Project Area rather than confined to the Development Area:
- Design has been considered to avoid impacting sites wherever possible. Only where impacts cannot be avoided will AHIPs be applied for.

6.3 AHIP Areas

In the occurrence that sites within the Development Area will be impacted an AHIP will need to be applied for covering the area of the known site and its extent. The area of coverage for the AHIP application for each of the sites is listed below in Table 6.2. The extent of the AHIP coverage areas are shown on Figure 8

Table 6.2. Area of AHIP coverage (redacted)

Figure 8 - Location of the AHIP area - NSW lands (redacted)

7 Management and Mitigation Measures

Ideally, heritage management involves conservation of sites through the preservation and conservation of fabric and context within a framework of "*doing as much as necessary, as little as possible*" (Marquis-Kyle and Walker 1994: 13). In cases where conservation is not practical, several options for management are available. For sites, management often involves the salvage of features or artefacts, retrieval of information through excavation or collection (especially where impact cannot be avoided) and interpretation.

Avoidance of impact to archaeological and cultural heritage sites through design of the development is the primary mitigation and management strategy, and should be implemented where practicable.

Harm to the identified sites within the Development Area can not be avoided as the development footprint will extend across all of the Project Area boundaries. The small size of the surface areas of the sites does not make them suitable for exclusion from the area of impact in the form of a conservation area or nature park. The nature of the sites being common, consisting of common artefact types and materials and being low in significance does not warrant this class of treatment to ensure their preservation.

It is proposed that an AHIP be applied for these sixteen small surface sites, as their location impedes the development of the area. It is proposed that the sixteen sites be surface collected (salvaged) and relocated to an area within the Conservation Corridor agreed upon by the RAPs, the developers and NSW EH. This will maintain their 'connection to country' in line with the wishes of the RAPs. An analysis of the recovered artefacts would need to be undertaken and a S90 Compliance report issued to EH following completion of the project in line with AHIP conditions.

Sub surface testing should be undertaken to mitigate the loss of the areas of PAD if these are to be impacted. Salvage of the sub surface deposits will provide further information and context to the sites in the region and promote a greater understanding of Aboriginal occupation of the Ginninderra Creek catchment. This information can then be held by the Aboriginal community and used for educating members of their community and the wider public.

7.1 Management Recommendations

Strategies have been developed based on the archaeological (significance) of cultural heritage relevant to the Project Area and influenced by:

- Predicted impacts to Aboriginal cultural heritage;
- The planning approvals framework;
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter; and,
  - The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010)

Prior to any impacts occurring within the Project Area, the following is recommended:

Recommendation 1: Continued consultation with the registered Aboriginal parties

It is recommended that Riverview continue to inform these groups about the management of Aboriginal cultural heritage sites within the Project Area throughout the life of the project. This recommendation is in keeping with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).

Recommendation 2: Application for an AHIP for the identified Aboriginal sites WB1 – WB16, WB19, WB20, WB22 and WB23 within the Development Area . All of these sites have low potential for sub surface artefacts. The AHIP application should cover the areas of the known sites as set out in Table 6.2 and shown on figure 9.

These sites should be collected, subjected to analysis and relocated to an agreed place within the Conservation Corridor of the Project Area to maintain their 'connection to country'. This location must be agreed upon by the RAPs, NSW OEH and Riverview. If a location can not be agreed upon the artefacts should be cared for by the Onerwal LALC under a care and control agreement.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places or cause land to be disturbed for the purposes of discovering an Aboriginal object. NSW Environment and Heritage (EH) issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with EH. Once the application is lodged processing time can take between 8-12 weeks. It should be noted that there will be an application fee levied by EH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Recommendation 3: Impacts to area of PAD WB1 should be avoided. If PADWB1 within the Development zone is to be impacted a program of sub surface investigation is required to determine the presence, extent and significance of any sub surface deposits.

- Sub surface testing should consist of a series of hand excavated testpits measuring 50 cm x 50cm across the areas of the identified PADs. A detailed methodology for the sub surface investigations should be developed for approval by the RAPs for the project prior to any testing commencing.
- This sub surface testing should be in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010).

Recommendation 4: Sites and areas of PAD located within the Conservation Corridor are not subject to any proposed development impact. These sites are protected under legislation and In the event of any future action impacting on these known sites further assessment of the impacts and application for an AHIP may be required. This recommendation applies to the following sites: WB17, WB18, WB21,WB24, WB25 – WB29, 57-1-0174, 57-1-0074, 57-1-0184, 57-1-0140 and PAD WB25, WB26 and 57-1-0140.

Recommendation 5: The proposed West Belconnen Conservation Corridor is of high cultural significance to the Aboriginal Community. Ongoing liaison should be undertaken with the RAPs in regards to the management of sites within the Conservation Corridor and future planned developments that may impact cultural sites. This would involve meeting with the RAPs and discussing future developments. In the future the requirements of consultation may change and requirements should be checked with NSW EH.

Recommendation 6: The area of the Ginninderra Creek has been assessed as holding high archaeological sensitivity. Any development that occurs in this area should be subject to sub surface testing within the development footprint to avoid damage to the archaeological record. This sub surface testing should be in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

Recommendation 7: Finding of low potential for cultural heritage sites or deposits across remainder of Development Area– proceed with caution.

The assessment of the Project Areas potential for cultural heritage sites and deposits is based on the field surveys and review of work completed in the immediate vicinity. This assessment has resulted in a finding of low potential across the Development Area except for the area of the Ginninderra Creekline. As a result the

project can proceed with caution in areas with no known cultural heritage sites dependant on recommendations 9, 10 and 11.

Recommendation 8: Due to the nature of the archaeological record it is possible that additional cultural heritage sites exist within the Project Area which were not located during this planning field survey. As a result the RAPs have requested that a cultural heritage induction should be included in the induction package for all construction workers.

Recommendation 9: Discovery of Unanticipated Aboriginal Objects

All Aboriginal objects and Places are protected under the *NSW National Parks and Wildlife Act* 1974. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Recommendation 10: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the Heritage Act 1977. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Recommendation 11: Discovery of Aboriginal Ancestral Remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

4. Immediately cease all work at that location and not further move or disturb the remains
5. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
6. Not recommence work at that location unless authorised in writing by EH.

Recommendation 12: No further archaeological work required for the Development Area once AHIP obtained from EH

No further archaeological work is required for the Development Area should the AHIP be approved, except in the event that unexpected cultural finds are unearthed during any phase of the project (refer to Recommendation 8-10).

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Appendices

Appendix 1 - AHIMS Results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC

Appendix 2 – Survey Transect Details