Appendix J

Cultural heritage assessment (Navin Officer heritage consultants)

Macquarie River to Orange Pipeline Project

Cultural Heritage Assessment

July 2012

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EXECUTIVE SUMMARY

Orange City Council proposes to construct the Macquarie River to Orange Pipeline including pumping stations, water pipeline and associated infrastructure to transfer water from the Macquarie River to Suma Park Dam.

Navin Officer Heritage Consultants Pty Ltd (NOHC) has been commissioned by Orange City Council to conduct a cultural heritage assessment of the project as part of an Environmental Assessment under Part 3A of the *Environmental Planning and Assessment Act* 1979. As per the Director General's Requirements, we are implementing a program of Aboriginal stakeholder consultation as an integral part of this assessment.

This report documents the results of a cultural heritage assessment of the proposed Macquarie River to Orange Pipeline study area. This assessment includes literature review, database searches, Aboriginal consultation and field inspection.

The proposed Macquarie River to Orange Pipeline project will be assessed under:

- Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The study found that:

- Two previously recorded Aboriginal sites are listed on the OEH AHIMS within the proposed Macquarie River to Orange Pipeline study area, Oaky Creek 1 and Oaky Creek 2. These sites were both relocated during the current study.

- Four previously recorded sites, 1 artefact scatter and three stone quarries are located within close proximity of the study area.

- Seventeen new Aboriginal sites (MPA1-17) have been recorded during the field survey for this project including ten artefact scatters (seven with associated PAD), six isolated finds (two with associated PAD) and one possible scarred tree.

- Five areas of potential archaeological sensitivity (PASA1-5) have also been identified.

- The proposed Macquarie River to Orange Pipeline construction corridor intersects the curtilage of two items that are currently listed on statutory registers ("Rosedale" homestead and Templar's Mill and Banjo Paterson memorial at "Narrambla").

- Five Historic (MPH1, MPH2, MPH3/4, MPH5 and MPH6) sites were identified during the field survey. These comprise three sites related to mining (MPH1, MPH2 and MPH3/4), a 20th century structure (MPH5) and an old alignment of Ophir Road (MPH6).

It is recommended that:

The following recommendations have been formulated on the basis of the results of the current survey and the results of previous heritage studies within the Orange area.

1. The sites MPA9 and MPA13 should be fenced prior to commencement of construction and their locations should be clearly marked on all relevant maps and plans to avoid impacts to these sites. A buffer of 10 m should be applied for fencing of these sites.

2. Prior to commencement of construction activities, salvage of artefacts should be conducted at MPA2, 4, 7, 10 and 11, and a Care and Control permit should be prepared for all Aboriginal objects prior to any salvage works.

3. Prior to commencement of construction activities, salvage of artefacts should be conducted at 1, 3, 6, 8,12, 14-19, Oakey Creek 1 and Oakey Creek 2 and, a program of archaeological

subsurface testing should be conducted within the affected sections of PAD at these sites; depending upon the results of that testing, it may be necessary to undertake salvage excavations in these locations.

4. A conservation area should be established for MPA5; including fencing and signage, and all impacts to this site should be avoided. A buffer zone of 10 m should be applied for fencing of these sites.

5. A program of archaeological subsurface testing should be conducted within the affected sections of PASA1-5; depending upon the results of that testing, it may be necessary to undertake salvage excavations in these locations.

6. Sites MPH1 and 5 should be fenced prior to commencement of construction and the location should be clearly marked on all relevant maps and plans to avoid impacts to these sites. A buffer of 10 m should be applied for fencing of these sites.

7. Prior to commencement of construction activities adjacent to properties 'Rosedale' and 'Narrambla' the construction corridor should be fenced off during works to avoid impacts to the heritage values associated with these sites, and potentially monitoring be undertaken of ground surface disturbance for these sections of the construction corridor..

8. A program of further historical research and archival recording should be conducted for sites MPH2, MPH3/4 and MPH6.

9. Liaise with Aboriginal stakeholders regarding an appropriate program (i.e. which sites to target) of site inspections following initial ground disturbance activities in order to mitigate any loss of Aboriginal cultural values.

10. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 5) be adopted and complied with during construction activities involving ground surface disturbance and excavation.

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1. INTRODUCTION

Studies undertaken by the Central NSW Regional Organisation of Councils (Centroc) in relation to future regional water security identified that Orange city's water supply system would be unable to meet the requirements of the city or provide for future growth (MVH 2009). Orange has experienced water shortages since the 1980s, with severe water restrictions implemented in February 2003. In May 2010 the city was on the brink of level six water restrictions, which would have impacted on business and industry within the city.

In response to ongoing concerns about the city's water security, Orange City Council adopted a security strategy that involved:

- An ongoing water conservation and demand management program; and
- Developing a diversified portfolio of water supply services.

Orange City Council (OCC) proposes to construct and operate a pipeline and associated infrastructure to transfer water from the Macquarie River to Suma Park Reservoir. The proposed offtake structure is located adjacent to the Macquarie River immediately upstream of Boshes Creek, and approximately 5 km downstream of Long Point (ca. 30 km northeast of Orange NSW). The proposed discharge structure will be located at Suma Park Reservoir (situated approximately 3.6 km east of Orange). The project is referred to as the Macquarie River to Orange Pipeline project.

The proposed pipeline would be approximately 37 km in length and would be located within the Local Government Areas (LGAs) of Cabonne Shire and Orange City (Figure 1.1).

The project will require various easements, the majority of which will be over privately held land adjacent to Ophir Road and Bulgas Road. The first four kilometres of the pipeline, from the Macquarie River, will require an easement over privately owned land as it traverses the distance from the river to the local road network. The easement would traverse mostly rural land and would cross various waterways, existing services, and road infrastructure.

This report documents the results of a cultural heritage assessment conducted for the proposed Macquarie River to Orange Pipeline Project Environmental Assessment. The study area for the project is defined as construction corridor between 6 m and 20 m wide, and 37 km long, and ancillary areas (ancillary areas as described below refer Section 1.1).

The report was commissioned by GHD Pty Ltd.

1.1 Project Description

The project would involve construction and operation of the following:

- *37 km of 375 mm diameter water rising main between the Macquarie River (north of Orange) and Suma Park Reservoir (situated approximately 3.6 km east of Orange).*

  The pipeline route will commence at the Macquarie River offtake structure, adjacent to the "Jumbo Hole", immediately above the confluence with Boshes Creek, then run south for approximately four kilometres through private property within the Cabonne Shire Council Local Government Area. It is proposed that the pipeline will be installed within the access road to the offtake structure when traversing this private property.

  The pipeline will then join Long Point Road. From this point the pipeline will parallel Long Point Road from CH4000 to CH9470, Oakey Lane from CH9470 to Ophir Road CH18500, Ophir Road from CH18500 to CH36130, through private land DP1075011, Bulgas Road from CH36620 to CH36755, private land DP841660 from CH36755 to CH36823, OCC land from CH36823 to CH36896, terminating at Suma Park Reservoir.

En route the pipeline will cross a number of waterways; and the roadways listed above on several occasions, depending on detail design.

Over the length of the pipeline there would be two booster pumping stations, in addition to the pumping station at the offtake structure.

The pipeline has a clearance zone that varies between 6 m, 10 m to 20 m. This allows for some flexibility to avoid impacts at various sites. Only trees within the clearance zone will be removed, and trees within the access corridor but outside the clearance zone will not be removed. Within the permanent 6 m easement, all trees will be removed.

- *An offtake and pump station located on the south side of the Macquarie River immediately upstream of the confluence with Boshes Creek.*

  The offtake station ('PS1') is anticipated to be formed by cutting back into the Macquarie River embankment to form a structure that minimises the hydraulic impacts on the river. It may be formed in one of two ways, depending on detail design considerations:

  - As a precast concrete structure surrounded by gabion armouring to prevent river bank erosion; or
  - As a structural steel trash rack enclosure surrounded by gabion armouring to prevent river bank erosion.

- *Two booster pump stations and break tanks along the pipeline route.*

  These booster stations are required as a single lift is beyond the capacity of commercially available pumping equipment and pipeline materials. One booster pump station ('PS2') would be located approximately 4.7 km southwest of the offtake structure, with the site adjoining Long Point Road. The other booster pump station ('PS3') would be located approximately 16.7 km southwest of the offtake structure, and would be located on a site adjoining Oaky Lane.

- *Power supply to pumps and other infrastructure.*

  Power supply to the pumps and other infrastructure will be over head and is anticipated to require upgrading of existing power lines and sections of proposed new power line and associated clearance corridor. The existing power lines should not require any additional vegetation removal due to upgrading. This power alignment is already covered by a 20 m wide clearance zone, which allows for 'blowout' i.e. swing. The upgrade of the power lines will involve additional poles and conductors. The proposed new power lines will require a permanent 20 m easement that will require large trees (>5 m) to be removed.

- *Telemetry controls to enable remote operation of the infrastructure including pumps and valves etc.*

- *A discharge structure at the Suma Park Reservoir*

1.2 Project Framework

The proposed Macquarie River to Orange Pipeline project will be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A ACT).

Under Part 3A of the Act the Director-General's Environmental Assessment Requirements for this project in relation to cultural heritage impacts are:

DGRs	DGRs Responses
Heritage Impacts – The Environmental Assessment must include sufficient information to demonstrate the likely impacts on Non-Indigenous and Aboriginal heritage values (archaeological and cultural) that may be impacted by the project with details on subsurface archaeological investigations undertaken for potential archaeological deposits and outline proposed mitigation measures to avoid or minimise any impacts	• Sections 5 and 6 of this report details the Aboriginal and Historical contexts, respectively, which outlines previous archaeological works undertaken and identify potential heritage impacts. • Section 7 provides the results of this assessment and identifies all heritage sites within the project area. • Section 10 provides management and mitigation measures to avoid or minimise any impacts to heritage sites within the project area.
Aboriginal Heritage – The Aboriginal heritage assessment must be consistent with the Draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (*OEH, 2005). The EA must demonstrate effective consultation with Aboriginal communities has been undertaken in determining and assessing impacts, developing options and selecting options and mitigation measures.	Section 4 of this report details the Aboriginal Consultation Program undertaken for this program, and Section 11 outlines the management and mitigation measures for this project, which have been provided to all registered Aboriginal stakeholders. At this stage no formal comments have been received.

1.3 Report Outline

This report:

- Describes the proposed development (Section 1);
- Describes the methodology employed in the study (Section 2);
- Describes the environmental setting of the study area (Section 3);
- Provides information relevant to the Aboriginal cultural context of the study area (Section 4);
- Provides an historical heritage context for the study area (Sections 5 and 6);
- Describes the results of the data review, field survey and Aboriginal consultation program conducted in the context of the assessment (Section 7);
- Assesses the significance of the findings of the study (Section 8);
- Provides a statutory and policy context for the proposed development; and
- Provides management recommendations based on the results of the investigation (Section 10).

1.4 Copyright

Copyright to this report rests with GHD except for the following:

- The NOHC logo and business name (copyright to this rests with Navin Officer Heritage Consultants Pty Ltd);
- Generic content and formatting which is not specific to this project or its results (copyright to this material rests with Navin Officer Heritage Consultants Pty Ltd);
- Descriptive text and data relating to Aboriginal objects which must, by law, be provided to OEH for its purposes and use;
- Information which, under Australian law, can be identified as belonging to indigenous intellectual property;
- Content which was sourced from and remains part of the public domain.

1.4.1 Restricted Information

Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain.

1.4.2 Confidentiality

No information in this report has been classified as confidential.

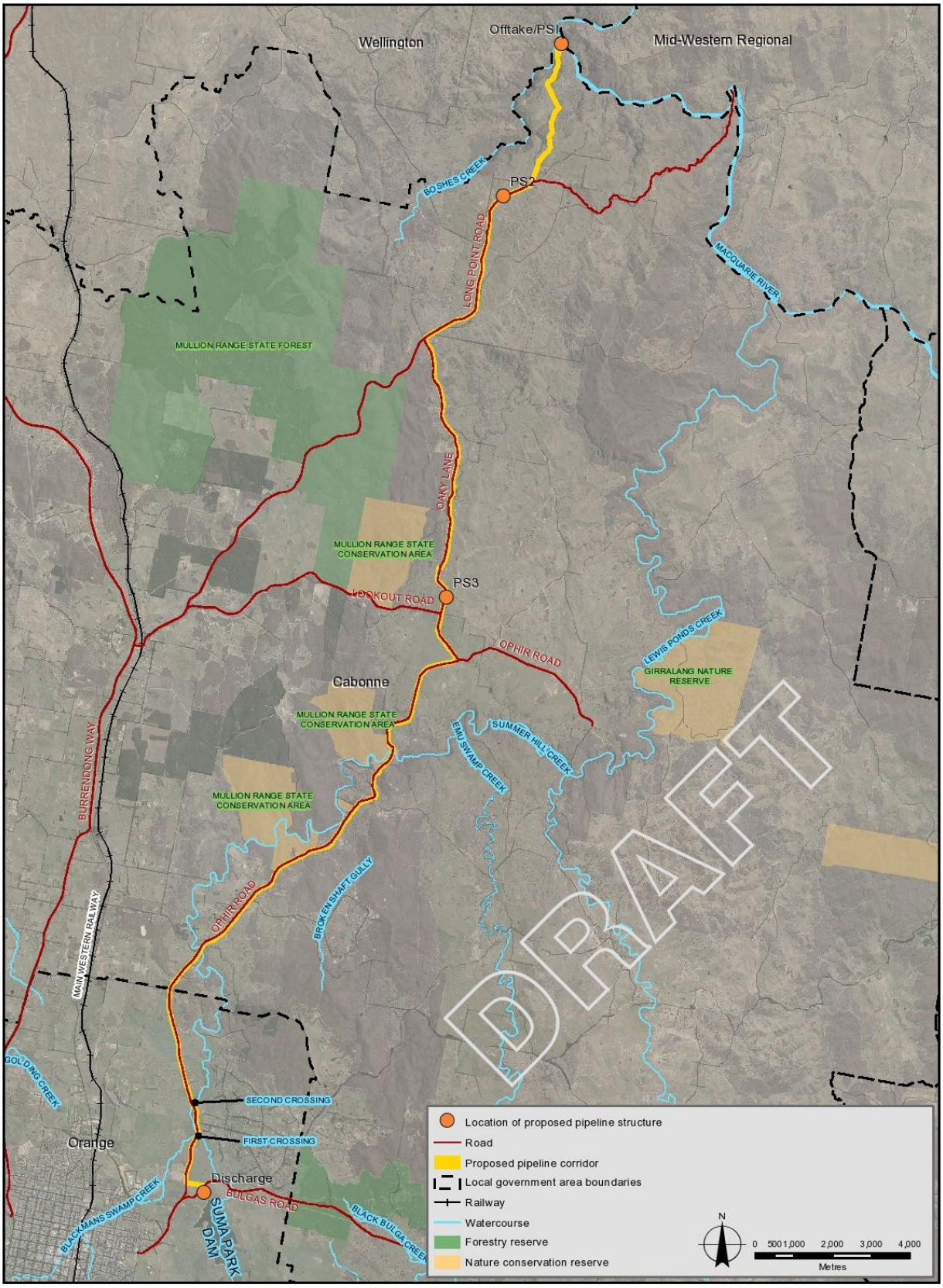

Figure 1.1 Indicative layout of proposed Macquarie River to Orange Pipeline (yellow line). (Image provided by GHD)

2. STUDY METHODOLOGY

2.1 Contributors

Field survey was conducted by Rebecca Parkes - Bachelor of Arts (First Class Honours); PhD in Archaeology from the Australian National University; Sam Harper – Bachelor of Arts (First Class Honours) from the Australian National University; Deirdre Lewis-Cook – Bachelor of Arts from the University of New England, Masters in Archaeology from the Australian National University; Adrian Cressy – Bachelor of Arts from the Australian National University; and, Glenda Hyde, a Ngunnawal woman; who has a Certificate IV in Conservation and Land Management and Community Facilitation.

This report was prepared by Deirdre Lewis-Cook (BA, MA Archaeology), Damian Tybussek (BA Hons Archaeology PhD Candidate) and Kerry Navin (BA Hons, MAACAI).

The report was edited by Nicola Hayes (BA/BSc, Grad. Dip. Arts) and Kerry Navin.

2.2 Literature and Database Review

A range of archaeological data was reviewed for the Macquarie River to Orange Pipeline study area and its surrounds. This literature and data was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Office of Environment and Heritage (OEH, formerly DECCW) and associated files and catalogue of archaeological reports; and theses held in the library of the School of Archaeology and Anthropology, the Australian National University.

Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

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

- Statutory Listings:
    - Aboriginal Heritage Information Management System (AHIMS) (NSW OEH);
    - The National Heritage List (Australian Heritage Council);
    - The Commonwealth Heritage List (Australian Heritage Council);
    - The State Heritage Register (Office of Environment and Heritage);
    - Section 170 Heritage and Conservation Register(s) compiled by the ARTC;
    - Heritage Schedule(s) from the Orange Local Environmental Plan 2000 (Amended); and
    - Heritage Schedule(s) from the Cabonne Local Environmental Plan 1991.
- Non-Statutory Listings:
    - The Register of the National Estate (Australian Heritage Council);
    - The State Heritage Inventory (Office of Environment and Heritage); and
    - Register of the National Trust of Australia (NSW).

2.3 Field Methodology

An archaeological survey of the study area was undertaken by archaeologist Rebecca Parkes and Aboriginal Cultural Co-ordinator Glenda Hyde in December, 2011.

Additional survey was undertaken in January 2012 by archaeologists Deirdre Lewis-Cook and Adrian Cressey, and in March 2012 by archaeologists Deirdre Lewis-Cook and Sam Harper.

Survey was conducted by walking the linear components of the project (pipeline and power supply corridors) and by walking systematic transects across all landforms within the offtake and pump station, booster pump stations and discharge structure.

The field team spread out with 5-10 m spacing between individuals to ensure maximum coverage. The survey included inspections of:

- all ground exposures for the presence of stone artefacts or other evidence of Aboriginal occupation; and
- all trees of sufficient age to have the potential for cultural scars.

Areas of archaeological sensitivity were targeted. These included well drained, locally elevated topographies adjacent to water, and features such as flat ground on ridge and spur crests, creek flats and banks, creek terraces, old growth trees, rock outcrops and elevated sand bodies.

Information was recorded using a handheld Trimble Nomad GPS, digital camera, and notebook.

2.4 Sampling Strategy

The majority of the study area was walked and inspected by the field survey team. Sections that were not walked were limited to some of the very steep slopes at the northern end of the study area. These were assessed to be of negligible archaeological potential due to their topography.

Survey coverage was, however, constrained along some other portions of the proposed pipeline route by limited access to private properties. In instances where access was not available (e.g. through the properties along Oakey Lane), the survey was conducted from the adjacent road reserve. In most cases this was 3-6 m away from the proposed easement centreline.

An assessment of the potential archaeological sensitivity of these areas was made based on the landforms present, levels of landscape disturbance, artefact occurrence and soil types observed along the road corridor.

2.5 Site Recording Parameters

Site recording parameters are provided in Appendix 1.

3. LANDSCAPE CONTEXT

3.1 General Location

The proposed study area is located in the northwestern corner of the Central Tablelands of New South Wales. The southern end of the proposed pipeline is located 3.6 km east of Orange; the northern end is located on the Macquarie River about five kilometres west of the locality of Long Point.

The study area falls within the South Eastern Highlands Biogeographic region and is characterised by a temperate climate with warm summers (NSW NPWS 2003). It is in the Orange subregion which is characterised by low hilly to hilly plateau with the peaks of Mount Canobolas dominating the landscape in the southwest (NSW NPWS 2003).

3.2 Geology

The study area is part of the Lachlan fold belt, a series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies (NSW NPWS 2003). From south to north, the rock profile along the proposed pipeline route is made up of Tertiary volcanics (Canobolas volcano); Ordovician volcanics, intrusives and volcaniclastic sediments; Silurian sediments and volcanics; and, Early Devonian sediments and volcanics. Several major faults cross the study area (Ramond and Pogson et al 1998).

3.3 Landforms

The study area predominantly traverses undulating slopes and hills to the east of the Mullion Range. The range is a prominent regional landscape feature about 20 km long and is roughly orientated north-south. Its southern end is located about eight kilometres northeast of Orange (NSW NPWS 2010).

Landforms include ridge and spur crests, upper, middle and lower slopes, valley floors/creek flats, alluvial terraces and drainage lines. Gradients are low to moderate across the majority of the study area, while the northern portion of the study area is characterised by a steeply sloping hilly landscape leading down to the Macquarie River.

Large watercourses such as the Macquarie River generally have wide flats although many of the smaller creeks are deeply incised.

3.4 Geomorphic activity, erosion and soils

The majority of the study area corresponds to eroding landform units such as knolls, ridges and upper slopes.

Aggrading landform units such as basal slopes and alluvial terraces are found along Oakey Creek, Summer Hill Creek and the Macquarie River. Erosion on upper slopes and knolls is likely to reveal artefacts while aggrading landform units such as those along the creeks and rivers are likely to conceal subsurface artefacts.

The main forms of erosion within the study area are slopewash/sheet erosion and rill erosion along informal vehicle access tracks. Rill and stream bank erosion is found along the creek lines and minor erosion along stock tracks.

Soils vary across the study area in relation to altitude, topography and rainfall. On the Tertiary basalts in the south, soils comprise shallow red-brown to black stony loams. In the remainder of the study area, mottled red and yellow texture contrast soils are found on the Palaeozoic slates, sandstones and volcanics (NSW NPWS 2003).

3.5 Natural resources and features

Numerous tributaries of the Macquarie River traverse the pipeline corridor. These range from first order ephemeral creek lines through to more substantial semi-permanent to permanent water courses such as Oakey Creek, Summer Hill Creek, Emu Swamp Creek and Boshes Creek.

Locally elevated and low gradient landforms adjacent to permanent pools of water are likely to have been utilised by Aboriginal people for activities such as camping.

Elevations within the adjacent Mullion Range are between 670 and 960 metres ASL (NSW NPWS 2010). Climatic factors such as cold winters, potential for frost and cold air drainage would have had an effect on Aboriginal exploitation and occupation of the area.

Vegetation in the study area comprises varying density forest with significant stands of riparian vegetation adjacent to the Macquarie River. The vegetation is relatively disturbed in areas of prior mining and logging activities.

The relatively undisturbed flora and fauna of Mullion Range State Conservation Area (MRSCA), located to the west of the study area, provides an indication of the natural resources that may have been present in the study area landscape in the past. The vegetation in MRSCA comprises the three following communities:

- Inland Scribbly Gum and Red Stringybark Woodland to Open Woodland;
- Red Stringybark and Bundy Woodland to Open Woodland; and,
- River Oak Riparian Communities (NPWS 2010:10).

A variety of native fauna have been recorded in the MRSCA including mammals such as eastern grey kangaroos, red-necked wallabies and wallaroos. As there has not been a systematic survey of fauna conducted in the reserve, it is likely that there is potential habitat for a variety of other mammals, reptiles, birds and amphibians. As such, it is likely that a range of edible plant foods and faunal resources would have been available to Aboriginal people prior to clearing and grazing practices.

Taking into consideration the elevation, climatic variation, seasonal nature of water supply and proximity of the study area to the Macquarie River and Mount Canobolas, it is likely that this area was used by Aboriginal people on a seasonal basis for activities such as hunting, gathering and movement through country. It is likely that sheltered locations with reliable water and an easterly aspect would have provided ideal winter camping areas.

3.6 Land-use history

Prior impacts in and around the study area can generally be classified as moderate to high. Land within the study area has been cleared for grazing and pasture improvement. Parts of the study area have been subject to forestry practices including logging and construction of infrastructure such as vehicle tracks.

The areas of greatest disturbance are those impacted by mining activities dating from the 1850s through to the 1930s (NSW NPWS 2010). Impacts include excavation of mine shafts, construction of water races and erosion of stream banks.

The majority of the study area has been cleared, particularly at the southern end towards Suma Park Dam. Exceptions to this are pockets of regrowth across the northern portion leading down to Macquarie River, and the section along Oakey Lane. Where the proposed pipeline is located within, or adjacent to, an existing road reserve, these areas have often already been impacted by installation of both above and below ground services.

4. ABORIGINAL CULTURAL CONTEXT

4.1 Tribal Boundaries

The study area traverses the area which was, at the time of European settlement, inhabited by members of the Wiradjuri linguistic group, and falls into the tribal area delineated by Tindale (1974) as 'Wiradjuri'. This territory is located within the Murray Darling Basin and extends from Dubbo and Bylong in the north to Tallangatta in the south and west from Lithgow to the Hay Plain and Ivanhoe.

Wiradjuri territory extends into three general physiographic regions: the highlands (central tablelands) in the east, the riverine plains in the west and the transitional western slopes zone in-between (White 1986: 39). The present day study area is located in the central tablelands.

4.2 Consultation Requirements for Proponents

As per the Director-General's Requirements for the Environmental Assessment for the Macquarie River to Orange Pipeline Project, this cultural assessment complies with the Draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* as set out by the NSW Department of Environment and Conservation (now the NSW Office of Environment and Heritage) in 2005.

The proponent also seeks to comply with the current requirements of the NSW Office of Environment and Heritage (formerly the NSW Department of Environment, Climate Change and Water).The project, therefore, also complies with the NSW OEH *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW OEH 2010). The 2010 guidelines provide a more stringent process which meets and exceeds the requirements under the 2005 draft guidelines.

This document sets out the requirements for 'consulting with those Aboriginal people who can provide information about the significance of Aboriginal cultural heritage as part of the heritage assessment process that informs any AHIP [Aboriginal Heritage Impact Permit] application' (NSW OEH 2010:1).

The requirements apply to all activities throughout NSW that have the potential to harm Aboriginal *objects* or places, and that also require an AHIP. Although AHIPS were not required for this stage of the project, the OEH 2010 Aboriginal cultural heritage consultation requirements for proponents were implemented for this project. This included:

Stage 1 - Notification of project proposal and registration of interest:

> An advertisement was placed in the *Central West Daily* on 1st October, 2011 with a 14 day period for registration ending 14th October, 2011.
>
> Stage 1 round 1 letters (Table 4.1) were sent on the 4th October 2011 with a 14 day period for registration ending 17th October, 2011.
>
> Stage 1 round 2a letters (Table 4.2) were sent on the 21st October, 2011 with a 14 day period for registration ending 27th October, 2011.
>
> Stage 1 round 2b letters (Table 4.3) were sent on the 31st October, 2011 with a 14 day period for registration ending 14th November, 2011.

See Appendix 3 for copies of letters and responses.

Table 4.4 lists the names of Aboriginal Organisations that have registered an interest and will be consulted with during this project:

Table 4.1 Stage 1 Round 1 Letters

Name	Organisation
The Secretary	Orange Local Aboriginal Land Council (OLALC)
The Secretary	Office of the Registrar*, Aboriginal Land Rights Act* (1983) NSW
The Secretary	Native Title Tribunal
The Secretary	Native Title Services Corporation Limited (NTSCORP)
The Secretary	NSW Office of Environment & Heritage
Mrs Joedie Davis	Central West Catchment Management Authority, Orange

Table 4.2 Stage 1 Round 2a Letters

Name	Organisation
Ms Annette Steal (CEO)	Orange Local Aboriginal Land Council (OLALC)
Mr James Williams	Local Aboriginal Elder
Mr Chad Morgan	Local Aboriginal Elder

Table 4.3 Stage 1 Round 2b Letters

Name	Organisation
Ms Dorothy Stewart	Binjang Wellington, Wiradjuri Heritage Survey
The Secretary	Dhuuluu-Yala Aboriginal Corporation
Ms Julian Bower	Mingaan Aboriginal Corporation
Mr Neville Williams	MOOKA
Mr Stephen Parkes	Wellington Valley Wiradjuri Aboriginal Corporation
Mr Robert Clegg	Wiradjuri Council of Elders
Chairperson	Wiradjuri Traditional Owners, Central West Corporation

Table 4.4 Registered Aboriginal Stakeholders for the Orange Project

Name	Organisation
Ms Dorothy Stewart	Binjang Wellington, Wiradjuri Heritage Survey
Mr James Williams	Wiradjuri Descendant, Central West
Ms Helen Riley	Mingaan Aboriginal Corporation
Mr Chad Morgan	Orange Local Aboriginal Land Council
Group Five	[Requested to remain anonymous]

Stage 2 – Presentation of information about the proposed project

A draft copy of the Proposed Macquarie River to Orange Pipeline Project - *Archaeological Investigation Methodology* was provided to each of the registered Aboriginal stakeholders for their Information; it was accompanied by a request for comments on the project.

Comments were received in response to the draft report from the following:

Name	Organisation	Response
Mr James Williams	Wiradjuri Descendant, Central West	Agreed with the methodology

Stage 3 - gathering information about cultural significance

Information has been requested from the registered Aboriginal groups through the correspondence outlined below.

It has been indicated by Mr James Williams that there may be areas of Aboriginal cultural significance in the study area and are awaiting further information.

Stage 4 - review of draft cultural heritage assessment report

A copy of the draft of this cultural heritage assessment report was sent to each of the registered Aboriginal stakeholders.

No responses were received.

4.3 Field Survey

An invitation to attend a site visit was sent out to the Orange Local Aboriginal Land Council (OLALC); as a result Chad Morgan attended and participated in the field survey.

4.4 Native Title Claim

A registered Native Title Claim exists for the area of the study area.

See Appendix 4 for a summary of the application and map of the application area.

5. ABORIGINAL CONTEXT

5.1 Archaeological Research

A number of archaeological surveys have been conducted in the region around the study area. These surveys provide a regional context for the study area.

In 1981 Pearson completed a major regionally based research investigation. His thesis was an investigation of Aboriginal and early European settlement patterns within the Upper Macquarie River region of NSW. The majority of his field coverage was directed by information from informants and was thus skewed toward large or obtrusive sites which had been recognised by local residents. Pearson excavated three rock shelter sites (Botobolar 5, and Granites 1 and 2) which provided a regional record of Aboriginal occupation dating back to around 7000 years BP (before present).

Pearson's analysis of the patterns of Aboriginal occupation involved an examination of site location characteristics in four sample areas. The following points summarise Pearson's results relevant to the present investigation:

- There is a strong relationship between site location and distance from water sources. Distance to water varied from 10 to 500 m, but in general the average distance from water decreased as site size increased;

- Sites were found on hilly or undulating places rather than on river flats or the banks of waterways. However it was found that the regional incidence of landform variation biased this sample;

- Good drainage and views over watercourses and river flats were also considered to be important site location criteria;

- Most sites were located in contexts which would originally have supported open woodlands, with small numbers in original grassland or forest contexts. However, this result is skewed by the predominance of the first vegetation type;

- Burial sites and grinding grooves were situated as close to habitation areas as geological constraints would allow;

- Ceremonial sites such as earth rings ('bora grounds') were located away from campsites;

- Stone arrangements were also located away from campsites in isolated places and tended to be associated with small hills or knolls or were on flat land;

- Quarry sites were located where stone outcrops with desirable working qualities were recognised and were reasonably accessible;

- Based on ethnohistoric information, Pearson suggests that Aboriginal campsites were seldom used for longer than three nights, and that large sites probably represent accumulations of short visits.

South of Orange, Ross carried out a preliminary survey of the Cadia area for a proposed copper mine in 1981, locating a possible scarred tree and two isolated finds (Ross 1981). Kohen subsequently conducted an archaeological survey of a proposed small to medium sized copper-gold mine at Cadia in 1991. He re-inspected Ross' scarred tree and considered the scar was unlikely to have an Aboriginal origin. He located one site (NPWS Site #44-1-0017), comprising seventeen artefacts including chert, quartz and quartzite, and three isolated finds (Kohen 1991:13-15).

Kohen noted that the impression gained from the limited archaeological surveys in the Cadia-Orange area was that there was 'little evidence of prehistoric Aboriginal occupation, with campsites being relatively uncommon and small' (ibid:8). However, he conceded that this impression was probably a result of the few surveys which had been conducted in the area.

Haglund noted that in 1984, no sites had been listed for the Orange City Area on the NSW NPWS Aboriginal Site Register. She concluded that sites would be unlikely to remain in the heavily modified central area of the town, and that the most likely site types to occur in the surrounding areas were small scatters of stone artefacts, scarred trees and quarry sites (Haglund 1984a:5).

A survey was completed in 1982 by Cubis for the proposed Wallerawang to Wellington 330 kV power transmission line. Fifty five Aboriginal archaeological sites were recorded within or in close proximity to (within one kilometre) the transmission line study area (Cubis 1982).

In 1985 Haglund conducted a desktop assessment of the prehistoric heritage within the Mudgee shire. At the time of assessment the National Parks and Wildlife Services (NPWS) register listed 59 Aboriginal archaeological sites located within the boundaries of the shire. Haglund noted that eleven more sites were known to exist but had not been added to the NPWS register. It was recommended that an archaeological survey be conducted prior to any future developments within the shire.

South of Cadia, Paton surveyed two small mining lease areas at Junction Reef near Blayney. No sites were recorded in the course of these surveys (Paton 1990).

An archaeological assessment was conducted in 1993 by Davies for the proposed Telecom optic fibre cable route between Orange and Narromine. Some 76 previously recorded sites occurred within the optic fibre cable study area. Archaeological material was found at nine locations in the course of Davies' survey, comprising five artefact scatters, three isolated artefacts and one scarred tree.

In 1993 Paton surveyed an 277 km optical fibre cable route from Mitchell in the ACT to Orange, locating nine sites comprising seven artefact scatters, one scarred tree and an artefact scatter/stone arrangement/raw material source in the course of the survey.

No Aboriginal sites were located during a survey by Dallas (1993) of the Canobolas Wool Top Expansion Project north of Orange, nor in the course of small area surveys of road realignments some 20 km west of Orange (Kelton 1995a & b). One scarred tree and an isolated find were located by Kelton (1994) in the proposed 'Moulder Hill' residential area west of Orange.

Navin Officer Heritage Consultants 1996 conducted an archaeological survey of the Orange to Cadia Transmission line. Two Aboriginal artefact scatters and one isolated find were located in the course of surveys of the transmission line easement.

In 1996 Kelton completed an archaeological survey for the proposed Long Point Road Orange to Mudgee Link in central west NSW. Sixteen Aboriginal archaeological sites were recorded which included: eleven open campsites (stone artefact scatters), three stone quarry sites, an isolated artefact, and one site which consisted of a previously recorded burial site and three scarred trees.

A subsequent supplementary report was prepared for the project which involved an archaeological survey for a section of road that had been re-designed to avoid a section of the original proposal which involved traversing extremely steep country. No sites had previously been recorded for the study area and the survey resulted in the recording of one Aboriginal site – a quarry (D-QS-4).

An assessment of the Suma Park and Spring Creek Reservoirs near Orange was undertaken by Oakly (2002). Seven sites were situated on low gradient spurs, and many were either just visible above the water line of the reservoir. An eighth site was located on a naturally occurring quartz outcrop on a low gradient slope.

An extensive survey of over 632 ha, near the Mitchell Highway approximately six kilometres west of the Orange CBD, was undertaken in 2003 (Heritage Concepts 2003). One artefact scatter with associated PAD was recorded on a slope above Broken Shaft Creek and assessed as being the remnants of a larger deposit that had moved down slope from a nearby terrace through colluvial action.

In 2006 OzArk EHM undertook survey of 212 ha between Leeds Parade and the Ophir Road Orange, NSW for the Orange City Council Local Environmental Study (LES). The assessment recorded nine Indigenous sites and one Potential Archaeological Deposit (PAD):

The most recent study to be undertaken for this region was in 2009. OzArk completed an indigenous heritage assessment for the Area 51 Recreation Park located northeast of Orange. Seven Aboriginal sites comprising five open sites, one scarred tree and one isolated find were recorded.

5.2 AHIMS Search Results

Ninety eight Aboriginal recordings are listed on the OEH AHIMS for the area surrounding the study area within the following (MGA/GDA) map grid references, with a 50 m buffer:

Easting: 689000 - 719000

Northings: 6307000 - 6357000

A copy of the AHIMS search is provided in Appendix 2.

Two previously recorded Aboriginal sites are listed on the OEH AHIMS within the study area. These are: Oaky Creek 1 (OEH # 44-2-0076) and Oaky Creek 2 (OEH # 44-2-0075), recorded by Cubis in 1982 (Figure 5.1).

A further seven sites are listed on the AHIMS register within one kilometre of the study area. Four of these sites are open artefact sites, found in close proximity to creeks or rivers and three are stone quarry sites.

Site information is summarised below (Table 5.1) and site locations are shown on Figure 5.1.

Table 5.1 Inventory of Recorded Aboriginal Sites

OEH Site No.	Site Name	Recording Type	AMG Reference
44-2-0075	Oaky Creek 2	artefact scatter	705510.6333428
44-2-0076	Oaky Creek 1	artefact scatter	705532.6333675
44-2-0077	Isaacs Creek 5	stone quarry	704446.6338389
44-2-0078	Isaacs Creek 4	stone quarry	704305.6338620
44-2-0079	Isaacs Creek 3	stone quarry	704305.6338620
44-2-0155	Quartz site	artefact	704431.6328071
44-2-0126	SPR-3	Open site	699310.6316000
44-2-0127	SPR-4	Open site	698900.6316000
44-2-0128	SPR-5	Opens site	699100.6316250

5.3 Predictive Model

The most common Aboriginal site type present in the Central Tablelands is the open artefact scatter, which may occur almost anywhere that Aborigines have travelled and may be associated with hunting or gathering activities, domestic camps, or the manufacture and maintenance of stone tools. The density of artefacts represented in these scatters can vary dramatically and can be dependent on factors such as stream ordering and the permanence of water sources.

Previous survey results suggest that artefact scatters are most likely to be located on well-drained and locally elevated ground adjacent to permanent water sources. High site densities and relatively dense artefact concentrations can be expected in close proximity to permanent watercourses. Elevated sand bodies within valley floor contexts are a landscape element with high potential.

Isolated finds, generally defined as a single stone artefact which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres, are recorded in small numbers in the Orange region. Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or subsurface artefact scatter. Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* of Aboriginal artefacts present within any particular landform.

Lithic quarry and procurement sites, together with associated flaking floors, may occur wherever rock types, suitable for stone tool manufacture, are exposed. Typically these sites involve the extraction of siliceous rock types for the manufacture of artefacts. Several quarry sites have been recorded in the Orange and adjacent regions.

The location of the study area in the undulating slopes and hills to the east of the Mullion Range within close proximity to semi-permanent and permanent water sources may have provided both effective travel routes.

Previous archaeological surveys across the Orange region suggest the following archaeological attributes and site location parameters for the study area:

- Artefact scatters are the most common site type and generally contain low numbers of artefacts and are found in low densities.

- The most important site location determinants appear to be the following (both singly and in combination): level or near level ground, well drained and locally elevated ground, proximity to permanent water, and location on a major watershed.

- Crest topographies on major watersheds which offer an effective through-access route across rugged and incised terrain do appear to have a higher site incidence than lesser order crest-line topographies.

- Site location trends toward mid-valley slope contexts may be indicative of avoidance of cold air drainage.

- Wetland margins are a focus for Aboriginal occupation.

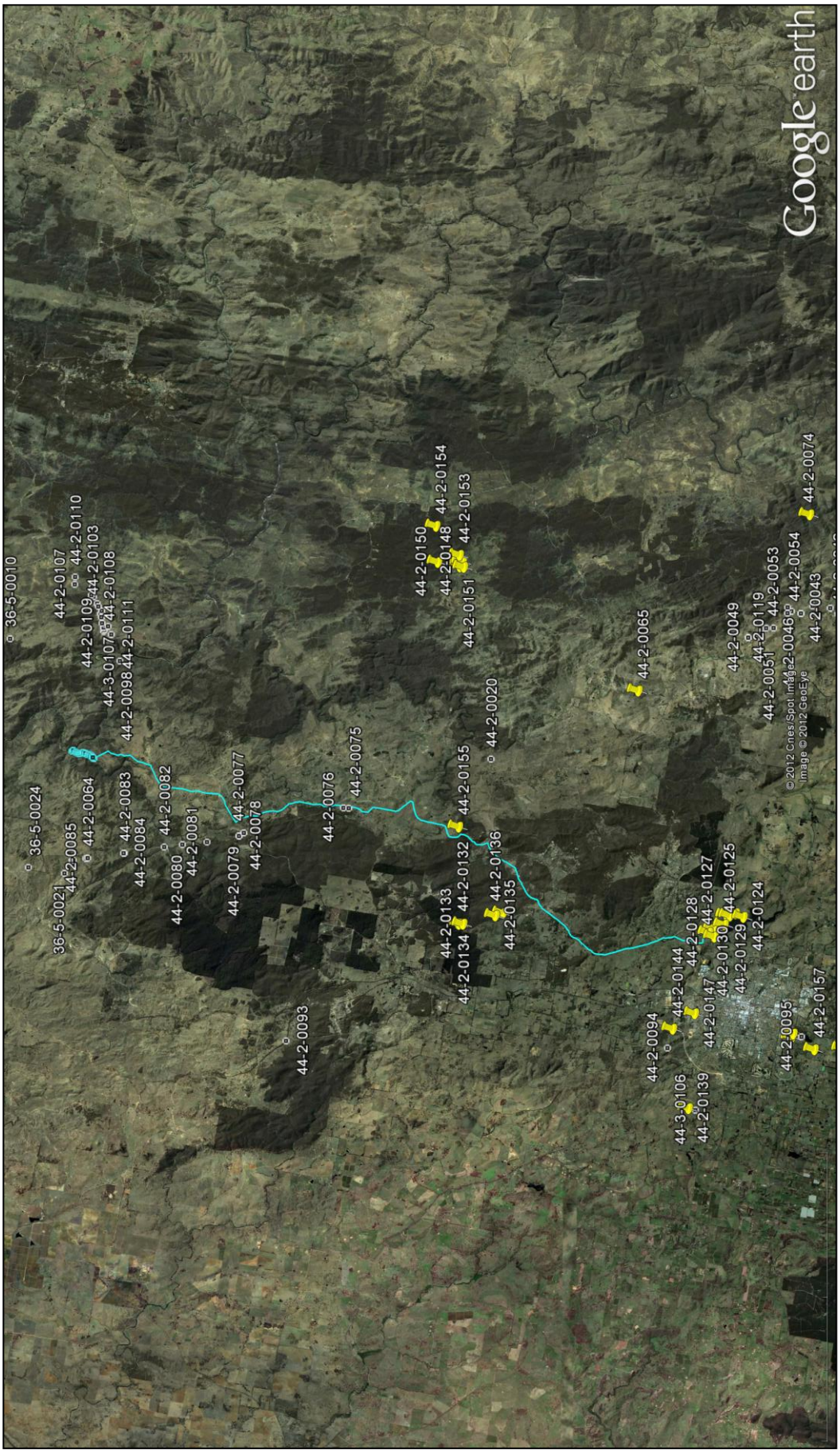

Figure 5.1 Locations of Previously recorded sites
(Base Map: Google Earth Pro 2011)

6. HISTORICAL CONTEXT

6.1 Location of Study Area

The study area is situated to the northeast of the township of Orange, and largely within the former Goldfields of Ophir and Margaret River.

6.2 Initial Settlement

The first documented European visitor to the Central Tableland region was George Evans, who crossed the Blue Mountains in 1813 when he encountered an expansive area of prime grazing land. Consequently, the initial settlement of this area was dictated by the needs of the pastoral industry. Governor Macquarie reserved all land west of the Macquarie River for Government stock and agricultural stations, and limited land-grants and grazing permits to colonists.

Private occupation was restricted to the east of the Macquarie and Campbell Rivers by Governor Macquarie (1810-1821) and his successor, Governor Brisbane (1821-1825) (Heritage Office and DUAP 1996:90).

Several settlements began to emerge in this period within these limits on occupation.

Bathurst was initially occupied from 1815 as a government station on either side of the Macquarie River. Kelso was occupied as a private settlement from 1818. The Wellington Valley was settled as a remote convict-run stock station from 1823. By the mid 1820s it was recognised that another settlement was needed between Wellington and Bathurst due to the distance between the two. Subsequently, a station was created on Fredericks Valley Creek to the east of where Orange is located today (Hughes Trueman Ludlow 1986:20). Generally, these settlements supported cattle grazing and a to lesser degree sheep grazing, along with a small amount of wheat and maize agriculture (Heritage Office and DUAP 1996:90; Hughes Trueman Ludlow 1986:19).

In 1826, Governor Darling re-defined the limits of location and opened this entire region to private settlement. Sheep grazing then became the dominant pastoral activity. This change in the pastoral industry was linked with the movement of ex-convict and free migrant settlers into this region during the later 1820s and 1830s. Some of these settlers amassed large pastoral runs with significant homesteads between the 1820s and 1840s (Heritage Office and DUAP 1996:90-91).

By the 1840s the Central Tableland region was no longer on the frontier, as squatters had moved beyond of the limits of location in search of their own runs. The region now served as a supply centre for the newly settled regions to the north. With the survey and laying out of towns and villages such as Bathurst in 1833, Mudgee in 1837, Carcoar in 1838, Rylstone in 1842, and Orange and Wellington in 1846, settlement within this region became more organised (Heritage Office and DUAP 1996:91).

The settled landscape was altered by the gold rushes of the 1850s and created many new townships and settlements. The landscape was changed from one centred on pastoralism to one encompassing both mining and pastoral interests.

6.3 Orange

Prior to the establishment of the township of Orange the general area was the site of sporadic settlement from the 1820s through to the early 1840s (Hughes Trueman Ludlow 1986:19). This settlement appears to have been built around the track from Bathurst to Wellington Valley which roughly follows the current Mitchell Highway.

Generally, the settlement over this period had three different phases:

1. *The establishment of 'Frederick's Valley' government station at Chinaman's Bend in the 1820s, disbanded early in the 1830s;*

2. *The establishment in the 1830s and 1840s of a number of large land grants along Summer Hill Creek from Lucknow north to the present town;* (*Summer Hill and Frederick's Valley are interchangeable names for the same creek).*

3. *The creation of a small township at Shadforth (known originally as 'Frederick's Valley') in the 1840s* (Hughes Trueman Ludlow 1986:19).

Only one of these early phases of settlement succeeded. The large land grants along Summer Hill Creek were ultimately consolidated into permanent estates that lasted well into the twentieth century and remain in some form or another today (Hughes Trueman Ludlow 1986:21-22, 25).

Orange was built on a Village Reservation marked out in 1828-1829, but remained unoccupied until the mid-1840s. During the 1830s this reservation was surrounded by substantial land grants which developed into permanent estates. The encroachment of these landholders on the perimeter of the reserve, the steadily increasing local population, and the development of the nucleus of a village in the area led surveyor Davidson to urge for the creation of the township of Orange in 1846. By the middle of the decade it was claimed that there were round 1400-1600 people within 45 miles of the Village Reservation. The Village of Orange was proclaimed on the 18th of November 1846 (Hughes Trueman Ludlow 1986:25-27).

Even though the local residents had argued for the creation of the township of Orange there was no immediate rush to take up the newly opened allotments. This reticence can partly be explained by the lack of reliable water at the site, as Blackman's Swamp Creek would dry up during the summer. Consequently, by 1851 there were only seven allotments in the square mile reserve with houses on them. Although the town was sparsely settled it had acquired several civic amenities in 1848. These comprised a police station and a store which was attached to Mills' Hotel; and in 1849 a court of petty sessions, another store, a Post Office, and a Methodist Chapel. This slow and steady growth had been fuelled by extensive sheep and cattle grazing to the north and east of the township and increasing wheat farming in the general area (Hughes Trueman Ludlow 1986:27-29).

The gold rush at Ophir, located about 30 km north of Orange, in May 1851 had a major impact on settlement in the Central Tablelands. At the height of the rush the fledgling township of Orange was largely depopulated, however, the mass migration to the area ultimately served to consolidate the settlement (Hughes Trueman Ludlow 1986:29).

The township of Orange was incorporated as a municipality in 1860. In 1864 the population rose to over 1,000 which enabled the town to become a borough (Hughes Trueman Ludlow 1986:30-31).

During the mid 1860s Orange benefited greatly from the discovery of gold at Lucknow to the southeast of the township (Heritage Office and DUAP 1996:93). For example, around £250,000 was deposited in the banks in Orange between 1862 and 1865. This influx of wealth, a growing population, and the expansion of the wheat industry led Orange to become a genuine commercial centre. Orange developed steadily during the rest of the 1860s and early 1870s with a population of 1,456 by 1871 (Hughes Trueman Ludlow 1986:31-32).

The next commercial expansion of Orange resulted from its connection to the Main Western Railway in 1877 which enabled rapid communications with Sydney and the coastal market. At this time most of the town's water supply was drawn from private wells. A government engineer recommended the construction of a reservoir and a piped water system for the town, but it was not until 1890 that this occurred (Hughes Trueman Ludlow 1986).

By the late 1880s it had become necessary to extend the township beyond its original square mile extent. In 1888 seventy four lots were put up for auction to the north of the township. In the same year a new borough, East Orange, also one square mile in extent, was created to the east of the original township. From this point until 1912 the town of Orange consisted of two different municipalities (Hughes Trueman Ludlow 1986).

The general prosperity of Orange and its diverse economic base enabled it to survive the collapse of the Lucknow mines between 1887 and 1890, the banking collapse of 1893, and the following depression. Orange's prosperity led it to be seriously considered as the Federal Capital in the early

20th century but despite the failure of its claim the town continued to grow up until the First World War. By this time the population of the town had reached 8,000 (Hughes Trueman Ludlow 1986:39).

The Great War did not especially disadvantage the town and Orange continued to expand and prosper after 1918 up until the 1930s depression. By the end of the 1930s the town had a population of over 11,000 (Hughes Trueman Ludlow 1986:39-40).

The growth of the town and its general prosperity is largely due to its strong economy which had been supported by a number of different industries over its history (Heritage Office and DUAP 1996:95).

6.4 Ophir

Ophir, located about 30 km northeast of Orange, is the famous location of the first gold discovery in Australia in 1851 by Edward Hargraves (Blainey 1981:13) (Figure 6.1). His discovery of gold along Lewis Ponds Creek, and his subsequent publicity of his discovery in the surrounding area, led to a massive gold rush in May of that year which emptied all the local towns. This rush caught the Colonial Government completely by surprise and they soon realised that they lacked the resources to forcibly stop the miners from digging on Crown land. Therefore, in order to control the diggings the Government introducing a licensing system where each miner had to purchase a licence to dig on Crown Land.

The licensing system created to control the Ophir diggings was the precursor to the miners' right which was used at all the subsequent gold rushes in the colonies (Blainey 1981).

After the initial rush to Ophir in May 1851 the population steadily rose at the settlement over the following months. By early June there was estimated to be over 1,000 men at the diggings. However, the coming winter and intolerable conditions in the field discouraged many miners, and the population began to decrease (Bartlett 1999:21).

Ultimately, the rush at Ophir proved to be short-lived, as all the easily won alluvial gold was soon exhausted. It was estimated that by the end of July, 1851, there were only 200 hundred miners left on the field, as many had moved to the new rush on the Turon River (Blainey 1981).

Access to the Ophir goldfields from Orange was via 'a tolerable bridle road' through John A. Templar's estate 'Narrambla' (CSU n.d.). This track appears to have been used until 1881 when a new road was surveyed (Orange Memorial Heritage Sheet). A map of the Ophir Goldfields produced in 1851 records a small number of properties in the surrounding area.

Following the failure of the rush at Ophir the field appears to have settled down into a poor man's or subsistence diggings. For instance, between 1852 and 1855 Gold Commissioner Green observed the population fluctuating between 50 and 200 miners (Bartlett 1999:35).

In 1855, the settlement consisted of a Church of England, a denominational school, two public houses, and assumedly a police barracks (Bartlett 1999:35). By the end of 1856 the field appears to have been mostly deserted due to flooding of the creeks and the attraction of other fields (Bartlett 1999:35). However, in 1858 there appears to have been a brief resurgence of the field associated with a new discovery near the old settlement of Newtown which brought about 150 people back to the field (Bartlett 1999:36). This new wave of alluvial mining appears to have continued into the early 1860s (Bartlett 1999:36). Consequently, by 1866 the population at Ophir is estimated at around 150 Europeans and 200 Chinese (Bartlett 1999:38).

While there were some Chinese miners at Ophir during the gold rush period, the population appears to have consolidated in the early 1860s after the riots at Lambing Flat. The Chinese Camp at Ophir was located below Murray's Hill on the flats near the creek. The Chinese population fluctuated with less than 20 miners recorded at Ophir in the 1890s, however, Chinese were recorded on the field up until the early decades of the 20th century (Bartlett 1999).

A town was laid out on the Ophir goldfield in June 1851 but only three blocks were sold by early 1852. The township itself supported a few stores and hotels, however, by 1860 there appears to

have only been one public house left on the field. From this time until the turn of the century the field only supported one, or occasionally two, hotels. The small number of hotels at the field over this time is clear evidence of a small population, which in 1889 was estimated as being only 50 (Bartlett 1999).

Mining appeared to be somewhat seasonal in this area, with the wheat harvest taking precedence over mining interests (Osborne 1975:17).

6.5 The Study Area

From north to south, the proposed pipeline passes through the parishes of Forbes, Lewis, March, Clinton and Orange. As illustrated on Figure 6.1, the northern extent of the pipeline is adjacent to the Margaret River Gold Field which was declared in 1865. Closer to Orange, the pipeline crosses The El Dorado Gold Field and through a section of Gold Lease claimed prior to 1880.

The study area to the northeast of Orange was dominated by pastoralism and mining in contrast to the wheat and fruit industries that thrived to the south and west of the town. Settlement was sparse with small clusters of occupation located in areas such as Eldorado Gully and Gum Creek.

At Eldorado Gully, a provisional school was opened from January 1897 to October 1910. During the 1880s, a provisional school required that there be a minimum number of twelve children expected to attend (Fletcher and Burnswoods, 1983:17).

Just north of Fourth Crossing at Kittys Creek (formerly Gum Creek), land was reserved for a Public School that was never constructed (Fletcher and Burnswoods 1983). There is a modern settlement around the Third Crossing of Summer Hill Creek where a Public School was constructed in the period post-1983.

6.5.1 Mining (Parishes of Orange and Clinton)

Located along the Ophir Road north of Orange are two areas of sustained mining dating to the late 19th Century. The first is on the Rosedale Estate where there was a small rush associated with quartz mining around 1899. This rush led to the establishment of several companies who continued to work in the area until 1905/6 (Osborne 1975). The location of tunnels and costeans associated with these works are unknown.

The second area is El Dorado Gully located on Summer Hill Creek about 20 km north of Orange. Alluvial gold mining was first reported in 1888 and in 1894 thirty miners were working in the area (Osborne 1975). This mining appears to have supported a small mining settlement including a provisional school around the turn of the 20th century. The area is now part of Mullion Range State Conservation Area and includes numerous mine shafts, two water races and associated ruins (NSW NPWS 2010).

6.5.2 Pastoralism (North of Summer Hill Creek)

The proposed pipeline to the north of Summer Hill Creek traverses an area devoted pastoralism. The first land claim belongs to Charles Forbes who held a portion as early as the 1850s. However, after the Robertson Land Acts came into effect in the early 1860s it appears that several different pastoralists began to jostle for the best land in the region. Over time major estates or pastoral properties were developed by the most enterprising or successful pastoralists. Generally, this section of the study area is dominated by pastoral landholdings of the wealthy Irish-Catholic James Dalton. Around his holdings some other small pastoral properties were held by John Tom Lane, George de vial Pilcher, Michael Carty Junior, and Carlo Torcetti/Bernard Ostini.

On the 1884 Parish Map of County Lewis demonstrates the level of competition for the best land with pastoralists such as James Dalton, John T. Lane, Thomas Flood, and Patrick Connelly all selecting land along major creek lines. Only one of these men appear to have an estate in the region: John Tom Lane appears to reside on Portion 11 ‘The Look Out”. On the 1901 Parish Map these men are still listed as owning property along the road, but James Dalton has brought out most of the property of Patrick Connelly.

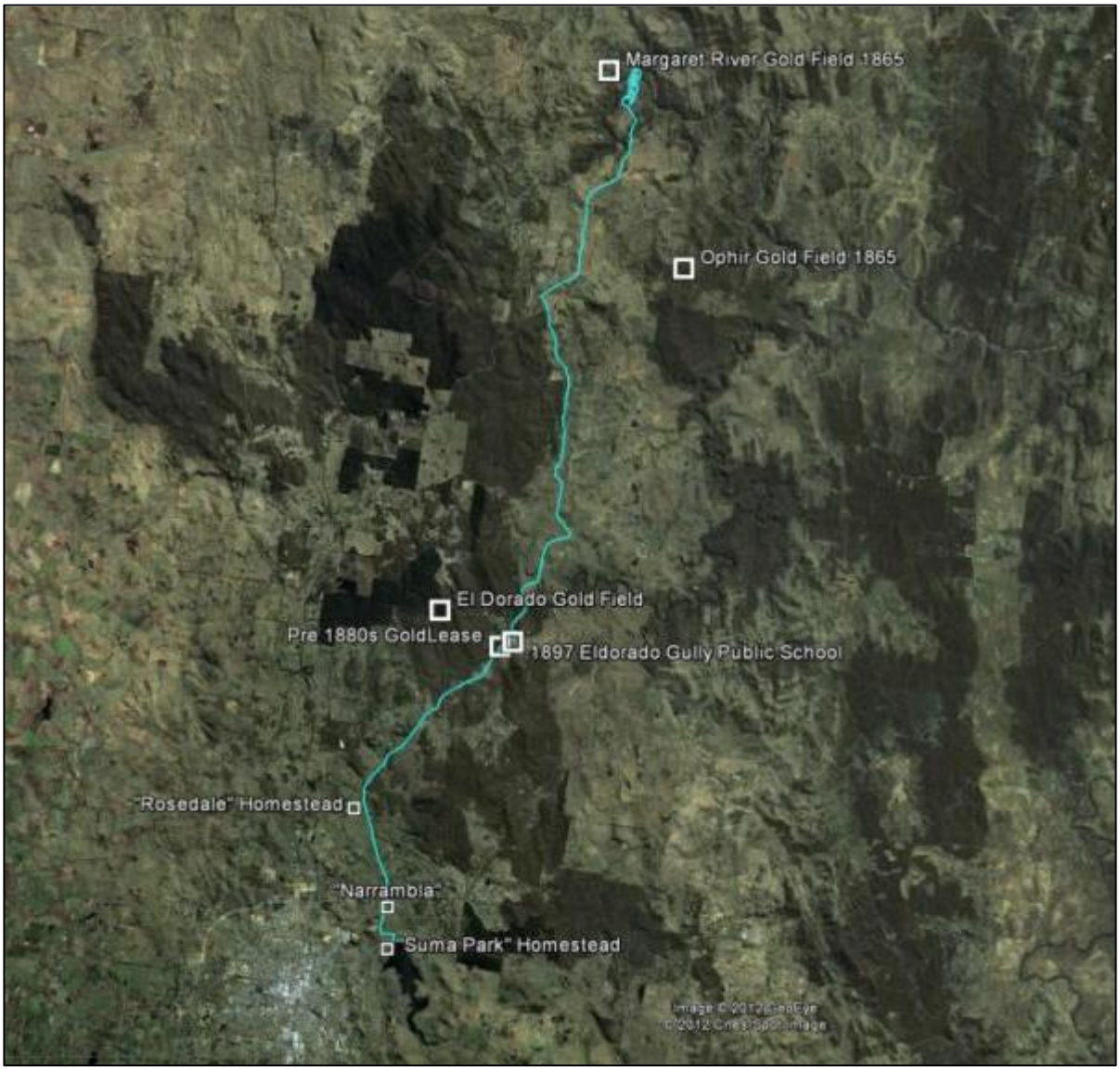

Figure 6.1 Location of historic features in relation to proposed pipeline (blue line) and alternative routes (green and blue lines) (Base map: Google Earth Pro).

To the north of County Lewis, the 1884 Parish Map of County Forbes shows that James Dalton is the major pastoralist in the area. Other pastoralists include Charles Forbes who appears to hold an estate on the intersection of Lookout Road and Long Point Road (Portion 18), George de vial Pilcher, Michael Carty Junior, and Carlo Torcetti. Similarly to the Parish of Lewis, in this Parish James Dalton (and later the Dalton Estate Limited) begins to buy out some of the smaller landholders over time. Also by 1933 a Bernarde Ostini had bought out Carlo Torcetti, however the other pastoralists appear to hold onto their land.

John T. Lane who holds some of the allotments around the Ophir Road and Lookout Road intersection on the 1884 Parish of Lewis Map may be of Cornish Heritage. He also appears to be the Mining Warden during the early 1880s.

6.6 Previous Cultural Heritage Studies

Two heritage studies are relevant to this project: the Orange Local Government Area (LGA) Heritage Study and the Cabonne LGA Heritage Study. In relation to the current study area, the Orange LGA covers the southern portion of the proposed pipeline from Suma Park Reservoir to the northern side of the Rosedale property near the third crossing of Summer Hill Creek. The Cabonne LGA covers the rest of the pipeline.

In 1984 the Orange City Council commissioned a heritage study for its whole City area with three main aims:

1. To analyse the history of the City of Orange

2. To identify and analyse its environmental heritage: and

3. To make recommendations for its conservation and management (Hughes Trueman Ludlow 1986:166)

The Orange Heritage Study recorded 659 heritage items (Hughes Trueman Ludlow 1986). In 2003 the Cabonne Shire Council commissioned a Heritage Study on its Local Government Area. This study was reviewed in 2010 by B. Hickson.

No archaeological study has been undertaken of the township of Orange or its immediate surrounds.

6.7 Heritage Listed Items

Three heritage listed sites were located near to the project pipeline. Based on available mapping it appears that two of these sites may be impacted by the proposed Macquarie River to Orange pipeline. These sites comprise the curtilages associated with "Narrambla" and "Rosedale" identified on the Orange LEP (Figure 6.2).

Table 6.1 Heritage-listed historical sites

Site	Description	Date	Address	LGA	Heritage Study Reference	Signif-icance
"Narrambla"	Templar's Mill ruins and Banjo Paterson memorial	1840s+	Ophir Road, Orange, NSW	Orange	L7	State
"Rosedale"	Homestead	1878	Ophir Road, Orange, NSW	Orange	M5	State
"Suma Park"	Homestead	1905-1915	Ophir Road, Orange, NSW	Orange	M13	Local

'Narrambla'

This listing includes Templar's Mill and a memorial to the birthplace of Banjo Paterson. This estate was originally part of the 2,833 acres of land granted to Simeon Lord in the 1830s to the north and northeast of the Village Reserve that became the township of Orange (portions 54 and 55, Country of Wellington). Lord never resided on his land but did lease some parts of it and sub-divided other parts for sale.

After Lord died in 1840 the land was further sub-divided by his trustees for sale. One of the recipients of this sub-divided land was John Arthur Templar who developed the estate of 'Narrambla' during the 1840s. He appears to have inherited a convict-powered flour mill on his land which he converted first to Bullock-drive and then to steam-power in 184. By the time the mill was demolished during the 1960s it was three stories high. Today the site of the mill is marked by a scatter of locally made bricks and a deep pit which assumedly corresponded to the location of the chimney (Hughes Trueman Ludlow 1986:27).

There is some confusion about the location of the original homestead on the 'Narrambla' estate as it appears to have been demolished sometime in the recent past (Hughes Trueman Ludlow 1986:27). Presumably, the homestead that bears the name today was built after the demolition of the original homestead.

There may be ruins of an early farmhouse associated with that of the flour mill dating to the 1840s (Hughes Trueman Ludlow 1986:88). The ruins appear to be located on the site of the current memorial.

The original track from Orange to the Ophir Goldrush may be still evident on the 'Narrambla' property.

This site is related to the theme of the Township of Orange Before 1860 in the Heritage Study (Hughes Trueman Ludlow 1986:66).

The estate of "Narrambla" is recorded as the birthplace of Andrew Barton "Banjo" Paterson (1864-1941) a well-known Australian poet and ballad writer who also worked as a solicitor, journalist, editor, vet (honorary), war correspondent, broadcaster, and soldier during his lifetime (ANU 1988). Paterson was born on the 17 February 1864 at the Narrambla Homestead which was at that time the home of John Templar. He was the first of seven children of Andrew Bogle Paterson (d.1889) and Rose Isabella nee Barton. Andrew Paterson Senior had migrated to NSW around 1850 from lowland Scotland, assumedly drawn by the gold rushes around this time. Rose was the native born daughter of Robert Barton of Boree Nyrang station, near Orange.

Banjo's connection with "Narrambla" appears to be limited to the time of his birth as his mother was staying with her sister at the property. There is no direct historical evidence of Banjo visiting the property again later in his life.

The Banjo Paterson memorial at this site comprises a bust, obelisk memorial, picnic area and parkland.

"Rosedale"

This listing is a mid-Victorian homestead dating between 1870-1890 on the Orange LEP Heritage Register and the National Trust of Australia (NSW) Register. It was constructed in 1878 of 'brick, stucco, cast iron, galvanised iron, slab' (Hughes Trueman Ludlow 1986:112).

A feature of this estate is a number of tall poplars and willows which may date back to the 1870s or 1880s (Hughes Trueman Ludlow 1986:120).

This homestead is linked to the theme of The Rural Hinterland in the Heritage Study (Hughes Trueman Ludlow 1986:66).

As discussed above, a number of companies had gold mining leases on "Rosedale" estate from 1899 to 1905/06 (Osborne 1975).

The Rosedale homestead and parkland remains at this site.

"Suma Park"

This listing is an Edwardian/Queen Anne homestead dating to between 1905 and 1915. It is included on the Orange LEP Heritage Register and the National Trust of Australia (NSW) Register (Hughes Trueman Ludlow 1986:107).

The structural elements of the building are include brick, tile and Colorbond, cement render, timber columns, bluestone, pebble dash, corrugated iron.

This homestead is linked to the theme of Urban & Suburban Development in the Heritage Study (Hughes Trueman Ludlow 1986:66). The Suma Park homestead and parkland remain at this site.

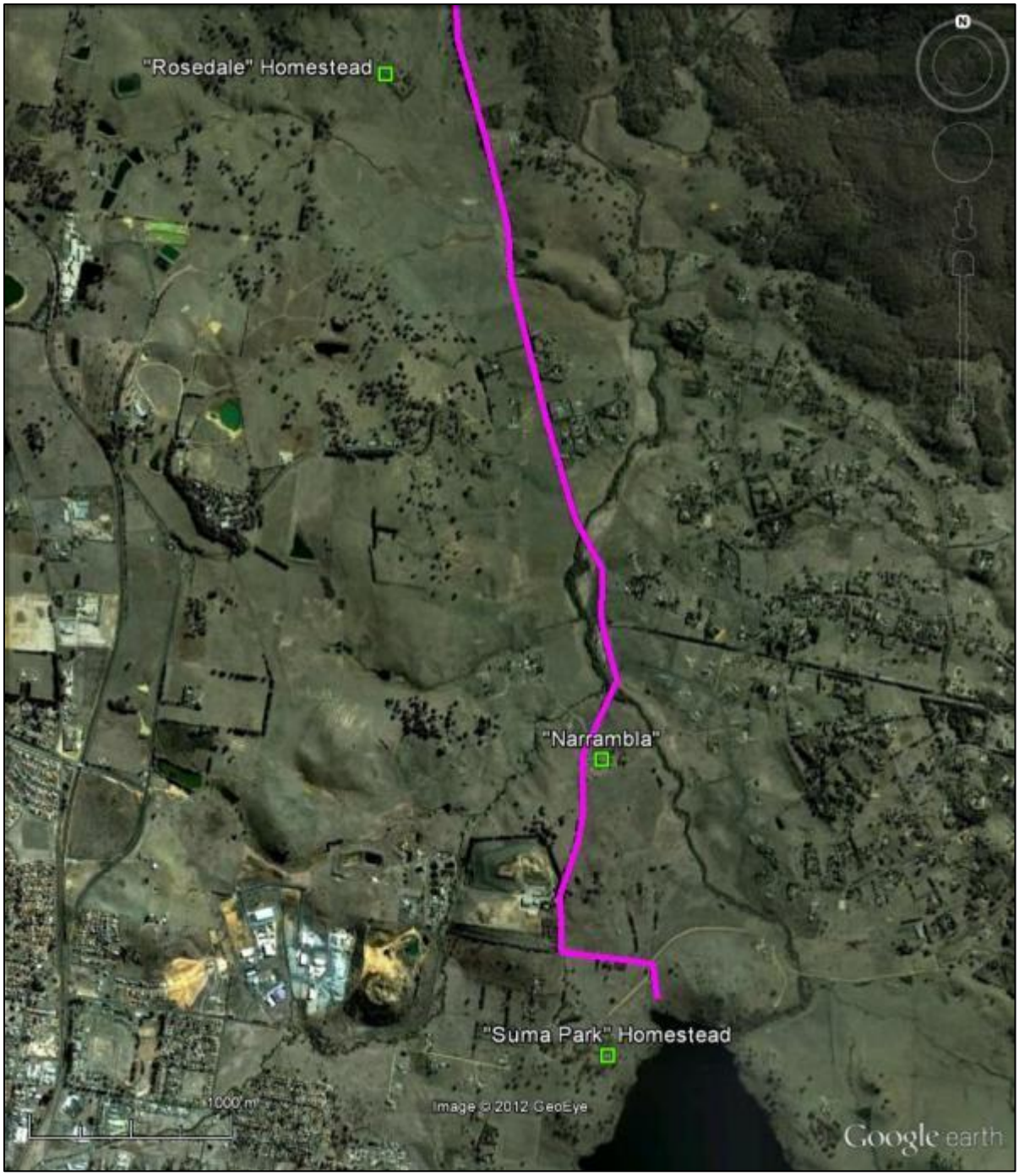

Figure 6.2 Location of Heritage listed items in relation to proposed pipeline (pink line) (Base map: Google Earth Pro).

6.8 Predictive Historical Archaeology Statement

Historic sites and features of heritage significance that may occur within the study area include:

- Old fence lines, such as post and rail fencing; these may occur along road easement boundaries and farmlands.

- Indications of field systems, such as drainage channels and ridge and furrow ploughlands; these are likely to survive in low lying agricultural ground, especially in areas that are now used for grazing, rather than cropping.

- Traces of agricultural and industrial processing or extractive sites, such as dairies, factories, and quarries; these may be found throughout agricultural lands on valley floors and adjacent low ranges;

- Archaeological sites, such as the occupation remains of former dwellings including homesteads, houses and huts; these will be distributed in close association with land settlement patterns, and correlated with favourable agricultural lands, trading nodes and transport corridors;

- Nineteenth-century structures, such as farm dwellings, outbuildings, selector's and timber-getters huts; these may survive as standing buildings, ruins or archaeological deposits and are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes;

- Standing buildings and structures; these will be focused in the town and along the early centres and corridors of occupation, industry, travel and transport;

- Sites associated with early roads; these will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points;

- Transport and access routes, such as bridle paths, stock routes, and roads of varying forms and ages; these may survive as abandoned remnants adjacent to modern transport routes, or as alignments now followed by more modern or upgraded road and track infrastructure; and

- Former mining sites and associated infrastructure; such as mine shafts, alluvial workings, water races, dams and machinery; these may survive in areas historically associated with mining.

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

7. RESULTS

7.1 Summary

Aboriginal Heritage

- Two previously recorded Aboriginal sites are listed on the OEH AHIMS within the pipeline corridor, Oaky Creek 1 and Oaky Creek 2. Both of these sites were re-found during the current study.

- A further seven sites are listed on the AHIMS register within one kilometre of the pipeline corridor. These are sites 44-2-0077, 0078, 0079, 0155, 0126, 0127 and 0128. Four of these sites are open artefact sites, found in close proximity to creeks or rivers and three are stone quarry sites.

- Seventeen previously unrecorded Aboriginal sites (MPA1-17) were identified within or in close association with the construction corridor during the field survey for this project. Sites comprised:

  - three artefact scatters (MPA10, MPA11 and MPA13);

  - seven artefact scatters with associated PAD (MPA1, MPA3, MPA6, MPA8, MPA9, MPA14 and MPA16);

  - four isolated finds (MPA2, MPA4, MPA7 and MPA17);

  - two isolated finds with associated PAD (MPA12 and MPA15) ;and

  - one possible scarred tree (MPA5).

- Five areas of potential archaeological sensitivity (PASA1-5) were identified recorded within or in close association with the construction corridor during the field survey for this project.

Site and PASA locations are shown on Figure 7.39.

Historical Heritage

- The proposed Macquarie River to Orange Pipeline construction corridor intersects the curtilage of two items that are currently listed on statutory registers ("Rosedale" homestead and Templar's Mill and Banjo Paterson memorial at "Narrambla").

- Five Historic (MPH1, MPH2, MPH3/4, MPH5 and MPH6) sites were identified during the field survey. These comprise three sites related to mining (MPH1, MPH2 and MPH3/4), a 20th century structure (MPH5) and an old alignment of Ophir Road (MPH6).

Site locations are shown on Figure 7.40.

7.2 Aboriginal Sites and PADs

Oakey Creek 1 (AHIMS No. 44-2-0076)

WGS84 705650.6333813 GDA

This site was originally recorded in 1982 by Cubis as an open artefact scatter measuring approximately 60 x 80 m and comprising approximately 400 artefacts. This site was originally recorded as a 'contact' archaeological site that included both flaked stone and glass tools. Cubis recorded 'formal' implement types including Bondi points.

One chert flake was identified during the 2011 survey (Figure 7.1). This artefact was located on a low gradient spur crest bordered by a drainage line to the north that feeds into Oakey Creek.

The site is partially located on an unsealed road that has cuts through it and as a consequence has been extensively damaged by road construction and use. Exposure incidence was 21-30% with 81-90% visibility. The soil is pale silty loam, 30-50 cm deep.

There is moderate potential for this site to be associated with subsurface archaeological deposits and for these deposits to be *in situ.*

This site is part of a broader PASA (PASA5) which runs across low gradient landforms bordering Oaky Creek (refer Section 7.3), and falls within the proposed pipeline corridor (Figure 7.40).

Artefact Description

- white chert flake 22 x 18 x 5 mm

Figure 7.1 Oaky Creek 1
looking southeast

Oakey Creek 2 (AHIMS No. 44-2-0075)

WGS84 705625.6333616 GDA

This site was originally recorded in 1982 (Cubis) as an open artefact scatter approximately 19 x 21 m, comprising approximately 100 artefacts, with all excepting one core being light blue chert. The site was recorded as adjacent to a deep and fast eroding gully, within 400 m of a permanent water source (Oaky Creek).

During the 2011 survey this site was re-found and identified as a scatter of at least eight artefacts eroding out on low gradient basal slopes with westerly aspect (Figures 7.2 & 7.3). This site has been impacted by erosion.

Exposure incidence was 51-60% over an area of 20 x 5 0m, with 81-90% visibility.

There is high potential for this site to be larger and to be associated with subsurface archaeological deposits. There is moderate potential for these deposits to be *in situ.*

This site is part of a broader PASA (PASA5) which runs across low gradient landforms bordering Oaky Creek (refer Section 7.3.1) and falls within the proposed pipeline corridor.

Artefact Descriptions

- milky white quartz flake, 32 x 21 x 7 mm
- black fine grained volcanic flake, 30 x 18 x 8 mm
- grey fine grained volcanic flake, 22 x 18 x 5 mm

- grey fine grained volcanic flake, 33 x 21 x 8 mm
- milky white quartz flake, 30 x 40 x 11 mm
- grey fine grained volcanic core, 21 x 55 x 2 mm
- grey fine grained volcanic flake, 32 x 25 x 10 mm
- grey fine grained volcanic flaked piece, 40 x 27 x 10 mm

Figure 7.2 Oaky Creek 2
looking north

Figure 7.3 Oaky Creek 2
looking east

MPA1 – Artefact Scatter and associated PAD

GPS Reference: 699166.6317107 (GDA)

MPA1 and the associated PAD are located on a low gradient terminal spur crest overlooking a drainage line and to the southwest of Summer Hill Creek.

The identified PAD covers an area approximately 70 x 35 m.

This artefact scatter comprises four stone artefacts identified across an area 20 x 10 m.

Disturbance to the site includes sheet erosion, fence construction, vegetation clearance and use for grazing purposes.

Exposure incidence across the site was approximately 20-30%, with visibility within these exposures approximately 50-60%. Artefacts at this site were recorded within an area of denuded ground adjacent to the fence line where visibility was greater (Figures 7.4 and 7.5).

There is moderate potential for artefacts to occur across this spur crest. There is moderate potential for subsurface artefacts to be associated with this site; it is predicted that the areal incidence of artefacts will be low to moderate. The potential for *in situ* material is assessed to be low.

The artefact scatter and associated PAD at MPA1 fall within, and extends to the north of, the proposed pipeline corridor.

Artefact Descriptions

- grey fine grained volcanic flake, 25 x 15 x 8 mm
- white quartz medial flake, 12 x 12 x 6 mm
- grey fine grained volcanic proximal flake, 20 x 17 x 6 mm
- grey fine grained volcanic flake, 24 x 25 x 5 mm

Figure 7.4 MPA1
Looking south

Figure 7.5 MPA1
Looking west

MPA2 - Isolated Find

GPS Reference 699066.6322931 (GDA)

MPA2 is located adjacent to Ophir Road on a spur crest with a northerly aspect overlooking Summer Hill Creek.

The site comprises an isolated grey fine grained volcanic core, 27 x 40 x 22 mm. The artefact was located within an area of surface erosion 3 x 2 m (Figures 7.6 and 7.7).

Disturbance to this site includes sheet erosion, vegetation clearance, fence and nearby road construction, and use for grazing purposes.

Exposure incidence across the site was approximately 10-20% and visibility within these exposures was approximately 70-80%.

The site has low potential for subsurface Aboriginal artefacts.

The site is located within the proposed pipeline corridor.

Figure 7.6 MPA2
Looking southwest

Figure 7.7 MPA2
Looking northeast

MPA3 - Artefact Scatter and associated PAD

GPS Reference 701184.6325155 (GDA)

MPA3 and PAD is located a basal toe slope with a northerly aspect overlooking an unnamed tributary of Summer Hill Creek.

The artefact scatter comprises 10 stone artefacts identified across an area 2 x 20 m. The PAD covers an area approximately 200 x 60 m.

Disturbance to the site includes Telstra infrastructure construction and associated trenching, road and fence construction, and vegetation clearance.

Exposure incidence across this site was approximately 60-70%, with visibility within these exposures approximately 80-90%. Artefacts at this site were recorded within areas of exposure associated with the Telstra infrastructure trench (Figures 7.8 and 7.9).

There is high potential for additional artefacts to occur particularly north towards the lower sections of the toe slope towards the drainage line. There is high potential for subsurface artefacts to be associated with this site, and it is predicted that the areal incidence of artefacts will be moderate. The potential for *in situ* material is assessed to be very low

The artefact scatter and associated PAD at MPA3 is within, and extends to the east and west of, the proposed pipeline corridor.

Artefact Descriptions

- grey rhyolite flake, 36 x 40 x 8 mm
- milky white quartz flake, 14 x 15 x 5 mm
- milky white quartz flake, 24 x 20 x 3 mm
- milky white quartz flake, 14 x 12 x 2mm
- milky white quartz core, 31 x 36 x 20 mm
- milky white quartz flake, 31 x 21 x 6 mm
- milky white quartz longitudinal flake, 21 x 13 x 5 mm
- milky white quartz proximal flake, 21 x 32 x 6 mm
- milky white quartz flake, 25 x 18 x 6 mm
- grey rhyolite flake, 60 x 38 x 7 mm

Figure 7.8 MPA3
Looking south

Figure 7.9 MPA3
Looking north

MPA4 - Isolated Find

GPS Reference 700218.6324125 (GDA)

MPA4 is located within a small depression on undulating upper slopes of a spur crest with a western aspect, one kilometre east of Summer Hill Creek.

The site comprises an isolated grey fine-grained volcanic broken flake, proximal portion, 17 x43 x 8 mm.

Disturbance to this site includes vegetation clearance, fence construction and use for pastoral and grazing purposes.

Exposure incidence across the site was approximately 60-70%, and visibility within these exposures was approximately 70-80%. The artefact was located within an area of surface erosion adjacent to the fenceline, possibly exposed as a result of grazing (Figure 7.10).

This site has low potential for subsurface Aboriginal artefacts.

The site is located within the pipeline corridor.

Figure 7.10 MPA4
looking south

MPA5 – Scarred Tree

GPS Reference 704139.6328183 (GDA)

MPA5 is located on a spur crest/upper slope interface with a northerly aspect overlooking Summer Hill Creek.

This site comprises a brittle gum with a probable cultural scar (Figure 7.11).

The origin of this scar is unclear. It is located within an area where there is evidence of European mining activity, and could therefore be the result of indigenous or non-indigenous action.

This site represents a probable Aboriginal scar (Refer Appendix A1).

The site is located approximately 12 metres to the west of the proposed pipeline corridor.

Table 7.1 MPA5 Tree Characteristics

Species: Brittle Gum	
Estimated height (m):	10.0
Girth @ 1.5 m high (m):	1.90
Condition:	Alive
Status:	Standing
Missing crown:	no
Major limbs missing:	no
Stock damage:	no
Die back:	no
Insect attack:	yes
Natural scars:	no
Hollow:	yes
Unstable:	no
Length excl regrowth:	0.80
Width excl regrowth:	0.23
Regrowth (max depth):	0.10
Regrowth (max width):	0.10
Aspect:	?
Base of scar:	0.0
Base of regrowth:	0.0
Shape of scar:	?
Scar surface burnt:	yes
Scar surf. weathered:	yes
Scar surface missing:	yes
Core wood missing:	yes
Borer holes/tracks:	no
Termite activity:	yes
Axe/hatchet marks:	no
No. of marks:	1
Type of axe/hatchet:	?
Toe holds:	no
No. of toe holds:	1
Carving Type:	?
Condition:	good
Tree is endemic:	yes
Tree > 100 yrs old:	no
Regrowth is old enough:	no
Scar ends above ground:	yes
edges are parallel:	yes
Edges are even & regular	yes
Shape uniform & symmetrical	yes
Aboriginal origin:	Possible
Other origin?	Other European
Other Euro. origin:	mining blaze?

Figure 7.11 MPA5
looking west

MPA6 - Artefact Scatter and associated PAD

GPS Reference 703778.6327215 (GDA)

MPA6 and PAD is located on a low gradient basal slope/creek margin associated with Eldorado Gully and an unnamed tributary of Summer Hill Creek.

The artefact scatter comprises ten stone artefacts identified over an area approximately 5 x 10 m.

The identified PAD covers an area approximately 180 x 30 m.

Disturbance to the site includes sheet erosion, vegetation clearance, fence construction, use for pastoral and grazing purposes and evidence of European discard including 19th century ceramic and glass fragments. Exposure incidence across this site was approximately 80-90%, and the visibility within these exposures was approximately 60-70%. Artefacts at this site were recorded within areas of sheet erosion adjacent to the fence line (Figures 7.12 and 7.13).

There is a high potential for additional artefacts to occur across the basal slope. The soil profile consists of dark brown silty sandy loam that appears to be at least 20 cm deep. There is a high potential for subsurface artefacts to be associated with this site, and areal incidence is predicted to be moderate.

The artefact scatter and associated PAD at MPA6 is within, and extends to the east and west of, the proposed corridor.

Artefact Descriptions

- grey rhyolite flake, 36 x 40 x 8 mm
- milky white quartz flake, 14 x 15 x 5 mm
- milky white quartz flake, 24 x 20 x 3 mm
- milky white quartz flake, 14 x 12 x 2mm
- milky white quartz core, 31 x 36 x 20 mm
- milky white quartz flake, 31 x 21 x 6 mm
- milky white quartz longitudinal flake, 21 x 13 x 5 mm
- milky white quartz proximal flake, 21 x 32 x 6 mm
- milky white quartz flake, 25 x 18 x 6 mm
- grey rhyolite flake, 60 x 38 x 7 mm

Figure 7.12 MPA6
facing south

Figure 7.13 MPA6
facing north

MPA7 - Isolated Find

GPS Reference 703127.6326698 (GDA)

MPA7 is located on a moderate gradient mid-slope with a westerly aspect overlooking Summer Hill Creek.

The site comprises an isolated grey fine grained volcanic flake, 29 x 21 x 6 mm.

Disturbance to this site is high with vegetation clearance and sheet and rill erosion. Exposure incidence across this site was approximately 80-90%, and visibility within these exposures was approximately 80-90%.

The artefact was located within an area of sheet erosion (Figure 7.14).

The site has low potential for subsurface Aboriginal artefacts. The site is located within the proposed pipeline corridor.

Figure 7.14 MPA7

MPA8 - Artefact Scatter and associated PAD

GPS Reference 702960.6326458 (GDA)

MPA8 and associated PAD is located on a low gradient spur crest and terminal spur crest with a northwesterly aspect overlooking Summer Hill Creek.

This artefact scatter comprises nine stone artefacts identified across an area 50 x 20 m. The area of identified PAD covers an area approximately 180 x 20 m.

Disturbance to the site includes sheet erosion and vegetation clearance. The exposure incidence across the site was approximately 60-70%, with visibility within these exposures approximately 70-80%. Artefacts at this site were recorded within an area of sheet erosion (Figures 7.15 and 7.16).

There is high potential for additional artefacts to be associated with this site and high potential for subsurface artefacts to be associated with this site. It is predicted that the areal incidence will be low to moderate. The potential for *in situ* material is assessed to be moderate to high.

The artefact scatter and associated PAD at MPA8 is within and extends to the east and west of the proposed corridor.

Artefact Descriptions

- grey fine grained volcanic flake, 21 x 14 x 3 mm
- grey fine grained volcanic flake, 24 x 25 x 6 mm
- grey fine grained volcanic broken flake, distal portion, 16 x 18 x 5 mm
- grey fine grained volcanic flake, 27 x 27 x 9 mm
- milky quartz flake, 14 x 16 x 4 mm
- grey fine grained volcanic flake, 20 x 28 x 5 mm
- grey fine grained volcanic flake, 44 x 42 x 8 mm
- grey fine grained volcanic flake, 25 x 44 x 10 mm
- milky quartz flake, 17 x 12 x 3 mm

Figure 7.15 MPA8
looking northeast

Figure 7.16 MPA8
looking southeast

MPA9 - Artefact Scatter and associated PAD

GPS Reference 702484.6325758 (GDA)

MPA9 and associated PAD are located on a low gradient mid slopes of a spur crest with a westerly aspect overlooking an unnamed tributary. Te artefact scatter comprises at least eleven stone artefacts and is continuous across an area approximately 10 x 150 m. Artefacts identified at this site are continuous along the property driveway exposure and continue through to the southern side of the creek (Figures 7.17 and 7.18).

Disturbance to the site includes construction of a driveway, which cuts into the ground surface approximately 10-20 cm, nearby dam construction and vegetation clearance. Exposure incidence across the site was approximately 80-90%, with visibility within these exposures approximately 80-90%.

There is high potential for additional artefacts to occur, particularly across lower sections of the site adjacent to the creek margins. There is high potential for subsurface artefacts to be associated with this site and it is predicted that the areal incidence of these artefacts will be moderate. The potential for *in situ* material is assessed to be moderate. The area of PAD identified covers an area approximately 130 x 110 m.

The artefact scatter and associated PAD are located approximately 40 m south of the proposed pipeline corridor.

Artefact Descriptions

- grey fine grained volcanic flaked piece, 52 x 42 x 12 mm
- grey fine grained volcanic blade flake, 32 x 18 x 4 mm
- grey fine grained volcanic broken flake, proximal portion, 22 x 30 x 9 mm
- milky quartz flaked piece, 31 x 21 x 15 mm
- grey rhyolite flake, 31 x 31 x 7 mm
- grey fine grained volcanic broken flake, proximal portion, 17 x 21 x 4 mm
- grey fine grained volcanic flake, 30 x 26 x 7 mm
- grey fine grained volcanic flake, 27 x 4 x 6 mm
- grey fine grained volcanic flake, 17 x 22 x 4 mm
- grey fine grained volcanic flake, 76 x 35 x 15 mm
- grey volcanic flake, 5 x 5 x 5 mm

Figure 7.17 MPA9 looking west

Figure 7.18 MPA9 looking south

MPA10 - Artefact Scatter

GPS Reference 707009.6342615 (GDA)

MPA10 is located on a low gradient spur crest. The artefact scatter comprises four stone artefacts identified across an area 40 x 10 m. Artefacts at this site were recorded within areas of sheet erosion (Figure 7.19 and 7.20).

Disturbance to the site includes road construction, vegetation clearance and sheet erosion. The exposure incidence across the site was approximately 30-40%, and visibility within these exposures was approximately 60-70%.

There is low potential for additional artefacts to be present across this site. The soil profile is skeletal and gravelly, with low potential for *in situ* artefacts to be associated with this site, and low potential for subsurface artefacts.

The artefact scatter MPA10 is located within the proposed pipeline corridor.

Artefact Descriptions:

- grey rhyolite flake, 28 x 19 x 6 mm
- grey fine grained volcanic flake, 55 x 21 x 8 mm
- grey porphyry flake, 40 x 34 x 20 mm
- grey fine grained volcanic flake, 20 x 11 x 3 mm

Figure 7.19 MPA10
looking southwest

Figure 7.20 MPA10
looking north

MPA11 - Artefact Scatter

GPS Reference 707375.6342773 (GDA)

MPA11 is located on a section of lower gradient mid to basal slopes with a northwesterly aspect, approximately 100 m south of an unnamed tributary of Boshes Creek. The artefact scatter comprises ten stone artefacts identified across an area 120 x 30 m. Artefacts at this site were recorded along the road cutting exposure (Figure 7.21).

Disturbance to the site includes road construction and associated spear drains, sheet and rill erosion, fence construction and vegetation clearance. The exposure incidence across the site was approximately 70-80%, with visibility within these exposures approximately 80-90%.

The site has moderate to high potential to contain more artefacts, however, it is considered that subsurface and *in situ* artefact deposits are likely to be located east of the fenceline and outside of the impact areas. Consequently, within the study area MPA11 is predicted to have low potential for *in situ* artefact and low potential for subsurface artefacts.

The artefact scatter MPA11 is within the proposed pipeline corridor.

Artefact Descriptions

- grey fine grained volcanic flake, 48 x 20 x 11 mm
- grey fine grained volcanic flaked piece, 60 x 45 x 23 mm
- grey fine grained volcanic flake, 40 x 41 x 11 mm
- grey fine grained volcanic flake, 35 x 55 x 12 mm
- grey fine grained volcanic flake, 33 x 49 x 14 mm
- grey fine grained volcanic flake, 45 x 29 x 17 mm
- grey fine grained volcanic flake, 95 x 25 x 24 mm
- grey fine grained volcanic flake, 9 x 15 x 4 mm
- grey fine grained volcanic flake, 30 x 25 x 10 mm
- grey fine grained volcanic flake, 42 x 40 x 9 mm

Figure 7.21 MPA11
looking south

MPA12 - Isolated Find with associated PAD

GPS Reference 708621.6346588 (GDA)

MPA12 and the associated PAD are located on a basal slope alluvial terrace adjacent to the Macquarie River. The site comprises an isolated milky quartz flake, 19 x 16 x 7 mm, identified in an area 2 x 3 m. Artefacts at this site were recorded mainly within the vehicle track exposure (Figures 7.22 and 7.23).

The soil profile consists of brown silty loam topsoil that appears to be at least 30-50 cm deep, and is part of an aggrading landform.

Disturbance to the site includes establishment of a vehicle track, vegetation clearance, use for grazing purposes and sheet erosion. The exposure incidence across the site was approximately 50-60%, and visibility within these exposures was approximately 60-70%.

There is high potential for additional artefacts to be associated with this site and high potential for subsurface artefacts to be associated with this site. There is moderate potential for these artefacts to be *in situ*.

The isolated artefact and associated PAD at MPA12 are located within and extends to the northeast and southwest of the proposed corridor.

Figure 7.22 MPA12
looking south

Figure 7.23 MPA12
looking east

MPA13 - Artefact Scatter

GPS Reference 707890.6343075 (GDA)

MPA13 is located on the mid slopes of a spur crest with a northwesterly aspect overlooking an unnamed tributary of Boshes Creek. The artefact scatter comprises three stone artefacts located across an area 40 x 20 m.

Disturbance to the site includes road cutting and associated earthworks, vegetation clearance, sheet erosion and use for pastoral and grazing purposes. Exposure incidence across the site was approximately 20-30%, and visibility within these exposures was approximately 50-60%. Artefacts were identified on higher ground in areas of sheet erosion (Figure 7.24).

There is moderate potential for additional artefacts to occur but due to the heavily disturbed nature of the site there is very low potential for subsurface or *in situ* artefacts to be present.

The artefact scatter at MPA13 is located approximately 40 m southeast of the proposed pipeline corridor.

Artefact Descriptions

- grey fine grained volcanic backed flake, 33 x 14 x 9 mm
- grey fine grained volcanic blade flake, 33 x 14 x 9 mm
- milky quartz flake, 23 x 20 x 3 mm

Figure 7.24 MPA13
looking north

MPA14 - Artefact Scatter with associated PAD

GPS Reference 707646.6334827 (GDA)

MPA14 and the associated PAD are located on low gradient basal slopes with a northerly aspect leading down to Oakey Creek.

This artefact scatter comprises six stone artefacts identified across an area 100 x 20 m.

Disturbance to this site includes road construction and associated earthworks, fence construction, vegetation and sheet erosion. Exposure incidence across the site was approximately 50-60%, and visibility within these exposures was approximately 80-90%.

Artefacts at this site were visible along the disturbed road verge (Figures 7.25 and 7.26).

There is moderate to high potential for additional artefacts to occur across the identified area. There is moderate to high potential for subsurface artefacts to be associated with this site and it is predicted that the areal incidence of artefacts would be low to moderate. The potential for *in situ* artefacts is low. The PAD covers an area approximately 100 x 30 m.

This site is part of a broader PASA (PASA5) which runs across low gradient landforms bordering Oaky Creek (refer Section 7.3)

The artefact scatter and associated PAD at MPA14 is within and extends to the west of the proposed pipeline corridor.

Artefact Descriptions

- grey volcanic flake, 32 x 38 x 7 mm
- grey volcanic flake, 34 x 31 x 11 mm
- grey volcanic flake, 42 x 49 x 13 mm
- grey volcanic flake, 33 x 14 x 9 mm
- black fine grained volcanic broken flake, proximal portion, 21 x 15 x 4 mm
- grey fine grained volcanic core, 35 x 23 x 13 mm

Figure 7.25 MPA14
looking north

Figure 7.26 MPA14
looking south-east

MPA15 - Isolated Find with associated PAD

GPS Reference 705663.6334630 (GDA)

MPA15 and associated PAD are located along a low gradient elevated spur crest with a westerly aspect overlooking Oakey Creek; it is bordered on its northern side by an ephemeral drainage line.

The site comprises an isolated black fine grained volcanic flakes piece, 20 x 28 x 8 mm. The area of identified PAD is approximately 20 x 3 m.

Disturbance to the site includes vehicle track establishment through the western end of the site, fence construction, vegetation clearance and use for pastoral and grazing purposes. The exposure incidence across the site was approximately 10-20%, and visibility within these exposures was approximately 70-80%.

Artefacts at this site were identified along the vehicle track exposure (Figures 7.27 and 7.28).

There is high potential for more artefacts to occur, particularly in the relatively undisturbed eastern portion of the site. There is moderate to high potential for subsurface artefacts to be associated with this site, and moderate potential for these artefacts to be *in situ*.

The soil profile is pale silty loam at least 20-80 cm deep.

This site is part of a broader PASA (PASA5) which runs across low gradient landforms bordering Oaky Creek (refer Section 7.3.1). The isolated artefact and associated PAD are within, and extend to the west of, the proposed pipeline corridor.

Figure 7.27 MPA15
looking east

Figure 7.28 MPA15
looking south-east

MPA16 - Artefact Scatter with associated PAD

GPS Reference 707982.6343575 GDA

MPA16 and the associated PAD are located on a low gradient spur crest overlooking a steep gully associated with Boshes Creek. The artefact scatter comprises five stone artefacts identified across an area 30 x 1 m. Artefacts at this site were recorded mainly along an erosion associated with a stock track (Figure 7.29).

Disturbance to the site includes surface erosion, vegetation clearance and use for pastoral and grazing purposes. The exposure incidence across the site was approximately 40-50%, and visibility within these exposures was approximately 60-70%.

There is a high potential for additional artefacts to occur. The soil profile is a brown loam that appears to be at least 20-30 cm deep. There is high potential for this site to have subsurface artefacts and moderate to high potential for artefacts to be *in situ*.

The artefact scatter and associated PAD at MPA16 are within, and extend to the east of, the proposed pipeline corridor.

Artefact Descriptions

- milky quartz backed flake, 17 x 11 x 6 mm
- milky quartz flake, 16 x 14 x 5 mm
- grey volcanic split pebble, 50 x 45 x 30 mm
- grey volcanic hammerstone, 95 x 65 x 40 mm
- milky quartz flake, 30 x 24 x 12 mm

Figure 7.29 MPA16
looking north

MPA17 - Isolated Find

GPS Reference 708354.6344683 (GDA)

MPA17 is located on a ridge crest approximately 850 m east of Boshes Creek. The site comprises an isolated find –a black, fine grained volcanic flake, 25 x 27 x 8 mm. The artefact was identified within an area of surface erosion (Figure 7.30).

Disturbance to this site includes sheet erosion and use for pastoral and grazing purposes. The exposure incidence across this site was approximately 30-40%, and visibility within these exposures was approximately 60-70%.

This site has low potential for subsurface Aboriginal artefacts. The site is located within the proposed pipeline easement.

Figure 7.30 MPA17
looking south

7.3 Potentially Archaeologically Sensitive Areas (PASA)

Ground surface visibility was found to be limited across much of the study area, due to dense pasture grass cover. The majority of ground surface exposures were found to occur within the easements of the existing highway and side roads, along cuttings and drains. Some exposures outside of road easements were afforded by creek banks and animal tracks.

Direct access to the whole of the easement was not available at the time of filed survey.

Due to the low level of visibility and access issues, it is unlikely that the recorded surface archaeology provides an accurate indication of the subsurface resource. For this reason, the whole study area was systematically assessed against the predictive site location criteria formulated in the predictive model presented in section 5.3.

PASA1

GPS Reference 698936.6139528 to 699000.6319300 (GDA)

This area is located adjacent to Ophir Road and consists of a relatively undisturbed spur crest. Visibility was <20%. There is moderate to high potential for the area to contain subsurface archaeological deposits and for these deposits to be in-situ.

PASA2

GPS Reference 698527.6321317 (GDA)

This area is a small crest adjacent to Ophir road located above drainage lines and swampy areas. Visibility was <20%. There is moderate to high potential for the area to contain subsurface archaeological deposits and for these deposits to be in-situ.

PASA3

GPS Reference 704660.6329273 to 704598.6329155 (GDA)

This area is located on low gradient basal slopes adjacent to t a creek line adjacent to Ophir Road. Visibility was <5%. There is moderate to high potential for the area to contain subsurface archaeological deposits and for these deposits to be in-situ. The PASA extends over an area of approximately 130 m along the pipeline route.

PASA4

GPS Reference 704660.6329273 to 704598.6329155 (GDA)

This area is located on low gradient basal slopes and crests leading to a creek line adjacent to Lookout Road. Visibility was <20%. There is moderate to high potential for the area to contain subsurface archaeological deposits and for these deposits to be in-situ. The PASA extends over an area of approximately 925 m along the pipeline route.

PASA5

GPS Reference 705620.6333597 to 705656.6336666 (GDA)

This area consists of a series of spurs leading to a creek line. Visibility was <20%. There is moderate to high potential for the area to contain subsurface archaeological deposits and for these deposits to be in-situ. The PASA extends over an area of approximately 3.2 km along the pipeline route.

7.4 Historical Sites

MPH1 – possible costean

GPS Reference 704157.6328206 (GDA)

This site comprises a rectilinear depression approximately .5 m by 2.5 m by .7 m deep (Figure 7.31). The feature may represent a costean (mining/exploratory technique). The feature is filled with water and may be deeper than estimated.

This recording is located about 250 m south of Fourth Crossing and may be associated with the El Dorado diggings which date to the late 19th and early 20th century. It is likely that this feature was used to test the extent of gold deposit in the area.

There is limited potential for subsurface archaeological deposits at the site.

This site is located adjacent to the easement for the proposed pipeline corridor.

Figure 7.31 View of MPH1 looking north.

MPH2 – Area of ground sluicing

GPS Reference 703135.6326688 (GDA)

This site consists of the remains of ground sluicing and associated features located about 150 m east of Spring Hill Creek and 2 km south of Fourth Crossing. The area is about 80 m by 200 m.

Features include water races, test shafts (costeans), paddocking and amorphous stone tailing mounds with a small section of possible herringbone style tailing mounds (Figures 7.32 and 7.33).

The recording at MPH2 is located within the general vicinity of the El Dorado gold diggings which date to the late 19th and early 20th centuries. Herringbone style tailing mounds are typically associated with Chinese miners (McGowan 2003).

There is limited potential for subsurface archaeological deposits at the site, however this site adds to the overall understanding of gold mining in the area.

The site falls within, and extends to the east of, the pipeline corridor.

Figure 7.32 View of water race associated with MPH2, looking northwest.

Figure 7.32 Example of stone tailing mounds associated with MPH2, looking west.

MPH3/MPH4 – Water Race

GPS Reference 708331.6344281 *to 708233.6344204 (GDA)*

This recording consists of two sections of water race that most likely form part of the same feature. The feature is a u-shaped channel located on the eastern side of Boshes Creek at the northern end of the study area. One section of the feature contains a u-shaped piece of timber which may have lined the raceway (Figures 7.34 and 7.35).

The northern extent of this feature is located about 2 km south of the Macquarie River and about 1 km southwest of the Margaret River Goldfield which dates to 1865.

There is limited potential for subsurface archaeological deposits at the site, however this feature adds to our overall understanding of gold mining in the area and may be associated with the Margaret River Goldfield.

The pipeline corridor cuts through two sections of this feature at site MPH3 and MPH4.

Figure 7.34 Looking south along a section of water race.

Figure 7.35 Section of water race with u-shaped timber.

MPH5 – 20th Century structure

GPS Reference 708311.6344521 (GDA)

This site records the remains of a rectilinear timber structure measuring about 1.3 m high x 2.1 m long x .7 m wide (Figure 7.36). The structure is built of timber logs with bullet head nails and wire loops to hold top rail in place. The bullet head nails date to the 20th century.

The function of this structure is unknown, however, it is likely to be associated with pastoral activities in the area.

There is limited potential for subsurface archaeological deposits to be present at the site.

This site is located approximately 5 m west of the pipeline corridor.

Figure 7.36 MPH5, looking west

MPH6 – road easement

GPS Reference 699558.6323461 (GDA)

This recording consists of an old alignment of the Ophir Road (Figures 7.37 and 7.38). The alignment is a cutting about 200 m long located on the east site of Ophir Road approximately nine km north of Orange.

This alignment may date to the original “bridle track” from Orange to the Ophir goldfields, however further research is required.

There is limited potential for subsurface archaeological deposits at this site. The site is located within the pipeline corridor.

Figure 7.37 Looking south along road easement on eastern side of Ophir Road.

Figure 7.38 Looking north along road easement on eastern side of Ophir Road.

7.5 Impacts to Previously Recorded Historical Sites

7.3.1.1 Rosedale Homestead

Rosedale homestead is located approximately 250 m west of the proposed pipeline easement (Figure 6.2), and will not be directly impacted by the proposed Macquarie River to Orange Pipeline Project.

7.3.1.2 Suma Park Homestead

Suma Park homestead is located approximately 500 m south of the proposed pipeline easement (Figure 6.2), and will not be directly impacted by the proposed Macquarie River to Orange Pipeline Project.

7.3.1.3 Banjo Paterson Memorial at Narrambla

The Banjo Paterson Memorial at Narrambla is located approximately 100 m west of the pipeline corridor (Figure 6.2), and should not be directly impacted by the proposed Macquarie River to Orange Pipeline Project.

7.6 Inventory of Site and PASA Locations

Table 7.1 Inventory of Site Locations

Site Number	Feature(s)	Location - *GDA*
Oakey Creek 1	Isolated Find with associated PAD	705650.6333813
Oakey Creek 1	Artefact Scatter with associated PAD	705625.6333616
MPA1	Artefact Scatter and associated PAD	699166.6317107
MPA2	Isolated Find	699066.6322931
MPA3	Artefact Scatter and associated PAD	701184.6325155
MPA4	Isolated Find	700218.6324125
MPA5	Scarred Tree	704139.6328183
MPA6	Artefact Scatter and associated PAD	703778.6327215
MPA7	Isolated Find	703127.6326698
MPA8	Artefact Scatter and associated PAD	702960.6326458
MPA9	Artefact Scatter and associated PAD	702484.6325758
MPA10	Artefact Scatter	707009.6342615
MPA11	Artefact Scatter	707375.6342773
MPA12	Isolated Find with associated PAD	708621.6346588
MPA13	Artefact Scatter	707890.6343075
MPA14	Artefact Scatter with associated PAD	707646.6334827
MPA15	Isolated Find with associated PAD	705663.6334630
MPA16	Artefact Scatter with associated PAD	707982.6343575
MPA17	Isolated Find	708354.6344683
PASA1	Potentially Archaeologically Sensitive Areas	698936.6139528 to 699000.6319300
PASA2	Potentially Archaeologically Sensitive Areas	698527.6321317
PASA3	Potentially Archaeologically Sensitive Areas	704660.6329273 to 704598.6329155
PASA4	Potentially Archaeologically Sensitive Areas	704660.6329273 to 704598.6329155
PASA5	Potentially Archaeologically Sensitive Areas	705620.6333597 to 705656.6336666
MPH1	Possible costean	704157.6328206
MPH2	Area of ground sluicing	703135.6326688
MPH3/4	Water race	708331.6344281 to 708233.6344204
MPH5	20th Century structure	708311.6344521
MPH6	Old Ophir Road alignment	699558.6323461

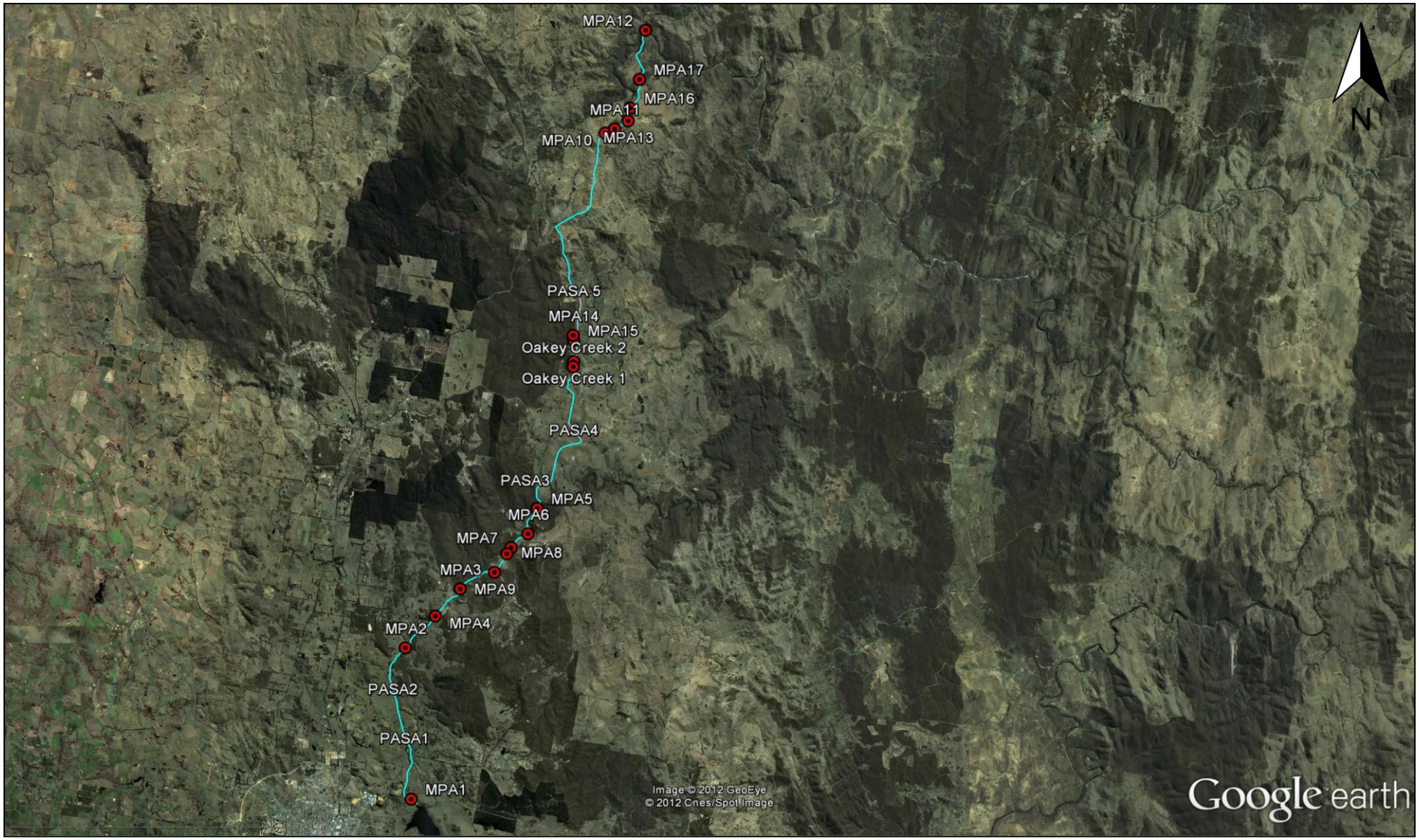

Figure 7.39 Location of Aboriginal sites (red dots) and PASAs (red areas) identified along pipeline corridor (blue line) (Base map: Google Earth Pro)

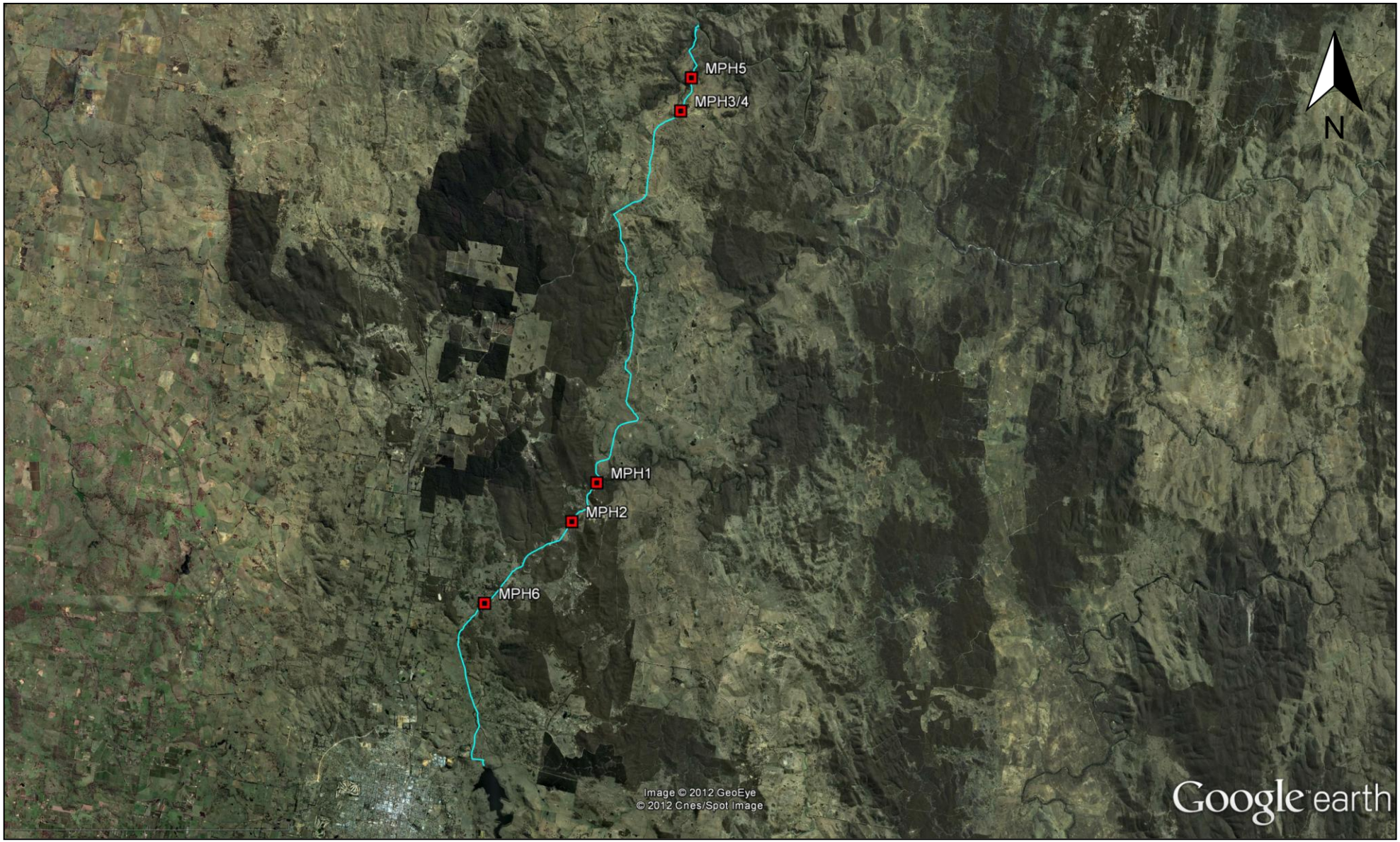

Figure 7.40 Location of historical sites (red squares) identified along the pipeline corridor (blue line)
(Base map: Google Earth Pro)

7.7 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels.

Generally visibility across the study area was variable from 0% to >90%. The worst areas of visibility were in the south of the study area in areas of cultivated ground. High visibility areas included tracks and eroded areas.

8. SIGNIFICANCE ASSESSMENT

8.1 Aboriginal Heritage

8.1.1 Assessment Criteria

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

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

- significance to contemporary aboriginal people;
- scientific or archaeological significance;
- aesthetic value;
- representativeness; and
- value as an educational and/or recreational resource.

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

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

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

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

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

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

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

8.1.2 The Study Area

The majority of sites identified in the proposed works corridor for the Macquarie River to Orange Pipeline project are surface scatters of artefacts, many with moderate to high potential for associated potential archaeological deposits (Table 8.1). A number of areas of PASAs unassociated with surface indicators of sites have also been identified.

Assessment of PASAs is not possible without further assessment.

Table 8.1 Aboriginal Site Significance Assessment

Site No	Site Type	Significance
MPA1	Scatter and PAD	Moderate archaeological significance at a local level
MPA2	Isolated Find	Low archaeological significance at a local level
MPA3	Scatter and PAD	Moderate archaeological significance at a local level
MPA4	Isolated Find	Low archaeological significance at a local level
MPA5	Scarred Tree	High archaeological significance at a local level
MPA6	Scatter and PAD	Moderate to high archaeological significance at a local level
MPA7	Isolated Find	Low archaeological significance at a local level
MPA8	Scatter and PAD	Moderate archaeological significance at a local level
MPA9	Scatter and PAD	Moderate to high archaeological significance at a local level
MPA10	Scatter	Low archaeological significance at a local level
MPA11	Scatter	Low archaeological significance at a local level
MPA12	Isolated Find and PAD	Moderate archaeological significance at a local level
MPA13	Scatter	Low archaeological significance at a local level
MPA14	Scatter and PAD	Moderate to high archaeological significance at a local level
MPA15	Isolated Find and PAD	Moderate archaeological significance at a local level
MPA16	Scatter and PAD	Moderate archaeological significance at a local level
MPA17	Isolated Find	Low archaeological significance at a local level
Oaky Creek 1	Scatter and PAD	High archaeological significance at a local level
Oaky Creek 2	Scatter and PAD	Moderate to high archaeological significance at a local level

8.2 Historical Heritage

8.2.1 Assessment Criteria

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

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

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

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

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

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

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

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

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

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

- cultural or natural places; or
- cultural or natural environments.

(or a class of the local area's

- cultural or natural places; or
- cultural or natural environments.)

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

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

Different components of a place may make a different relative contribution to its heritage value. For example, loss of integrity or condition may diminish significance. In some cases it is constructive to note the relative contribution of an item or its components. Table 8.1 provides a guide to ascribing relative value.

Table 8.1 Guide to ascribing relative heritage value

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

8.2.2 The Study Area

Six sites or site complexes with potential historical heritage significance have been identified with the Orange water pipeline study area.

MPH1 – Possible costean

This recording comprises a rectilinear costean located on the northern edge of the El Dorado goldfields. This site type is not rare and does not have any special association with individuals or groups of local importance. This feature has relatively limited research potential. As such this item is assessed as being of insufficient heritage value to warrant listing.

MPH2 – Area of ground sluicing

This recording comprises a series of apparently associated mine workings and prospecting areas on the southern side of the El Dorado goldfields. The area has suffered minor disturbance from subsequent improvements to the Ophir Road, but as a whole the area is readily interpreted as an area of 19th century alluvial workings. Site preservation is good overall with some elements such as water races and tailing mounds in good condition. The site is typical of small scale alluvial gold mining and has moderate research potential in terms of information that could be yielded regarding the timing, nature, ethnicity and extent of the 19th century mining at El Dorado. It is however at this stage unclear whether the workings can be linked to individuals or groups of local importance. Further research is required to determine whether the herringbone tailing mounds are of Chinese origin.

Essentially, the workings at MPH2 are assessed to have significance at a local level against criteria **a** and **e** in terms of their place in local mining history and the potential that exists for additional research in the form of archaeological survey.

MPH3/4 – water race

This recording comprises two sections of apparently linked water race on the hill slopes to the east of Boshes Creek. The feature has suffered minor disturbance from subsequent pastoral activities and may be associated with the Margaret River goldfield. This feature has moderate research potential in terms of information that could be gained regarding the nature and extent of activities associated with the Margaret River goldfield. It is unclear at this stage whether the water race can be linked to individuals or groups of local importance.

Essentially, the water race recorded as MPH3/4 is assessed to have significance at a local level against criteria **a** and **e** in terms of its place in local mining history and the potential that exists for additional research in the form of archaeological survey.

MPH5 – 20th century structure

This item is an isolated timber structure that may have been associated with pastoral activities in the area. The structure dates to the 20th century and is relatively well preserved. It is unclear whether it can be associated with individuals or groups of local significance and its rarity cannot be adequately assessed without additional research.

The timber structure at MPH5 is assessed as potentially having significance against criteria **a** and **e**, although this could only be confirmed through additional historical and archaeological investigations.

MPH6 – old Ophir Road alignment

This recording comprises as section of road cutting adjacent to Ophir Road. This feature is relatively well preserved however it has low potential for archaeological deposits. It is unclear whether it can be associated with individuals or groups of local significance and its rarity cannot be adequately assessed without additional research.

The road easement at MPH6 is assessed as potentially having significance against criteria **a** and **e**, although this could only be confirmed through additional historical and archaeological investigations.

9. STATUTORY AND POLICY CONTEXT[1]

9.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act* 1979 (EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the *Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act 2005*.

Part 3A of the EP&A Act

Part 3A of the Act was an amendment which established a separate streamlined and integrated development assessment and approvals regime for major State government infrastructure projects, development that was previously classified as State Significant development, and other projects, plans or programs declared by the Minister for Planning.

Part 3A (Section 75U) removed the stop-the-clock provisions and the need for single-issue approvals under eight other Acts, including the *National Parks and Wildlife Act* 1974 and the *Heritage Act* 1977. Environmental planning instruments such as the heritage provisions within REP and LEPs, (other than State environmental planning policies) do not apply to projects approved under Part 3A (Section 75R, paragraph 3).

New South Wales' Parliament passed a Bill in June 2011 that repealed Part 3A of the Environmental Planning and Assessment Act 1979 and replaced it with an alternative system for assessing projects of state significance.

Transitional arrangements were announced which covered projects which were lodged under Part 3A. These transitional arrangements are found in the *State Environmental Planning Policy (Major Development) Amendment 2011* (Major Development SEPP), published on 13 May 2011.

Project applications for residential, commercial or retail projects and coastal subdivision development for which Director General's environmental assessment requirements **(**DGRs**)** had been issued on or before 8 April 2011, remained as Part 3A applications, unless the DGRs were issued more than two years before 8 April 2011 and the proponent had not lodged an environmental assessment by 8 April 2011.

9.2 Implications for the Macquarie River to Orange Pipeline project

Following identification of Aboriginal sites within the proposed Orange Pipeline study area, the recommendation from this report should be approved and incorporated into the NSW Department of Planning's Conditions of Approval for this project.

[1] The following information is provided as a general guide only. Readers are advised to seek qualified legal advice relative to legislative matters.

10. IMPACT ASSESSMENT

The Macquarie River to Orange Project will impact on heritage items in the pipeline corridor as follows:

- MPA1 – water rising main corridor;
- MPA2 – water rising main corridor;
- MPA3 – water rising main corridor;
- MPA4 – water rising main corridor;
- MPA6 – water rising main corridor;
- MPA7 – water rising main corridor;
- MPA8 – water rising main corridor;
- MPA10 – water rising main corridor;
- MPA11 – water rising main corridor;
- MPA12 – offtake and pump station;
- MPA14 – water rising main corridor;
- MPA15 – water rising main corridor;
- MPA16 – water rising main corridor;
- MPA17 – water rising main corridor;
- Oakey Creek 1 – water rising main corridor;
- Oakey Creek 2 – water rising main corridor;
- PASA1 – water rising main corridor;
- PASA2 – water rising main corridor;
- PASA3 – water rising main corridor;
- PASA4 – water rising main corridor;
- PASA5 – water rising main corridor;
- MPH2 – water rising main corridor;
- MPH3/4 – water rising main corridor; and
- MPH6 – water rising main corridor.

The Macquarie River to Orange Project may inadvertently impact on heritage items adjacent to the pipeline corridor as follows:

- MPA5 – vegetation clearance and vehicle/plant movements;

- MPA9 – vehicle/plant movements;
- MPA13 – vehicle/plant movements;
- MPH1 – vegetation clearance and vehicle/plant movements; and
- MPH5 – vegetation clearance and vehicle/plant movements.

11. MANAGEMENT AND MITIGATION MEASURES

11.1 Aboriginal sites

The Aboriginal sites and, sites with associated PADs and areas of PASA identified in the course of this study fall into two general categories:

- Sites, PADs and PASAs that will be directly impacted by the proposed Macquarie River to Orange Project (MPA1, MPA2, MPA3, MPA4, MPA6, MPA7, MPA8, MPA10, MPA11, MPA12, MPA14, MPA15, MPA16, MPA17, Oakey Creek 1, Oaky Creek 2, PASA1, PASA2, PASA3, PASA4 AND PASA5); and

- Sites that may be indirectly impacted from the proposed Macquarie River to Orange Project (MPA5, MPA9 AND MPA13).

Sites that will be directly impacted

Sites, PADs and PASAs identified during the course of this investigation may be directly impacted by construction of the following: water rising main pipeline within a 6-20 m corridor, offtake and pump station, booster stations, power supply to the pumps and other infrastructure, and discharge structure.

Where sites of low to moderate archaeological significance (MPA1, MPA2, MPA3, MPA4, MPA7, MPA8, MPA10, MPA11, MPA12, MPA15, MPA16, MPA17) will be directly impacted by the proposed Macquarie River to Orange Project there are two options for mitigation.

- Modify the project design so that it no longer impacts the site, PAD or PASA.

- Salvage artefacts from the site prior to impacts; Sites with associated PADs or areas of PASA should have further subsurface investigation undertaken.

  A Care and Control permit to be applied for any proposed salvage works.

  The collected items could be stored at an appropriate keeping place as agreed to by the relevant Aboriginal stakeholders (e.g. the Australian Museum), or as guided by advice from the OEH.

Where sites of high archaeological significance (MPA14, Oakey Creek 1, Oakey Creek 2) will be directly impacted by the proposed Macquarie River to Orange Project there are two options for mitigation.

- Modify the project design so that it no longer impacts the site or PAD

- Reduce pipeline construction corridor width to 6 m in these areas.

- Conduct further subsurface investigations to establish the nature and extent of archaeological deposit within the pipeline construction corridor. Depending upon the results of such investigations it may also be necessary to undertake a program of salvage excavations at some or all of these sites.

  A Care and Control permit to be applied for any proposed salvage works.

  Fencing off during construction of remaining areas of sites and associated PADs outside of the pipeline construction corridor with high visibility fencing and heritage signage marking this as a no-go area

Sites that may be indirectly impacted

Sites, PADs and PASAs identified during the course of this investigation may be indirectly impacted by the following: vegetation clearance, vehicle and plant movements, storage areas and equipment lay down.

In the case of sites and PADs that may be indirectly impacted (MPA5, MPA9, MPA13) the most applicable management strategies are:

- To clearly mark the extent of the site with high visibility fencing and heritage signage marking these areas as no-go zones, and where feasible,

  To limit the extent of construction impacts in order to minimise impacts. In this instance, the sites and PADs could also be clearly marked on all mapping and plans used by contractors working on the project.

- If areas of PAD are to be directly impacted further archaeological investigation in the form of subsurface testing would be required. Depending upon the results of such investigations it may also be necessary to undertake a program of salvage excavations at some or all of these sites.

It should be noted that areas of PAD are likely to continue for some distance either side of the proposed impacts (e.g. where the proposed transmission line or pipeline corridor traverses an area of PAD) and moving the construction footprint will simply result in impacts to an additional area of PAD. The option of modifying the pipeline corridor will also potentially require additional archaeological investigations in the form of survey work along any previously un-investigated sections of the alignment.

11.2 Historical Sites

The historical sites identified in the course of this study fall into two general categories:

- Sites that will be directly impacted by the proposed Macquarie River to Orange Pipeline project (MPH2, MPH3/4, MPH6, Narrambla, Rosedale); and

- Sites that may be indirectly impacted from the proposed Macquarie River to Orange Project (MPH1, MPH5).

Sites that will be directly impacted

MPH2, MPH3/4, MPH6

Sites identified during the course of this investigation may be directly impacted by construction of the following: water rising main pipeline within a 6-20 m corridor, offtake and pump station, booster stations, power supply to the pumps and other infrastructure, and discharge structure.

Where these sites will be directly impacted the proposed management strategy:

- Conduct photographic archival recordings of these sites prior to construction impacts.

Narrambla and Rosedale

While the pipeline alignment passes through the curtilage of properties that contain heritage listed items ('Narrambla' and Rosedale'), it should be noted that the heritage values associated with these properties are defined on the Orange LEP schedule as the homestead at Rosedale, and the Banjo Paterson memorial and Templar Mill ruins at Narrambla, which will not be directly or physically impacted by the proposed pipeline corridor.

The distance between the listed items and the construction zone is such that they will not be directly impacted by dust and vibrations. Given this, the overall impact on the heritage value of these allotments is assessed to be negligible.

Applicable management strategies at these sites are:

- Modify the project design so that it no longer impacts the site or PAD

- Reduce pipeline construction corridor width to 6 m in these areas.

  Fencing off during construction of the site boundary outside of the pipeline construction corridor with high visibility fencing and heritage signage marking this as a no-go area; and

  Potential monitoring of ground surface disturbance at these sites.

Sites that may be indirectly impacted

Sites identified during the course of this investigation may be indirectly impacted by the following: vegetation clearance, vehicle and plant movements, storage areas and equipment lay down.

In the case of sites that may be indirectly impacted (MPH1, MPH5) the most applicable management strategies are:

- To clearly mark the extent of the site with high visibility fencing and heritage signage marking these areas as no-go zones, and where feasible,

  To limit the extent of construction impacts in order to minimise impacts. In this instance, the sites and PADs could also be clearly marked on all mapping and plans used by contractors working on the project.

11.3 Recommendations

The following recommendations have been formulated on the basis of the results of the current survey and the results of previous heritage studies within the Orange area.

It is recommended that:

1. The sites MPA9 and MPA13 should be fenced prior to commencement of construction and their locations should be clearly marked on all relevant maps and plans to avoid impacts to these sites. A buffer of 10 m should be applied for fencing of these sites.

2. Prior to commencement of construction activities, salvage of artefacts should be conducted at MPA2, 4, 7, 10 and 11, and a Care and Control permit should be prepared for all Aboriginal objects prior to any salvage works.

3. Prior to commencement of construction activities, salvage of artefacts should be conducted at 1, 3, 6, 8,12, 14-19, Oakey Creek 1 and Oakey Creek 2 and, a program of archaeological subsurface testing should be conducted within the affected sections of PAD at these sites; depending upon the results of that testing, it may be necessary to undertake salvage excavations in these locations.

4. A conservation area should be established for MPA5; including fencing and signage, and all impacts to this site should be avoided. A buffer of 10 m should be applied for fencing of these sites.

5. A program of archaeological subsurface testing should be conducted within the affected sections of PASA1-5; depending upon the results of that testing, it may be necessary to undertake salvage excavations in these locations.

6. Sites MPH1 and 5 should be fenced prior to commencement of construction and the location should be clearly marked on all relevant maps and plans to avoid impacts to these sites. A buffer of 10 m should be applied for fencing of these sites.

7. Prior to commencement of construction activities adjacent to properties 'Rosedale' and 'Narrambla' the construction corridor should be fenced off during works to avoid impacts to the heritage values associated with these sites, and potentially monitoring be undertaken of ground surface disturbance for these sections of the construction corridor..

8. A program of further historical research and archival recording should be conducted for sites MPH2, MPH3/4 and MPH6.

9. Liaise with Aboriginal stakeholders regarding an appropriate program (i.e. which sites to target) of site inspections following initial ground disturbance activities in order to mitigate any loss of Aboriginal cultural values.

10. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 5) be adopted and complied with during construction activities involving ground surface disturbance and excavation.

11. Three copies of this report should be provided to the OEH for its information and records, at the following address:

    Planning & Aboriginal Heritage Section
    NSW Office of Environment and Heritage
    PO Box 2111
    Dubbo NSW 2830

12. One copy of this report should be provided to the Heritage Branch, OEH, for its information and records, at the following address:

    NSW Heritage Branch
    NSW Office of Environment and Heritage
    Locked Bag 5020
    Parramatta NSW 2124

13. A copy of this report should be forwarded to the registered Aboriginal stakeholders.

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APPENDIX 1

SITE RECORDING PARAMETERS

A1 Aboriginal Sites, PADs and PASAs

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts, and areas of archaeological potential unassociated with surface artefacts. Recordings fall into two broad categories: sites and potential archaeologically sensitive areas (PASAs).

Sites

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

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees.

Frequently encountered site types within southeastern Australia include stone artefact occurrences - including isolated finds and open artefact scatters, rock shelter sites - including occupation deposit and/or rock art, grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in basic site identification are outlined, together with those for the recording types encountered by this investigation.

Stone Artefact Occurrences

Stone artefact occurrences are the most commonly recorded site type in Australia. They may consist of single artefacts - described as isolated finds; or as a distribution of more than one artefact – often described as an artefact scatter or 'open camp site' when recording surface artefacts, or as a subsurface artefact distribution when dealing with an archaeological deposit.

Where artefact incidence is very low, either in terms of areal distribution (artefacts per square metre) or density (artefacts per cubic metre), the differentiation of the recording from background artefacts counts or *background scatter* may be an issue.

Isolated finds

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

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

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

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations.

Given the varied incidence of ground surface exposure and deposit disturbance within the study area, and the lack of background baseline data, the specification of 60 metres is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Background scatter

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

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

Artefact distribution

Artefacts situated within an open context are classed as an open artefact distribution, also known as artefact scatter (or 'open camp site') when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). The use of the term *scatter* is intended only to be descriptive of the current archaeological evidence and does not infer the original human behaviour which formed the site. The term *open camp site* has been used extensively in the past to describe open artefact scatters. This was based on ethnographic modelling suggesting that most artefact occurrences resulted from activities at camp sites. However, in order to separate the description from the interpretation of field evidence, the terms *artefact scatter*, *artefact distribution* or *artefact occurrence* are now more extensively used. The latter two options can also be used to categorise artefacts occurring in sub-surface contexts.

Scarred Trees

Trees with scars of Aboriginal origin form the other major type of artefactual evidence. Each tree is normally considered to be a separate site. The identification of a scar as Aboriginal in origin is dependent on a set of inter-related interpretive criteria. The credibility of alternative causal explanations such as natural traumas and other types of human scarring must be tested for each scar.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989), and the field manual for Aboriginal scarred trees developed by Long (2005):

1. The scar does not normally run to ground level: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal origin (some ethno-historical examples of canoe scars reach the ground);

1(a). If a scar extends to the ground, the sides of the original scar must be relatively parallel: (natural scars tend to be triangular in shape;

2. The scar is either approximately parallel sided or concave, and symmetrical: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular, and often adzed);

3. The scar should be reasonably regular in outline and regrowth: scars of natural origin tend to have irregular outlines and may have uneven regrowth;

4. The ends of the scar should be 'shaped', either squared off, or pointed (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);

5. A scar which contains adze or axe marks on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);

6. The scar must date to the time of Aboriginal bark exploitation within its region: The traditional Aboriginal exploitation of bark probably ceased in most regions between 100 and 150 years ago. However, in some locations associated with Aboriginal settlement, the Aboriginal removal of bark may have continued to the present day, or restarted as part of new cultural movements.

7. The tree must be endemic to the region: (and thus exclude historic plantings).

Field based identification of Aboriginal scars, is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence of several diagnostic criteria or the balance of interpretation leaning toward an Aboriginal origin. For this reason interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories were used:

- Aboriginal scar - This is a scar where an Aboriginal origin is considered the most likely. The scar conforms to all of the criteria and a natural origin is considered unlikely and improbable;

- Probable Aboriginal scar - This is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out; and

- Possible Aboriginal scar - This is a scar which conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit.

Table A.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

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

Table A.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit.

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

Potential Archaeologically Sensitive Areas

Where a predictive model has been substantially tested and refined against a corpus of subsurface archaeological results, the resulting degree of certainty associated with areas of predicted potential allows the use of a term such as Potential Archaeological Potential (PAD), (refer above). In contrast, where a model remains largely untested, as is the case for the Orange region, it must necessarily be inclusive and general in its use of criteria. There is therefore a consequential level of uncertainty in the model's predictions. On-going refinement of the model following the application of test results may well establish a more discriminatory and exclusive subset of archaeological predictions.

It is the intention of the assessment program to progressively test and revise the predictive model through successive stages of archaeological test pitting. Through the refinement of the model, locations that were identified using an early version, may no longer qualify after model refinement. In view of both the higher level of uncertainty associated with the current Orange model, and the related risk of identifying areas as PADs in contexts which may subsequently be considered to have lesser or no potential, an alternative terminology has been adopted for this assessment. Those areas which are consistent with the current predictive criteria have been termed Potential Archaeologically Sensitive Areas (PASAs). This term is intended to denote that the archaeological sensitivity of the identified area remains subject to confirmation and model refinement. The use of this term is deliberately distinct from potential archaeological deposit (PAD). In the context of the present investigation, the identification of a PASA is more tentative, and based on a less tested regional model, than for a PAD.

At present some PASAs include known site locations. This is not a contradiction. Despite the presence of one or more surface artefacts, a reliable prediction regarding the nature of any associated subsurface artefact distribution cannot yet be made for Southern Illawarra coastal plain sites. Elsewhere across NSW, a low incidence of surface artefacts is often associated with a higher subsurface incidence. Given the regional uncertainty regarding the nature and incidence of archaeological deposits, a PASA identification in association with surface artefacts (a site) should not be inferred to correspond to a PAD for that site.

The identification of PASAs within the study area was based on the following:

- the predictive model criteria developed in the route options assessment stage of the project (refer section 5.3);
- ethno-historical information;
- a review of landscape characteristics relative to known archaeological site patterning and landscape disturbance; and
- locations suggested by local Aboriginal community representatives.

A.2 Historical Sites and Features

Historical archaeology refers to the 'post-contact' period (at and following the start of the written record) and includes: domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The three primary types of places or items that may form part of the historical archaeology context include:

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

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

3. Shipwrecks, deposits and structures associated with maritime activities.

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

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

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

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

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

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

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

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

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

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

APPENDIX 2

AHIMS HERITAGE REGISTER SEARCH RESULTS

AHIMS Web Services (AWS)

Your Ref Number : ODRCP

Extensive search - Site list

Client Service ID :52299

Note: This Excel report shows the sites found in AHIMS on the 29/09/2011. If this date is not the same as the original date of the Search Results letter obtained during the Basic Search, then the search results might be different. The PDF version of this report will always coincide with the Basic Search Results letter.

SiteID	SiteName	Contact	Datum	Zone	Easting	Northing	Context	SiteStatus	SiteFeatures	SiteTypes	Permits	Reports	Recorders
44-2-0119	Icely Burials		AGD	55	713600	6313300	Open site	Valid	Burial : -	Burial/s			Bill Allen
44-2-0001	Carlton Road		AGD	55	696827	6310546	Open site	Not a Site	Art (Pigment or	Not an		1310	Sharon
36-5-0006	Dalmeny;Dixon's Long Point;		AGD	55	714300	6344809	Open site	Valid	Modified Tree	Carved		65,1299,	David
36-5-0008	Euchareena;		AGD	55	694779	6352705	Open site	Valid	Artefact : -	Open Camp			Mr.War
36-5-0010	Bundi;Mullingar Creek;		AGD	55	713857	6349235	Open site	Valid	Artefact : -	Open Camp		1299	Mr.War
36-5-0015	Bundi Creek;		AGD	55	712292	6350869	Open site	Valid	Artefact : -	Open Camp		1299	Michael
44-2-0074	Bowles 1		AGD	55	718720	6311093	Open site	Valid	Artefact : -,			232,1298	ASRSYS
44-2-0075	Oaky Creek 2;		AGD	55	705510	6333428	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0076	Oaky Creek 1;		AGD	55	705532	6333675	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0077	Isaacs Creek 5;		AGD	55	704446	6338389	Open site	Valid	Stone Quarry : -,	Quarry		232	ASRSYS
44-2-0078	Isaacs Creek 4;		AGD	55	704305	6338620	Open site	Valid	Stone Quarry : -,	Quarry		232	ASRSYS
44-2-0079	Isaacks Creek 3;		AGD	55	704305	6338620	Open site	Valid	Stone Quarry : -,	Quarry		232	ASRSYS
44-2-0080	Boshes Creek 1;		AGD	55	703948	6341300	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0081	Boshes Creek 2;		AGD	55	704047	6340135	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0082	Sawyers Creek 1;		AGD	55	703854	6342154	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0083	Sawmill 6;		AGD	55	703607	6344018	Open site	Valid	Stone Quarry : -,	Quarry		232	ASRSYS
44-2-0084	Sawmill 5;		AGD	55	703606	6344060	Open site	Valid	Artefact : -	Open Camp		232	ASRSYS
44-2-0085	Sawmill 1;		AGD	55	703391	6345843	Open site	Valid	Stone Quarry : -,	Quarry		232	ASRSYS
44-2-0020	Ophir;		AGD	55	707692	6326689	Open site	Valid	Modified Tree	Carved		65	ASRSYS
36-5-0050	GC-OS-1;		AGD	55	694690	6353404	Open site	Valid	Artefact : -	Open Camp			Central
36-5-0021	Middle Creek;Middle Creek 5;		AGD	55	702702	6346882	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
36-5-0022	Middle Creek;Middle Creek 4;		AGD	55	703314	6346443	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
36-5-0023	Middle Creek;Middle Creek 3;		AGD	55	703308	6346507	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
36-5-0024	Middle Creek;Middle Creek 1;		AGD	55	703021	6348567	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
36-5-0025	Backwater Creek;Backwater		AGD	55	701822	6354983	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
36-5-0026	Backwater Creek;Backwater		AGD	55	701705	6355239	Open site	Valid	Artefact : -	Open Camp		232	L Cubis
44-2-0092	Dalmeny;Ulmarram;Dixon's Long		AGD	55	714300	6344809	Open site	Valid	Burial : 1,	Carved		65,3553	Michael
44-2-0093	Eulah;		AGD	55	694600	6336600	Open site	Valid	Artefact : -	Open Camp		2650	S
44-2-0094	Moulder Hill ST-1;MH/ST-1;		AGD	55	693900	6318700	Open site	Valid	Modified Tree	Scarred			Central
44-2-0095	Rifle Range;		AGD	55	694300	6312400	Open site	Valid	Stone Quarry : -,	Open Camp			R
44-2-0097	D-OS-1		AGD	55	714187	6344790	Open site	Valid	Artefact : 100	Open Camp		3553	Jim
44-2-0098	LP-OS-1;		AGD	55	712700	6344100	Open site	Valid	Artefact : -	Open Camp		3553	Jim

44-2-0099	D-OS-2;	AGD	55	714500	6344880	Open site	Valid	Artefact : -	Open Camp	3553	Jim
44-2-0100	D-OS-3;	AGD	55	714790	6344910	Open site	Valid	Artefact : -	Open Camp	3553	Jim
44-2-0037	Lewis Ponds 10;	AGD	55	710997	6307898	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0038	Lewis Ponds 14;	AGD	55	713348	6307167	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0039	Lewis Ponds 15;	AGD	55	712933	6308281	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0040	Lewis Ponds 16;Browns Creek;	AGD	55	713221	6308636	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0041	Lewis Ponds 17;Browns Creek;	AGD	55	713221	6308636	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0042	Lewis Ponds 21;	AGD	55	714198	6310245	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0043	Lewis Ponds 24;	AGD	55	714486	6310600	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0044	Lewis Ponds 30;	AGD	55	714264	6311981	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0045	Lewis Ponds 31;	AGD	55	714264	6311981	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0046	Lewis Ponds 33;	AGD	55	714563	6312610	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0047	Lewis Ponds 34;	AGD	55	714373	6312434	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0048	Lewis Ponds 37;	AGD	55	712602	6313966	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0049	Lewis Ponds 39;	AGD	55	713171	6314493	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0050	Lewis Ponds 40;	AGD	55	713171	6314493	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0051	Lewis Ponds 42;	AGD	55	713055	6313857	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0052	Lewis Ponds 43;	AGD	55	713329	6313847	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0053	Lewis Ponds 44;	AGD	55	713596	6313653	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0054	Lewis Ponds 32;	AGD	55	714289	6312620	Open site	Valid	Stone Quarry : -,	Quarry		ASRSYS
44-2-0101	D-OS-4;	AGD	55	714960	6344950	Open site	Valid	Artefact : -	Open Camp	3553	Jim
44-2-0102	D-OS-5;	AGD	55	715090	6344890	Open site	Valid	Artefact : -	Open Camp	3553	Jim
44-2-0103	D-OS-6;	AGD	55	715300	6345050	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0104	D-OS-7;	AGD	55	715440	6345100	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0105	D-OS-8;	AGD	55	715770	6345260	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0106	D-OS-9;	AGD	55	715840	6345360	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0107	T-OS-1;	AGD	55	716360	6346110	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0108	D-QS-1;	AGD	55	716250	6345270	Open site	Valid	Stone Quarry : -,	Quarry	3553	Central
44-2-0109	D-QS-2;	AGD	55	716200	6345300	Open site	Valid	Stone Quarry : -,	Quarry	3553	Central
44-2-0110	T-QS-1;	AGD	55	716710	6346080	Open site	Valid	Stone Quarry : -,	Quarry	3553	Central
44-2-0111	D-IF-1;	AGD	55	713960	6344460	Open site	Valid	Artefact : -	Isolated	3553	Jim
44-2-0112	D-OS-1;	AGD	55	714120	6344820	Open site	Valid	Artefact : -	Open Camp	3553	Central
44-2-0062	Lewis Ponds;26;	AGD	55	714609	6311419	Open site	Valid	Artefact : -	Open Camp		ASRSYS
44-2-0064	Sawmill 2;	AGD	55	703407	6345760	Open site	Valid	Stone Quarry : -,	Quarry	83,232	ASRSYS
44-2-0065	Lower Lewis Ponds 1;	AGD	55	710580	6319307	Open site	Valid	Artefact : -, Stone		83,232	ASRSYS
44-3-0106	BSC-IF-1;	AGD	55	690930	6317440	Open site	Valid	Artefact : -	Isolated		Central
44-3-0107	D-QS-4	AGD	55	714350	6344600	Open site	Valid	Stone Quarry : -,	Quarry	4773	Central
44-2-0132	Western Boundary Firetrail OS1	AGD	55	699780	6328020	Open site	Valid	Artefact : 3	1624		Bill Allen
44-2-0133	Western Boundary Firetrail OS2	AGD	55	699760	6327790	Open site	Valid	Artefact : 5	1624		Bill Allen
44-2-0134	Western Boundary Firetrail ST1	AGD	55	699760	6327980	Open site	Valid	Modified Tree			Bill Allen
44-2-0135	Mullion Creek OS1	AGD	55	700110	6326260	Open site	Valid	Artefact : 4			Bill Allen
44-2-0136	Mullion Creek IF1	AGD	55	700220	6325900	Open site	Valid	Artefact : 1			Bill Allen

44-2-0129	SPR-6		AGD	55	699980	6314980	Open site	Valid	Artefact : -		Bobbie
44-2-0130	SPR-7		AGD	55	699880	6315250	Open site	Valid	Artefact : -		Bobbie
44-2-0131	SPR-8		AGD	55	699900	6315400	Open site	Valid	Artefact : -		Bobbie
44-2-0124	SPR-1		AGD	55	699800	6314620	Open site	Valid	Artefact : -		Bobbie
44-2-0125	SPR 2		AGD	55	699460	6315520	Open site	Valid	Artefact : -		Bobbie
44-2-0126	SPR-3		AGD	55	699310	6316000	Open site	Valid	Artefact : -		Bobbie
44-2-0127	SPR-4		AGD	55	698900	6316000	Open site	Valid	Artefact : -		Bobbie
44-2-0128	SPR-5		AGD	55	699100	6316250	Open site	Valid	Artefact : -		Bobbie
44-2-0140	Rifle Rage SQ	T Russell	AGD	55	694250	6312400	Open site	Valid	Stone Quarry : 1		Bill Allen
44-2-0141	Rifle Range ST2	T Russell	AGD	55	694100	6312460	Open site	Valid	Modified Tree		Bill Allen
44-2-0142	Rifle Range ST1	T Russell	AGD	55	694250	6312400	Open site	Valid	Modified Tree		Bill Allen
44-2-0139	Area B Artefact Scatter	T Russell	AGD	55	690823	6317377	Open site	Valid	Artefact : 28		Lori
44-2-0144	Burrendong 1		AGD	55	694600	6318044	Open site	Valid	Artefact : -		Mr.John
44-2-0147	Bloomfield Hospital Grounds	T Russell	AGD	55	695300	6317000	Open site	Valid	Potential	100685	Jim
44-2-0148	BRP-ST1 (Gowan)		AGD	55	716862	6327445	Open site	Valid	Modified Tree	101383	Doctor.J
44-2-0149	BRP-IF1 (Gowan)		AGD	55	716823	6327527	Open site	Valid	Artefact : 1	101383	Doctor.J
44-2-0150	BRP-OS1 with PAD		AGD	55	716856	6328606	Open site	Valid	Potential	101383	Doctor.J
44-2-0151	BRP-OS2 with PAD		AGD	55	716597	6327391	Open site	Valid	Potential	101383	Doctor.J
44-2-0152	BRP-OS3 with PAD		AGD	55	716620	6327574	Open site	Valid	Potential	101383	Doctor.J
44-2-0153	BRP-OS4 with PAD		AGD	55	717168	6327579	Open site	Valid	Potential	101383	Doctor.J
44-2-0154	BRP-OS5 with PAD		AGD	55	718568	6328656	Open site	Valid	Potential	101383	Doctor.J
44-2-0156	Rural Fire Service Scar Tree		GDA	55	693634	6310295	Open site	Valid	Modified Tree	3231,323	Orange
44-2-0155	Quartz Site		GDA	55	704431	6328071	Open site	Valid	Artefact : -		Miss.Cor
44-2-0157	The Springs, Orange	Gallangga	GDA	55	693607	6311611	Open site	Valid	Artefact : -,		Mr.Toiv

Report generated by AHIMS Web Service on 29/09/2011 for Rebecca Parkes for the following area at Datum :GDA, Zone : 55, Eastings : 689000 - 719000, Northings : 6307000 - 6357000 with a Buffer of 50 meters.Additional Info : Background research for heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 98

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

APPENDIX 3

ABORIGINAL CONSULTATION

Notice Placed in *The Central West Daily* 1 October 2011

HEADING PROPOSED ORANGE DROUGHT RELIEF CONNECTION PIPELINE PROJECT CULTURAL HERITAGE ASSESSMENT ABORIGINAL STAKEHOLDER REGISTRATION

BODY Orange City Council proposes to construct the Orange Drought Relief Connection Pipeline including pumping stations, transmission pipeline and associated infrastructure to transfer water from the Macquarie River to Suma Park Dam.

Navin Officer Heritage Consultants Pty Ltd has been commissioned by Orange City Council to conduct a cultural heritage assessment of the project as part of an Environmental Assessment under Part 3A of the *Environmental Planning and Assessment Act 1979.*

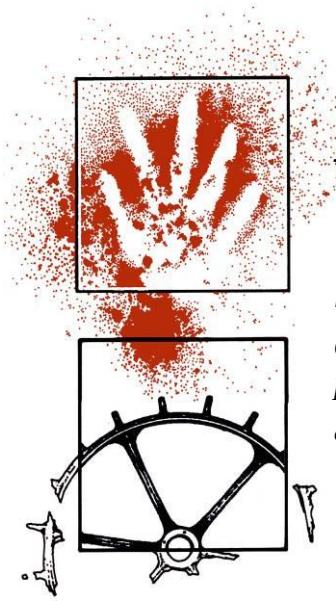
As per the Director General's Requirements, we are implementing a program of Aboriginal stakeholder consultation as an integral part of this assessment.

Navin Officer Heritage Consultants Pty Ltd invite Aboriginal people and organisations who wish to participate in the program, and who hold cultural knowledge relevant to determining the cultural significance of objects and places in the project area, to register an interest in the project. Please forward expressions of interest to:

The Secretary
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street,
Kingston ACT 2604

The closing date for registration is 14 October, 2011

Example Letter sent for Stage 1



Navin Officer
heritage consultants pty ltd
abn: 28 092 901 605

4 October 2011

The Secretary
Orange Local Aboriginal Land Council
PO Box 10
ORANGE NSW 2800

Our Reference: ODR2011

Dear Sir/Madam,

Re: Proposed Orange Drought Relief Connection Pipeline Project
Cultural Heritage Assessment

Orange City Council proposes to construct the Orange Drought Relief Connection Pipeline including pumping stations, transmission pipeline and associated infrastructure to transfer water from the Macquarie River to Suma Park Dam.

Navin Officer Heritage Consultants Pty Ltd (NOHC) has been commissioned by Orange City Council to conduct a cultural heritage assessment of the project as part of an *Environmental Assessment under Part 3A of the Environmental Planning and Assessment Act 1979.*

As this is a Part 3A project the Office of Environment and Heritage's has produced a document Aboriginal cultural heritage consultation requirements for proponents 2010, NSW Department of Environment, Climate Change and Water (NSW DECCW 2020) that sets out the requirements for consulting with Aboriginal people who can provide information for this project. I am therefore writing to inform you of this development and invite registration as an interested group.

The closing date for this registration of interest is 17 October, 2011.

Please respond in writing to:

The Secretary
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
KINGSTON ACT 2604

or by fax to: (02) 6282 9416

Yours faithfully,

Glenda Hyde

(Ms) Glenda Hyde

NSW GOVERNMENT | Environment, Climate Change & Water

Your reference: Orange Drought Relief Pipeline Project
Our reference: : DOC11/45973
Contact: Paul Houston 68835361

Navin Officer
Number 4 Kingston Warehouse
71 Leichhardt St
KINGSTON ACT 2604
Att: Glenda Hyde

14th October 2011

Dear Glenda,

WRITTEN NOTIFICATION AS REQUIRED UNDER OEH ABORIGINAL CULTURAL HERITAGE REQUIREMENT FOR PROPONENTS 2010 – For the Proposed Orange Drought Relief Pipeline Project.

I refer to your letter dated 4th October 2011to the Office of Environment and Heritage (OEH) regarding the above matter.

A list of known Aboriginal parties that OEH feels is likely to have an interest in this development is attached as Attachment 1 (overleaf). Please note this list is not necessarily an exhaustive list of all interested Aboriginal parties and receipt of this list does not remove the requirement of a proponent/consultant to advertise in local print media and contact other bodies seeking interested Aboriginal parties, in accordance with the requirements.

If you wish to discuss any of the above matters further please contact me, at your earliest convenience, on (02) 6883 5361.

Yours sincerely

Paul Houston
Aboriginal Heritage Planning Officer
EPRG North- West Branch

The Department of Environment Climate Change and Water is now known as The Office of Environment and Heritage.

PO Box 2111, Dubbo NSW 2830
48-52 Wingewarra St Dubbo NSW
Tel: (02) 6883 5330 Fax: (02) 6884 9382
www.environment.nsw.gov.au

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P 02 9562 6327 F 02 9562 6350

The Secretary
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street
Kingston ACT 2604

6 October 2011

Dear Secretary

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 4th October 2011 regarding Aboriginal stakeholders within the Orange area in NSW.

I have searched the Register of Aboriginal Owners and the project area described does not have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act* 1983 (NSW).

I suggest you contact the Orange Local Aboriginal Land Council. They may also be able to assist you in identifying other Aboriginal stakeholders for this project.

Yours sincerely

Tabatha Dantoine
Administrative Officer
Office of the Registrar, *Aboriginal Land Rights Act* (1983)

Registrations of interest

MINGAAN ABORIGINAL CORPORATION
ABN: 83905372168
38 Tweed Road
Lithgow NSW 2790
Telephone / Fax (02) 63522473

Navin Officer Heritage Consultants Pty Ltd
71 Leichhardt St
Kingston ACT 2604

12 November 2011

Re: Proposed Orange Drought Relief Connection Pipeline Project
Cultural Heritage Assessment

This is to notify that Mingaan Aboriginal Corporation is registering interest as stakeholders in this project.

We look forward to confirmation of this registration of interest.

Thanking you for your attention to this matter

H. Riley

Helen Riley
Director

From: James Williams [mailto:James.Williams@facs.nsw.gov.au]

Sent: Thursday, 27 October 2011 8:51 AM

To: Navin Officer

Subject: Proposed Orange Drought Relief Connection Pipeline Project Cultural Heritage Assessment. Registration as an interested group.

I wish to be registered as an interested group for the above assessment. I am interested in being involved in all aspects of this project. I have experience in site assessment and have localised knowledge of the area concerned. I wish to participate in any meetings and on ground works. My contact details are

James Williams
22 Sharp Road
Orange NSW 2800

Telephone 0434637361

Email james.l.williams@live.com.au

From: jamie gray [mailto:jamiegray66@gmail.com]

Sent: Monday, 14 November 2011 2:22 PM

To: Glenda Hyde

Subject: Hi Glenda

In regards to letter,I wish to register as an interested group and would like the methodology report E-mail to me.

Cheers

Dorothy. Stewart

Methodology sent to Registered Groups for comment

Survey Methodology

Archaeological Investigation

Proposed Orange Drought Relief Connection Pipeline Project

Navin Officer Heritage Consultants Pty Ltd *2 November 2011*

The Purpose of this Document

The purpose of this document is to inform indigenous stakeholders about the proposed methodology for conducting an archaeological investigation for the Orange Drought Relief Connection Pipeline Project. The methodology outlined below has been developed in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in New South Wales (Part 6 *National Parks and Wildlife Act 1974*). The Orange Drought Relief Connection Pipeline Project is the proposed construction and operation of infrastructure with the capacity to transfer up to 12 ML/day of water from the Macquarie River to the Suma Park Dam.

The proposed project would involve construction and operation of the following:

- 36 km of 375 mm diameter water rising main between the Macquarie River and Suma Park Dam;
- an offtake and pump station located north of Long Point on the upper Macquarie River;
- three booster pump stations and break tanks along the pipeline route;
- Power supply to pumps and other infrastructure;
- Telemetry controls to enable remote operation of the infrastructure including pumps and valves etc.; and
- A discharge structure at the Suma Park Dam.

Indigenous stakeholders are invited to read the methodology and then provide comments and suggestions regarding this document. Please respond to, Glenda Hyde by xxx **2011.**

Navin Officer Heritage Consultants
4/71 Leichhardt St
KINGSTON NSW 2604

Tel: (02) 6282 9415 Fax: (02) 6282 9416

email ghyde@nohc.com.au

Study Aims

The primary aim of the archaeological investigation is to identify Aboriginal cultural heritage sites and areas of archaeological sensitivity/potential that are present within the study area.

The survey will aim to record all material traces and evidence of Aboriginal land use that are visible on the ground surface, or exposed in sections, or visible in features such as scarred trees. It will also aim to identify where evidence of Aboriginal land use may be present under the ground surface (i.e. areas of potential archaeological deposit [PAD]).

The survey will aim to incorporate Aboriginal cultural heritage values into the archaeological assessment in order to enable an informed assessment of potential impacts on Aboriginal heritage.

Background Research

Prior to commencement of the fieldwork the following background research will be undertaken:

- a search of AHIMS to identify previously recorded sites in or near the study area;
- a review of previous archaeological work in the local region;
- a review of the landscape context; and
- compilation of a summary of local and regional patterns of Aboriginal land use.

Survey Methodology

The survey will be conducted by personnel from Navin Officer Heritage Consultants and interested Aboriginal community representatives.

The field team will carry the required field recording equipment such as compass, differential GPS, camera, site forms, maps and notebook and required safety equipment such as first aid kits, mobile phones, two way radios and EPIRBs.

The field survey will involve:

1. Foot survey of the project area

The project areas include:

- 36 km of 375 mm diameter water rising main between the Macquarie River and Suma Park Dam;
- an offtake and pump station located north of Long Point on the upper Macquarie River;
- three booster pump stations and break tanks along the pipeline route;
- Power supply to pumps and other infrastructure;
- Telemetry controls to enable remote operation of the infrastructure including pumps and valves etc.; and
- A discharge structure at the Suma Park Dam.

Comprehensive survey of the Macquarie River to Orange pipeline corridor (see attached map) will allow the most effective means of identifying Aboriginal heritage sites within the study area. This will be achieved by walking the linear components of the project (pipeline easement and power supply easements) and by walking systematic transects across all landforms within the offtake and pump station, booster pump stations and discharge structure.

The field team will spread out with 5-10 m spacing between individuals to ensure maximum coverage. The survey will endeavour to include inspections of:

- all ground exposures for the presence of stone artefacts or other evidence of Aboriginal occupation; and
- all trees of sufficient age to have the potential for cultural scars.

Areas of archaeological sensitivity will be targeted for particular attention. This includes well drained, locally elevated topographies adjacent to water, and features such as flat ground on ridge and spur crests, creek flats and banks, creek terraces, old growth trees, rock outcrops and elevated sand bodies.

2. Field consultation with Aboriginal representatives

During field survey, Aboriginal representatives will be invited to communicate any knowledge that they may have regarding archaeological and cultural sites within the study area and the broader landscape.

The project team will conduct the cultural assessment program in a culturally sensitive manner and treat the information provided with respect (and in confidence, where required).

The aim of this field consultation is to discuss Aboriginal cultural values, relevant to the study area, and any Aboriginal sites identified within the proposed development area. This consultation will guide decisions regarding ongoing heritage management and mitigation actions for the Macquarie River to Orange Pipeline.

3 Site recording

All surface archaeological sites, potential archaeological deposits and places of Aboriginal cultural value will be documented. All sites would have the following details recorded using standardised recording forms.

- site name, recorder and date;
- site type;
- differential GPS coordinates;
- landscape and landform character including notes on geology and soils;
- site plan;
- site dimensions;
- site condition and potential to be larger;
- site content including numbers and artefact types, raw materials and basic measurements of artefacts; and
- representative photographs of the Aboriginal site.

4 Additional survey data

In addition to the abovementioned site recording, the survey will include detailed recording of all survey units including:

- GPS data for all survey unit limits;
- survey unit descriptions (landform, soils, prior disturbance etc);
- representative photographs of survey units(s);
- survey coverage information (ground exposures, visibility, vegetation etc); and
- limits of the proposed area of works (potential area of harm).

Report Preparation

Information gained in the course of the survey and information provided by the Aboriginal community will be documented in a report, consistent with the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*. The report will detail the survey methodology, background research, analysis of survey coverage, results, and assessment of significance of

identified sites including information gained through Aboriginal community consultation. The results of Aboriginal community consultation regarding site management will also be incorporated into the report recommendations.

Cultural Input from Registered Stakeholders

In order to assess the possible impacts of this proposed development, it is important to assess any potential effects on Aboriginal cultural values.

You (or your organisation or group) are asked to identify whether there are any Aboriginal objects or places of cultural value to Aboriginal people in the area of the proposed project. We also seek your views of the potential management options for any sites/objects that may be found in the project area during the investigation.

To do this, you (or your organisation or group) are invited to provide a written submission on its views. Your report will be provided to government authorities responsible for making decisions about the development proposal.

Your report will be most effective if it is provided on the letterhead of your organisation and signed by an executive office holder.

Your report will be included in the cultural heritage assessment report. The draft cultural heritage assessment report will be provided to the Aboriginal community for comment. Comments and the assessment of potential development impacts on cultural sensitivity conducted by the participants will then be incorporated into the survey report where appropriate.

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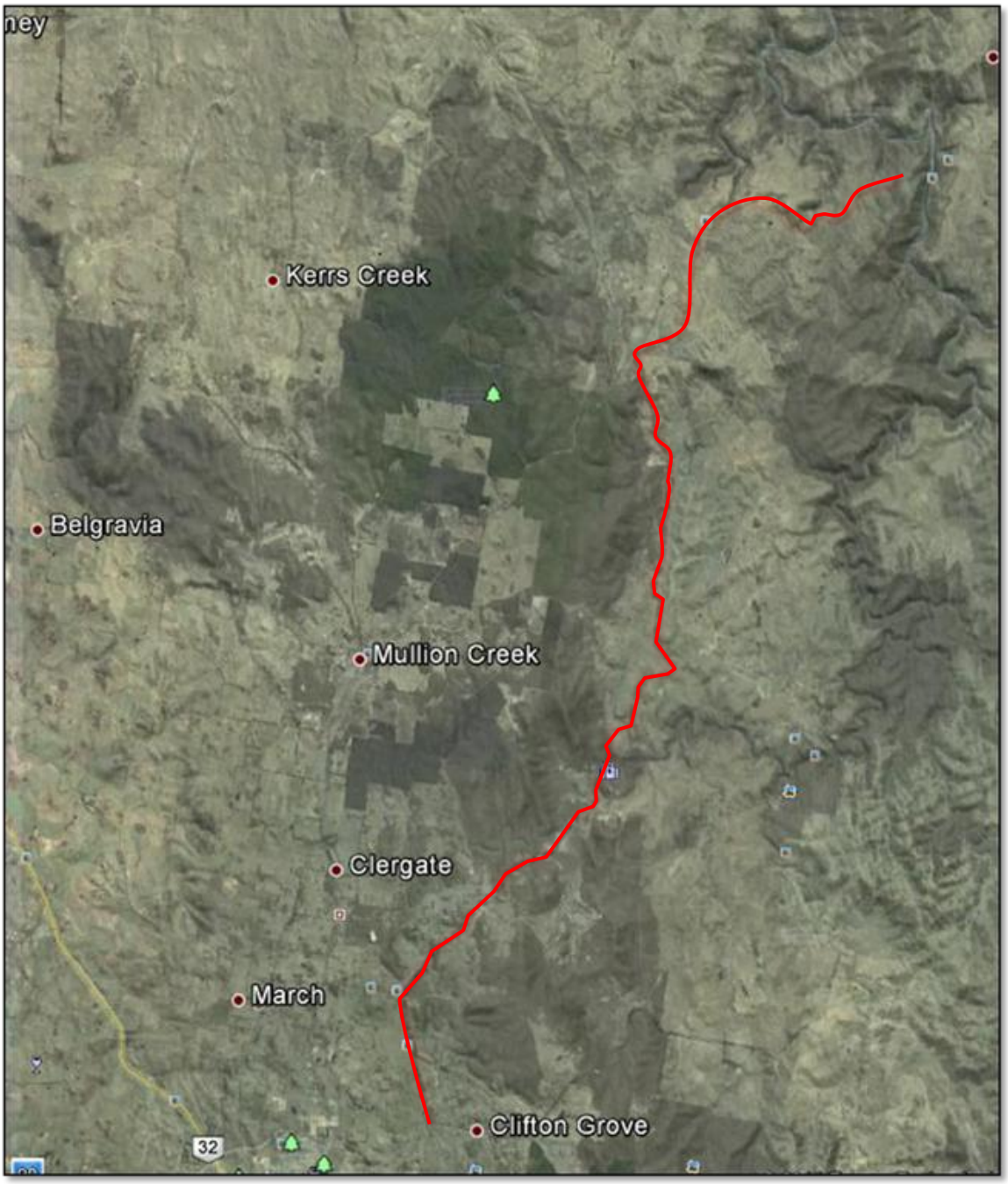


Indicative location of proposed Macquarie River to Orange Pipeline study area.

From: James Williams [mailto:James.Williams@facs.nsw.gov.au]

Sent: Monday, 21 November 2011 4:29 PM
To: Glenda Hyde
Cc: James Williams
Subject: Survey methodology Orange pipeline

Hello Glenda

I am responding to the survey methodology that has been proposed for the Proposed Orange Drought Relief Connection Pipeline Project.

I agree with the proposed methodology outlined in this document.

James Williams

Wiradjuri Descendant

Deputy Chairperson
Central West Catchment Management Authority Aboriginal Reference Group.

APPENDIX 4

NATIVE TITLE CLAIM

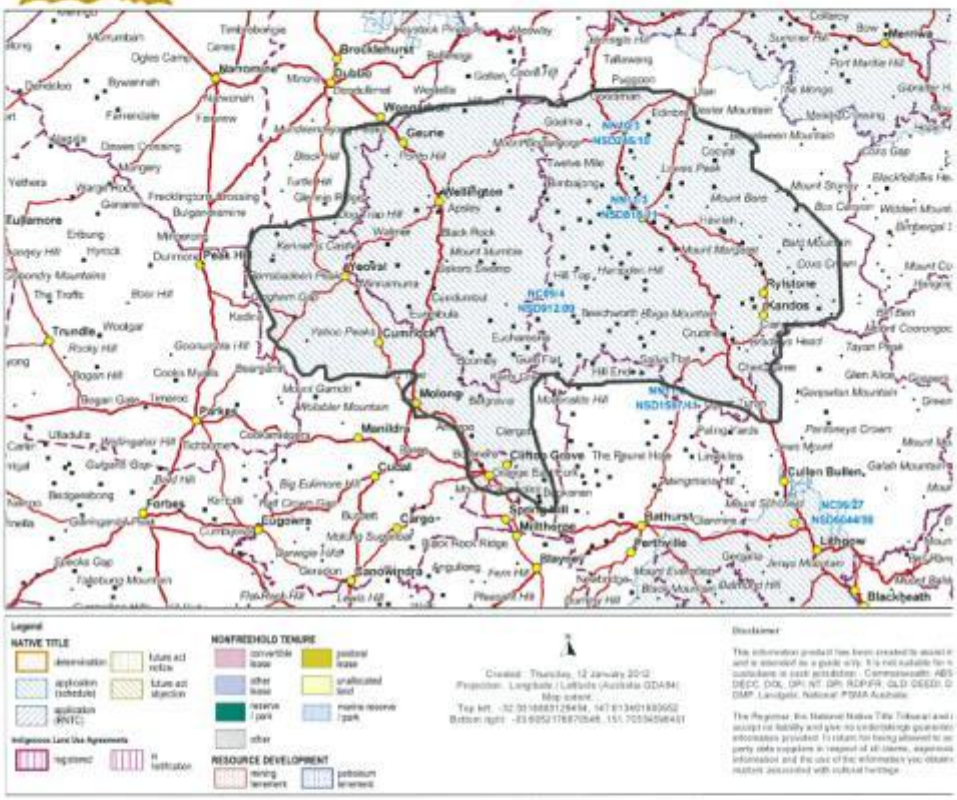
Claimant application summary - Wellington Valley Wiradjuri

Application name:	Wellington Valley Wiradjuri
Application type:	Claimant application
State or Territory:	New South Wales
Date filed:	24/08/2009
Register of Native Title Claim status:	Registered
Federal Court file no:	NSD912/09
Tribunal file no:	NC09/4
Status:	Active
Area description:	Wellington
Representative A/TSI body area(s):	NTSCORP Limited
Local government region(s):	Cabonne Shire Council Dubbo City Council City of Lithgow Narromine Shire Council Orange City Council Parkes Shire Council Wellington Council Bathurst Regional Council Mid-Western Regional Council Warrumbungle Shire Council
Applicants' representative:	Teitzel & Partners
Notification status:	Notification Complete
Notification closing date:	29/09/2010
In mediation:	No
Case manager:	Kimberley Wilson

National Native Title Tribunal

Native TitleVision

NC09/4



http://www.ntv.nntt.gov.au/intramaps70/ApplicationEngine/print.aspx?templateName... 12/01/2012

APPENDIX 5

UNANTICIPATED DISCOVERY PROTOCOLS

Protocol to be followed in the event that previously unanticipated Aboriginal or historical archaeological material (objects, artefacts, deposits or relics) are encountered in the course of construction of the Macquarie River to Orange Pipeline Project

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

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

    b. The site supervisor and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human or Aboriginal or historical European origin for the finds, then consider if it is possible to gain a qualified opinion (such as from the project archaeologist) within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out not to be archaeological). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following authorities or personnel of the discovery:

    a. The Heritage Branch of the Department of Planning ;

    b. An archaeologist or Aboriginal Heritage Officer from the Office of the Environment and Heritage (OEH), Environment Protection and Regulation Group, North West Branch (02 6883 5330), or call the OEH Environment Line: 131555 (excluding mobiles);

    c. Representative(s) from the registered Aboriginal stakeholders (as appropriate); and

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

4. Facilitate, in co-operation with the appropriate authorities and stakeholders:

    a. The recording and assessment of the finds. This will include determining if the find(s) are from a new or previously recorded site, and lodgement of an OEH site card for all new recordings;

    b. Fulfilling any legal constraints arising from the find(s). This will include complying with OEH directions, and HMP requirements in the case of a previously recorded site; and

    c. The development and conduct of appropriate management strategies. Strategies will depend on stakeholder requirements and the assessed significance of the find(s).

5. Where the management of find(s) involves the salvage excavation or collection of artefacts, this material will be curated according to the provisions of any relevant CMP, or as directed by OEH.

6. Where the find(s) are determined to have cultural heritage value according to the criteria specified in the *Heritage Act 2004*, any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from OEH.

Protocol to be followed in the event of that suspected human remains are encountered in the course of construction of the Macquarie River to Orange Pipeline Project

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

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

    b. The site supervisor will be informed of the find(s).

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

3. Immediately notify the following people of the discovery:

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

    b) Department of Planning

    c) An archaeologist or Aboriginal Heritage Officer from the Office of the Environment and Heritage (OEH), Environment Protection and Regulation Group, Southern Branch (02 62297177, or call the OEH Environment Line: 131555 (excluding mobiles), or 02 99955555);

    d) An archaeologist or appropriate staff member from the Heritage Branch, Office of the Environment and Heritage (OEH) (02 98738500);

    e) Representative(s) from the registered Aboriginal stakeholders (as appropriate); and

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

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Construction related works in the area of the find(s) may not resume until the proponent receives written approval from the relevant statutory authority: from the Police or Coroner in the event of an investigation, or from OEH in the case of Aboriginal or Non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.

In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage Council, then all or some of the following steps *may* be conducted:

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

7. If the specialist identifies the remains as non-human then, where appropriate, the protocol for the discovery of Non-Aboriginal or Aboriginal artefacts should be followed.

8. If the specialist determines that the remains are human, then the proceeding course of action may be of three types:

a. The remains are of an Aboriginal or non-Aboriginal person who died less than 100 years ago. All further decisions and responsibilities regarding the remains and find location rest with the Police and/or the State Coroner.

b. The remains are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

   i. Ascertain the requirements of the Heritage Branch (OEH), the proponent, the project archaeologist, and the views of any relevant community stakeholders;

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

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

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

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

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

      5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

c. The remains are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

   i. Ascertain the requirements of the relevant Aboriginal stakeholders, the OEH, the proponent, and the project archaeologist;

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

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

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

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

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

      5. Subsequent reburial at another place and in an appropriate manner determined by the Aboriginal stakeholders and the OEH.

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