



Environmental & Heritage Management P/L



INDIGENOUS AND NON-INDIGENOUS HERITAGE ASSESSMENT:

WOLLAR - WELLINGTON 330KV ELECTRICITY TRANSMISSION LINE

August 2005

REPORT PREPARED BY

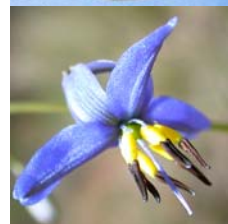
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FOR

INTERNATIONAL ENVIRONMENTAL
CONSULTANTS P/L

ON BEHALF OF

TRANSGRID



EXECUTIVE SUMMARY

The Indigenous heritage component of the current study recorded twenty-eight (28) Indigenous sites. Nineteen (19) of these were open sites, nine (9) of which also have Potential Archaeological Deposit (PAD); seven (7) isolated finds and two (2) PAD's.

Of the 28 recorded sites along the proposed Wellington – Wollar transmission line easement, eleven (11) will be directly impacted by the proposed works, while a further six (6) require mitigative measures to ensure they are not impacted. The categorising of these 17 sites into groups according to recommended management simplifies the presentation of the devised management strategies and mitigative measures. These groups and recommendations can be summarised as follows:

Group 1 – Sites to be fenced off (6): WC-OS12 with PAD; WC-OS13 with PAD; WC-OS15 with PAD; WC-OS16 with PAD; MC-OS19; WW-IF7.

Sites of this group should be identified in the field prior to any construction impacts occurring. An appropriate curtilage should be delineated around these sites using a highly visual physical barrier (i.e. 1 m high orange roadwork fencing). This will ensure all sites can be easily identified and protected from inadvertent machinery impacts. Members of the construction team, including sub-contractors, machine operators and truck drivers should undergo site induction concerning cultural heritage issues, prior to working on the site. This would preferably be undertaken by an individual who has a good working knowledge of Indigenous sites and of the legislation protecting them. This induction should inform workers/contractors of the location of nearby sites, and of their legislative protection under Section 90 of the NSW National Parks and Wildlife Act 1974. These inductions should be recorded in a register, with all those present signing their complicity with these guidelines.

Group 2 – Sites requiring a Section 87(1) permit for collection or relocation (2): WC-IF1; WC-IF5.

The two sites of this group will require application by the Proponent to the NSW DEC for a Section 87(1) permit to collect and relocate these isolated finds prior to any development impacts occurring.

Group 3 – Sites requiring a Section 87(1) permit for monitoring (3): UC-OS1 with PAD; UC-OS3; SC-OS10.

The sites of this group will require application by the Proponent to the NSW DEC for a Section 87(1) permit to monitor earthworks at these locations. Monitoring should be undertaken by an archaeologist or suitably qualified Aboriginal community members. The fate of any artefacts recovered will be determined by the Aboriginal community as to whether they wish the artefacts to be reburied in a recorded location or retained through application to the NSW DEC for a Care and Control permit.

Group 4 – Sites requiring a Section 87(1) permit for test excavation (6): GC-OS5 with PAD; CR-OS4; BSR-OS8; WC-OS17 with PAD; WC-PAD 1 and WC-PAD 2.

These sites are characterised by having, at minimum, low-moderate potential for intact, sub-surface deposits. Sites of this group to be impacted by the current proposal will require application by the Proponent to the NSW DEC for a Section 87(1) permit to undertake test excavation at these sites. The results of test excavation will allow an accurate characterisation of the archaeological resource (i.e. nature, extent and integrity of sub-surface deposits) subsequently enabling the formulation of appropriate management strategies. It is important to note that test excavation at these locations will only be required within the area(s) that are to be impacted as a result of the proposed development. This, in many cases, will mean test pitting in very limited areas.

It is recommended that TransGrid apply for a whole of development Section 87(1) / 90 permit at the project outset to cover all monitoring, test excavation and partial site destructions so as to streamline the permit application process.

Only one site of group 4 warrants further mitigative measures, being site CR-OS4. Here fencing will be required along Uamby Road, as well as along the access tracks to Tower 198 and around the construction zone for this tower. It is further recommended that this site be recorded in detail prior to the Proponent undertaking some site preservation measures such as stabilising erosion areas with soil and subsequently planting grasses to inhibit further erosion.

Further site specific management recommendations and mitigative measures are detailed in Table 23, located at the end of Section 6.1. The information contained within this table provides the Proponent with precise details regarding potential impacts and site avoidance, and notes where there may be potential for impacts to be reduced. Although this Table alludes to potential for the revision of impacts at certain locations, this report has been devised on known impacts at the time of writing. If in the future the Proponent is able to reduce impacts at any location, then required management may be revised.

Beyond the identification of Indigenous sites, the current study also identified archaeological sensitivity at several tower locations and creek crossings, often close to recorded sites. Due to the potential for artefacts, in all likelihood from disturbed deposits, it is recommended that the Proponent seek a Section 87(1) permit to monitor works at these locations as detailed below and listed on Table 24.

- a. Tower sites 30, 32, 35, 41, 46, 51, 80, 128, 134 and 155;
- b. Creek crossings for access roads at Wilpinjong Creek – tower 50 and Slapdash Creek – tower 134.

Three sections of the proposed Transgrid Tower locations were not accessible during the current survey. Once access issues are resolved, survey should be undertaken at these 24 tower locations, (Towers: 59-63; 181-190 and 234-242). Predictive modelling has indicated that of these 24 locations, 13 are in areas of low archaeological sensitivity, two are in areas of low-moderate sensitivity, a further two in areas of moderate archaeological sensitivity while the final seven are situated in areas of moderate to high archaeological sensitivity.

The non-Indigenous heritage component of this study recorded ten features. These include farming cottages, old farming and mining structures & equipment and a rail line. The majority of these items were outside of the impact corridor and the four that were within the

proposed easement will not be impacted by the construction of the transmission line if appropriate mitigative measures, as outlined in Section 6.2, are undertaken.

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1. INTRODUCTION

This report was commissioned by International Environmental Consultants P/L on behalf of TransGrid. It details the results of an Indigenous and non-Indigenous heritage survey and assessment along the 117 km route of the proposed Wollar – Wellington 330kV transmission line, NSW (Figure 1 & 2).

1.1 Project Scope

The consultant was briefed to undertake survey and assessment of Indigenous and non-Indigenous heritage issues arising from construction of the proposed Wollar – Wellington 330kV transmission line, NSW. The proposed electricity easement and associated infrastructure will consist of c. 275 towers constructed along a linear corridor (changing angle at several locations) between Wollar and Wellington. Existing and new access roads required for tower construction and ongoing maintenance of the new line have also been assessed.

This investigation included the following aspects:

- a search of all relevant registers of information for both Indigenous and non-Indigenous heritage: the NSW Department of Environment and Conservation (DEC) Aboriginal Heritage Information Management System (AHIMS); the NSW Heritage Office State Heritage Register and State Heritage Inventory; the National Trust of Australia (NSW) Register; the Register of the National Estate (Australian Heritage Commission); the Australian Heritage Places Inventory and the Wellington and Mid Western Local Government Area LEP's;
- a review of the relevant literature including previous consulting reports, academic theses and articles and heritage studies undertaken for local councils;
- consultation with the Gallannggabang Aboriginal Corporation (GAC), Warrabinga Native Title Claimants Corporation (Warrabinga), Murong Gialinga ATSIC (MGATSIC) and the Mudgee Local Aboriginal Land Council (MLALC). It should be noted that the Wellington Local Aboriginal Land Council was defunct prior to and during this consultancy;
- pedestrian field survey to identify and record all cultural heritage sites and relics within the 116 km proposed impact corridor for the Wollar – Wellington 330kV transmission line and associated access tracks;
- assessments of the significance of any recorded sites and the formulation of appropriate management strategies; and
- completion of documentary evidence (e.g. DEC AHIMS Site Cards, NSW Heritage Council Inventory sheets or Statements of Heritage Impacts (SoHI's) for any sites/relics located during the survey for the notification of the relevant authorities.

Figure 1: Locality Map

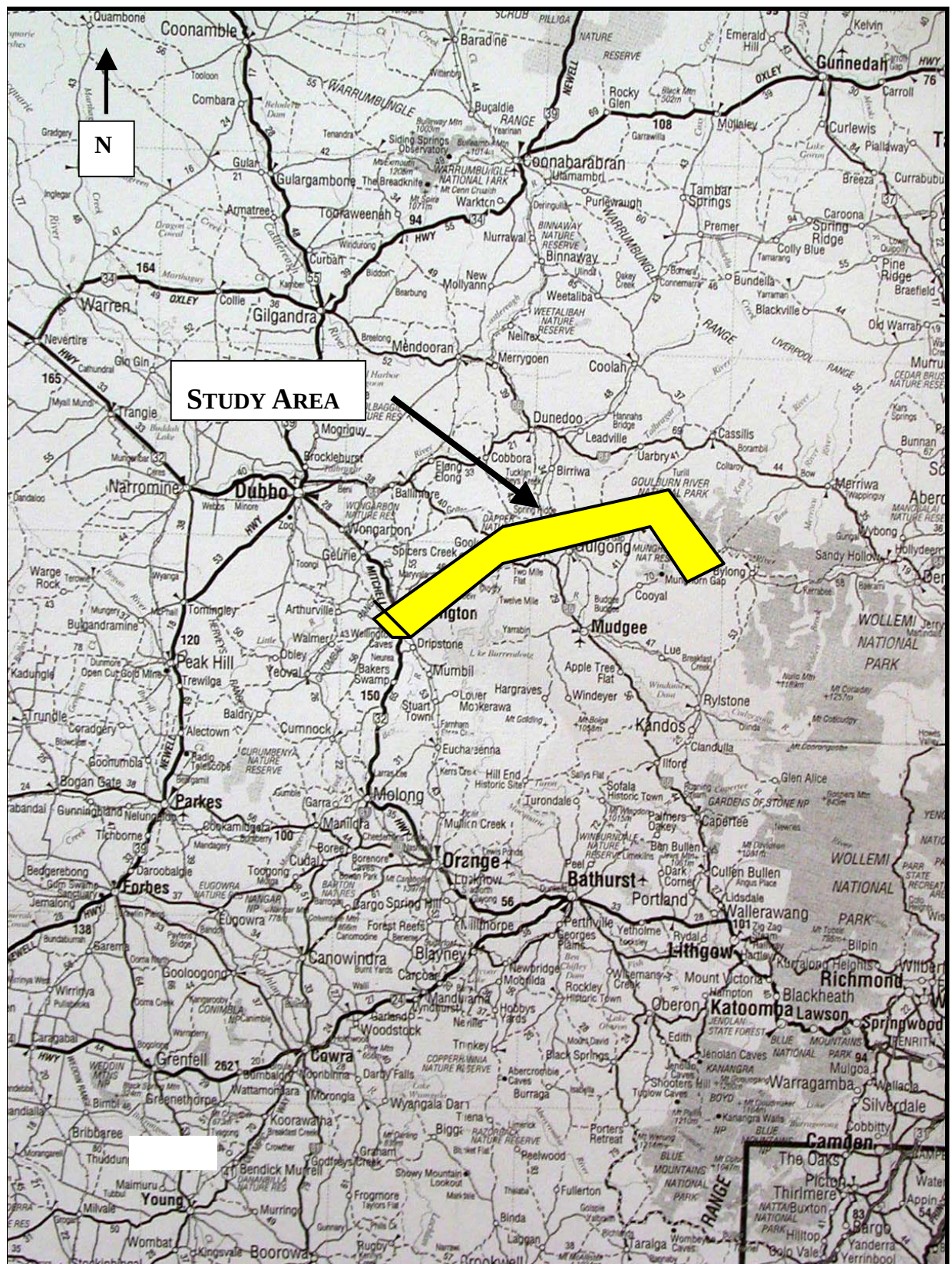
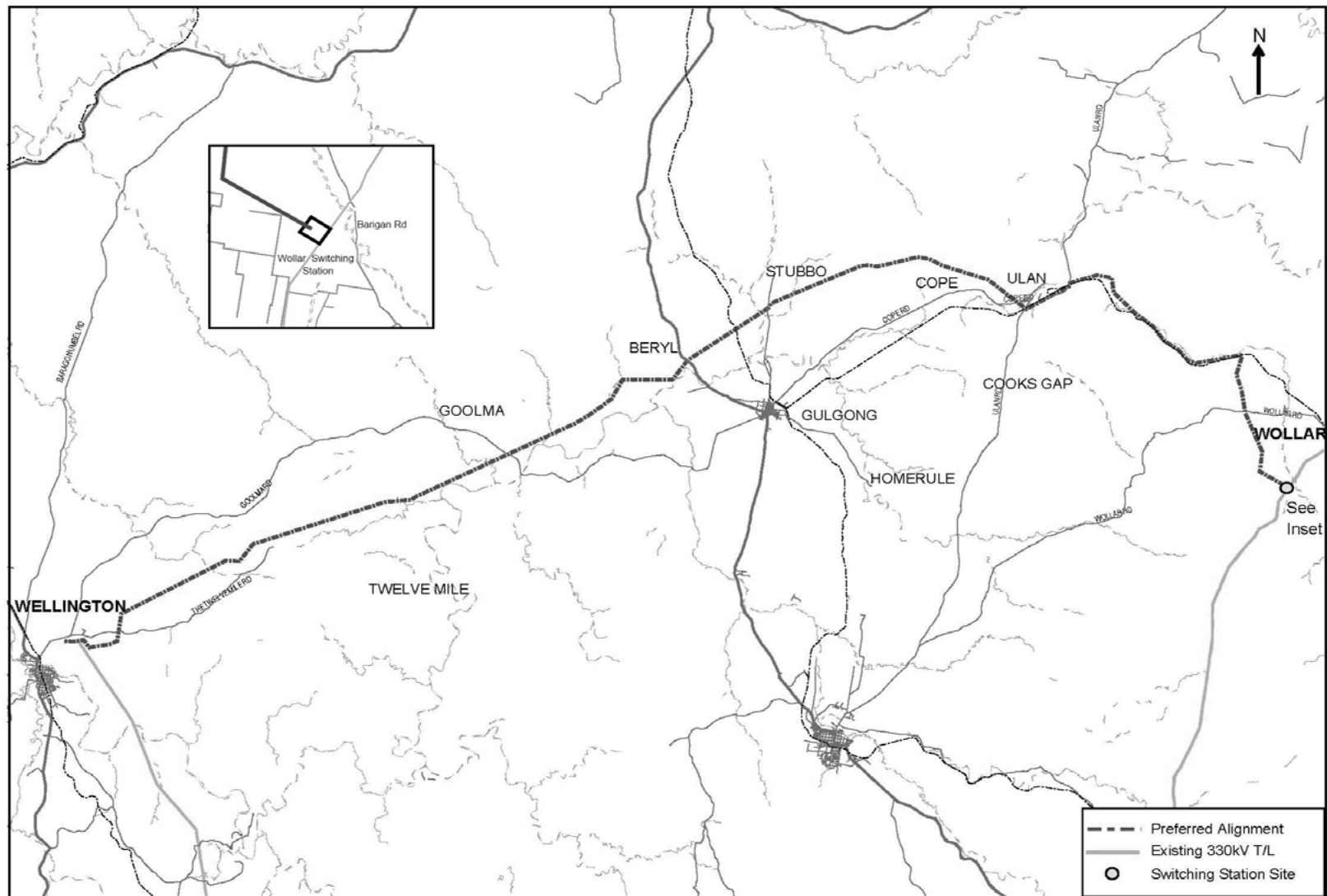


Figure 2: Location of Survey Area (source: TransGrid).



1.2 Proposed Works

TransGrid propose to construct a 116 km 330kV transmission line that will connect the Wollar 330kV switching station to the existing Wellington 330/132kV switching station (Figures 1 & 2). Several options for the route of the easement were canvassed (ERM 2003) with what was known as the Northern Corridor being selected as the preferred route.

The 330kV transmission line will consist of up to 275 towers. These will be constructed along a linear easement at locations that, considering engineering and design considerations, have the least environmental and aesthetic impact (Figure 3). Existing tracks will be used where possible to access the easement with some requiring upgrading. Infrequently, new access roads will also be required, some of which are needed at creek crossings. Access roads will be used for construction purposes and also for ongoing line maintenance. Tracks will be generally 4-5 m in width. The location of the proposed access roads were marked as dotted lines on aerial photographs overlain with the route plan supplied to the OzArk. These aerial images could not be reproduced in the current report (due to size and volume), but will form part of the associated EIS documents.

The impact footprint and ground disturbing activity of each tower structure is c. 10 x 10 m, with each of the four legs requiring a 1 x 1 m excavation for footings. Although the direct impact area is limited, a broader area of disturbance will be associated with construction at each tower location for vehicle parking and equipment storage, likely to cover an area of approximately 50 x 50 m. Very little ground disturbance will be associated in the inter-tower span distance, although portions of the study corridor will require vegetation removal due to the interference with the lines from large trees.

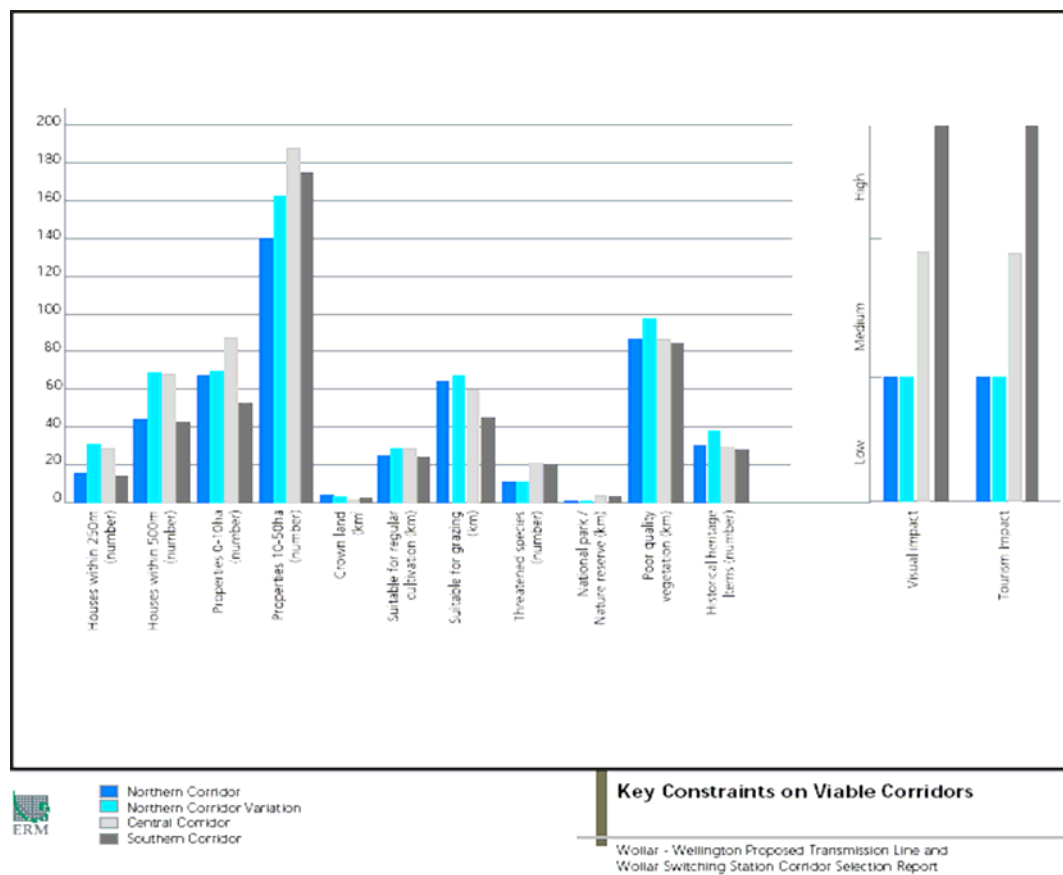
1.3 Project Constraints and Limitations

Survey was limited to the area delineated in Figure 2, being a 116 km x 60 m easement for the proposed 330kV transmission line. The determination of this route as the most appropriate was based upon an options study which assessed the constraints concerning each option (Figure 3) and arriving at the current alignment. This route was plotted on a series of large scale A3 aerial photographs supplied by TransGrid, which also indicated the location of the new access tracks.

The survey area was physically delineated in the field by professionally surveyed posts and via aerial and route maps provided by the client. Mr Murray Williams – Senior Environmental Officer, Mr Jim Morris and Mr Bruce Jackson from TransGrid accompanied the archaeological and heritage team at all times to detail site specific impacts, arrange property access and to act as guides. In this regard it is important to note that impacts at each tower site were absolutely delineated in the field as exact tower locations were provided. This degree of accuracy has enabled concomitant precision in the identification of heritage constraints at each impact location and hence the formulation of tailor-made management recommendations.

It is important to note that tower locations 59 – 63, 181 – 190 and 234 – 242 were not inspected as part of the current project because access to the properties on which these towers are to be located was denied. Consequently, for the purpose of the current assessment, predictive modelling has been undertaken for these areas to provide an indication of their heritage potential. Once access is granted, physical assessment will be undertaken in these areas to ground truth the predictive modelling.

Figure 3: Key Constraints Identified for Each Route Option (Source: TransGrid)



1.4 Report Authorship

This investigation was undertaken by Jodie Benton, Phillip Cameron, Ben Churcher and Kylie Sutherland (OzArk Environmental and Heritage Management P/L). This report was written by Jodie Benton, Phil Cameron & Ben Churcher.

2. COMMUNITY INVOLVEMENT

2.1 Aboriginal Community Involvement

Aboriginal community involvement in the project was determined by advertising for expressions of interest in the Wellington and Mudgee local papers. Letters were also issued to Aboriginal groups or individuals known to have an interest in Indigenous heritage within the study area (Appendix 2 & 3).

The study area falls within the boundaries of the Wellington LALC and the Mudgee LALC, however, neither of these organisations participated. The Wellington LALC has been defunct since 2003 and the Mudgee LALC, despite initially registering an expression of interest, failed to commit staff to accompany the survey team despite all reasonable attempts to facilitate their involvement (Appendix 2). Consequently, the MLALC has been kept informed of the project in accordance with the *DEC Interim consultation guidelines for community consultation* and through direct communication with David Maynard (MGATSIC). Mr Maynard also communicated with the chair of Gallannggabang Aboriginal Corporation to ensure the results from a large recorded site on lands on or close to the border between the LALC's were known.

Aboriginal groups participating in the survey were the Gallannggabang Aboriginal Corporation (GAC), Warrabinga Native Title Claimants Corporation (Warrabinga) and Murong Gialinga ATSIC (MGATSIC). These groups provided representatives throughout the length of the project. GAC was represented in the field by Mr Jamie Carr, Mr Terry Hayek, Mr Cedrick Talbot and Mr Ricky Hill. MGATSIC was represented in the field by Mr David Maynard and Ms Rosy Booth whilst Warrabinga was represented in the field by Ms Lynn Syme and Mr Lance Syme. All organisations provided one – two representatives per day during the field assessments.

GAC and Warrabinga undertook survey within the Wellington LALC boundaries and MGATSIC and Warrabinga undertook survey within the Mudgee LALC boundaries. The duration of field work totalled 14 days undertaken on:

- 17th – 18th February 2005
- 10th -11th March 2005
- 17-18th March 2005
- 30th March – 1st April 2005
- 14th – 15th April 2005
- 27th – 29th April 2005

Appendix 2 lists correspondence with the Aboriginal communities while Appendix 3 provides a list of all consultation with these groups. Discussions were held in the field at the location of each impact area with the client, archaeologists and the community to define the type and nature of each impact and assessed requirements for mitigation or management measures. The community were encouraged to bring forward any issues of concern and had full access to representatives of the client, the archaeologist and other communities for confidential or group discussions. The final survey date was partially used to revisit (desktop) each Aboriginal site located during the survey and discuss the likely management recommendations to be contained within the archaeological assessment report.

3. THE STUDY AREA

The Wollar – Wellington 330kV transmission line will connect the proposed Wollar 330kV switching station to the existing Wellington 330/132kV substation. The easement length is approximately 116 km and traverses lands administered by the Midwestern

Regional and Wellington Councils (Figure 2). Larger towns or villages closest to the easement route include Wollar, Ulan, Gulgong, Goolma and Wellington, although none of these are directly within the proposed easement.

Pedestrian survey was confined to the easement defined by the Principle where access with the landholder had been obtained, as well as the routes of access roads and other known impacts. Tower locations 59 – 63, 181 – 190 and 234 – 242 were not inspected as part of the current project because access to the properties on which these towers were located was denied.

3.1 Environmental Setting

The proposed Wollar – Wellington 330kV transmission line easement lies within the NSW South Western Slopes Bioregion. According to the DEC web page (2005) it is an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria with an area of 8,657,426 ha. About 8,070,608 ha or 93.22% of this bioregion occurs in NSW, with the remainder in Victoria. The bioregion extends from Albury in the south to Dunedoo in the northeast. Towns located in the bioregion include Wagga Wagga, Mudgee, Cootamundra, Narrandera, Parkes, Gundagai and Young. The bioregion includes parts of the Murray, Murrumbidgee, Lachlan and Macquarie River catchments.

Generally the area of the development proposal is confined to ridge lines or open agricultural land, which for the most part, have been extensively cleared and grazed. In places the easement and access roads cross drainage lines and creeks.

3.2 Geology and Topography

A review of the geological setting has been previously prepared for this study corridor (IEC 2004: Section 5.2) and the following data is based on this.

In general, Paleozoic rocks of the Molong Rise, the Hill End and Cowra Troughs, and the Paleozoic Granites dominate the geology along the study easement. Tertiary volcanics, largely basalts, have extruded in scattered areas. Quaternary alluvium has been deposited in narrow bands, usually in association with major streams. Towards the north and east we find the Permian, Jurassic and Triassic rocks of the Sydney and Great Artesian Basins known as the Oxley Basin. The Paleozoic rocks of the Capertee Rise include scattered areas of basalt especially in the northeast, and smaller areas of Quaternary alluvium interrupt these. The geology along the transmission line route is summarised in the accompanying EIS.

From Wellington the proposed transmission line traverses gently undulating land until south west of Goolma. Hills become steep within the localised areas of Uamby Creek and Mollys Creek thereafter the terrain is flat to gently undulating until east of Beryl. At this point the proposed transmission line skirts around the “Blue Biddy Mountain”. At Ulan the transmission line is situated on flat to gently sloping land, despite passing through one area of hilly land just prior to Ulan. Steep cliffs occur along Wilpinjong

Creek adjacent to the southern boundary of the Goulburn River National Park however the easement is predominantly situated on the creek flats at the base of the cliffs / escarpment with the exception of two crossings over small protruding minor escarpments.

3.3 Vegetation

The native vegetation around the area has been greatly altered as a result of European settlement and associated land use. In the present survey area TransGrid has aimed to minimise impacts to native vegetation and as such predominantly all land within the impact corridor, has been either extensively cleared or heavily grazed. Small exceptions to this occur on lands owned by Ulan Coal and on escarpments especially in close proximity to Wilpinjong Creek (toward the Wollar end of the route).

On a broad scale the vegetation is consistent with the DEC bioregional overview (2005). In the higher rainfall eastern hill country, woodlands and open woodlands of white box (*Eucalyptus albens*) are dominant. To the west and north these give way to vegetation communities dominated by grey box (*E. microcarpa*) and white cypress pine (*Callitris glaucophylla*). Other tree species characteristic of the study area include red stringybark (*E. macrorhynca*) on higher slopes, with black cypress pine (*C. endlicheri*), kurrajong (*Brachychiton populneum*), red ironbark (*E. sideroxylon*), white gum (*Eucalyptus rossi*), yellow box (*E. melliodora*) and Blakely's red gum (*E. blakelyi*) occupying the lower slopes. Valley flats are dominated by rough-barked apple (*Angophora floribunda*), with the occasional river oak (*Casuarina cunninghamia*) found along eastern streams and river red gum (*E. camaldulensis*) lining the larger central and western streams. Where altitude and rainfall are lower, Dwyer's mallee gum (*E. dwyeri*) dominates areas of granite-derived soils and red ironbark communities occupy areas of sandy soils derived from sedimentary rock. Other common trees on hill slopes include hill red gum (*E. dealbata*).

Distinct and overlapping vegetative communities occur within the study area which is listed below. These communities have been described and documented by Keith (2004). The descriptions quantify features of vegetation such as Structure, Physiognomy (collectively describes the growth forms, degree of woodiness, types of leaves, range of growth forms as well as more subtle variations within each of the growth forms) and species composition.

3.4 Existing Levels of Disturbance

The study easement has undergone various levels of disturbance along its 116 km route. Prior to European impacts the classification of native vegetation along the route would have been as follows (source Keith 2004):

- Predominantly *Western Slopes Grassy Woodland* across the entire area with localised areas of *North West Slopes Dry Sclerophyll Forests* chiefly from Gulgong to Ulan. From Ulan and around Wollar the *Western Slopes Dry Sclerophyll Woodland* peters into *Sydney Hinterland Dry Sclerophyll*; and

- *Floodplain Transitional Woodlands* occur along the rivers and larger creek lines and are more widespread within the Wellington Valley;

The majority of the study area has been extensively cleared since the 1820s for grazing sheep and cattle and raising crops. Relatively little of the study area can be considered 'lightly disturbed' land. Ridges, hill-slopes and creek flats have all been moderately and/or heavily disturbed with erosion evident in some areas. The current development proposal is mostly targeting cleared grazing land or re-growth forest. Only a small portion of land remains undisturbed and in original condition as this area is inaccessible to machinery and generally unsuited for grazing agriculture (i.e. sides and tops of steep rocky escarpments). Aboriginal sites within the study area will have been affected by these land use disturbances.

In specific terms, towers 15, 22, 56-58 and 102-103 are the only towers that will impact land that has never been cleared and farmed other than slight disturbance associated with domestic stock having access. The underlying geology here is different to the remainder of the study area, with significant outcropping, boulderised quartzite and sandstone scattered all over the surface. Towers 62 & 63 also occur within the above-mentioned land, however, and were not assessed as access to this property was denied.

Other towers are located on area with minimal disturbance where the land has not been ploughed although portions have been cleared and grazed at a much higher stocking rate. Such areas are associated with towers 162, 164, 174, 176, 190, 195, 196, 197, 204 – 211, 255 and 228.

More specifically the landform, vegetation and disturbance of the study area are described in Appendix 4.

3.5 Estimated Effective Survey Coverage

Ground surface visibility will not affect the detection of all site types. It is predominantly open sites, isolated finds, deposits associated with shelters and to a lesser degree grinding groove sites that are impacted by this factor. For these sites, the degree of ground surface visibility combined with archaeological post-formation processes (i.e. whether sites are obtrusive as a result of factors that have occurred since they were formed) will both influence the effectiveness of archaeological field survey. Consequently, it is considered important to document and assess variables associated with ground surface visibility in relation to the landforms surveyed. The following variables are recorded:

1. The percentage area of landforms / survey units determined to have exposures or patches of ground surface visibility; and
2. The quality of the visibility within these exposures, a factor which is usually influenced by the degree of ground cover from either live vegetation or leaf litter, or from siltation (e.g. floodplains) or imported soil deposits (e.g. tracks, roads).

Ground surface visibility along the current study corridor was very variable, as may be expected in a survey of this length (c. 116 kms) which covers such a variety of landforms with shifting degrees of land-use disturbance. Appendix 4 to this report tabulates the overall percentage of ground surface visibility, which is determined via a calculation based on the two major variables described above.

All mature, native trees within impact locations and between towers were inspected for scarring, ensuring good survey coverage of this site type, while all (although there were few) sandstone outcrops were inspected for engravings or grinding grooves, providing equally appropriate survey coverage for these site types.

4. INDIGENOUS HERITAGE

4.1 Aboriginal Historical Background

At the time of European settlement, the study area was situated within the territory of people belonging to the *Wiradjuri* tribal and linguistic group (Tindale 1974). The Wiradjuri tribal area is situated within the Murray Darling Basin and extends across three general physiographic regions: the highlands or central tablelands in the east, the riverine plains in the west, and the transitional western slopes zone in-between (Navin Officer 2005: 48).

The Wiradjuri is one of the largest language groups within New South Wales extending across the districts of Mudgee, Bathurst, Dubbo, Parkes, West Wyalong, Forbes, Orange, Junee, Cowra, Young, Holbrook, Wagga Wagga, Narrandera, Griffith, and Mossgiel (Tindale, 1974). While the area was noted to have a single basic language, various dialects could be found throughout the region (Tindale, 2000; Wiradjuri Language Development Project, 2004). The study area is located within the central tablelands and on the eastern margin of the Wiradjuri territory.

Oral tradition records the presence of over 20 clans within the broader Bathurst – Mudgee region, organised according to matrilineal descent (Navin Officer 2005: 48). Clans were made up of a number of fairly independent groups, of up to 20 members, in friendly contact with each other, moving separately for much of the year over a shared territory (Pearson 1981; Haglund 1985).

Within the Wiradjuri region, the presence of Aborigines in the Darling Basin has been dated to 40,000 years ago (Hope 1981 as cited in Haglund 1985). A spread east into the mountains is thought to have occurred between 14,000 to 12,000 years ago.

4.2 Regional Context and Previous Archaeological Studies

Systematic, regional based archaeological studies covering the proposed transmission line corridor have not been undertaken. Several research driven studies have, however, been carried out in nearby areas that have similar topographic features to the current study area. Results of these projects can therefore be extrapolated to the proposed Wollar - Wellington easement.

Relevant to a scientific understanding of the archaeology of the general region are three studies undertaken over the past twenty years. These are Pearson (1981)¹, Koettig (1985) and Haglund (1985). Together these provide baseline data for placing past Aboriginal sites within a regional landscape context. Following is a summary of the salient points learned from these studies:

Pearson (1981) worked primarily in the Upper Macquarie region, the western boundary of his study area being Wellington. While this area lies to the east of the current study area, the general proximity of his study area make the findings of this work relevant. The majority of Pearson's 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 5,000 years before present. Pearson's analysis of the patterns of Aboriginal occupation involved an examination of site location characteristics in four sample areas.

According to Pearson archaeological sites could be divided into two main categories, occupation sites and non-occupation sites (which included grinding grooves, scarred or carved trees, ceremonial and burial sites etc.). An analysis of the location of these sites led him to build a model for site prediction along the following lines (Pearson 1981: 101 as quoted in Koettig 1985: 47):

- Site distance to water varied from 10 m to 500 m, but in general larger sites are found closer to water;
- Good soil drainage and views over watercourses are important site location criteria;
- Most sites were located in contexts, which would originally have supported open woodlands;
- 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;

¹ M. Pearson's 1981 study is an unpublished PhD thesis from the ANU. The authors have been unable to directly access this work and rely heavily on summaries presented in Koettig (1985).

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

The location of non-occupation sites were dependent on various factors relating to site function. For example, grinding grooves only occur where there is appropriate outcropping sandstone, but as close to the occupation site as possible. Scar trees were variably located with no obvious patterning, other than proximity to watercourses, where camps were more frequently located.

Although a useful study, Koettig (1985: 49-50) considers Pearson's findings as preliminary, mainly due to the unsystematic nature of the recording of most sites used in the analysis. In her view, this would have skewed both site type (obvious manifestations) and location (areas of disturbance), therefore biasing the sample. Further the sample size of both the Wellington and other areas were considered too small to yield significant results.

Also relevant to the current project scope is Koettig (1985), who undertook a comprehensive study of evidence relating to Aboriginal occupation within the Dubbo area, including c. 5 km around the city limits. As a result of the desktop component of this study, Koettig determined there was need for systematic survey to ensure that all topographic landform units and different stream order associations were explored in terms of site type and location. This field work included detailed recording of various site types, ensuring the presence of comparative, quantifiable data. The field survey was undertaken by dividing the broader Dubbo study area into five sample Survey areas covering the three major physiographic zones, but was constrained by time and an inability to access privately owned land.

As a result of this study, Koettig (1985: 81-82) concluded that:

- Aboriginal sites may be expected throughout all the landscape units surveyed.
- The most frequently occurring site types were open artefact scatters, scar trees and grinding grooves.
- The location of sites and their relative size were determined by various factors, predominantly environmental and social. Although social factors cannot be explained through archaeological research, some of the environmental issues may be. These are:

Proximity to water: the largest campsites were located close to permanent water, nonetheless, sites were found all over the landscape including hills and ridges away from obvious water.

Geological formation: Certain sites require specific conditions, e.g. grinding grooves occur where appropriate sandstone outcrops, quarries

are found where suitable stone resources are accessible, burials tend to be found in sandy sediments such as alluvial flats etc.

Availability of food resources: The widest range of potential foods was found along the main water courses due to the supply of permanent water. Some foods would have been seasonal and required foraging away from water courses.

In predicting intensity of occupation, Koettig suggests that larger and more constantly occupied sites are likely to occur along permanent watercourses, while less intense and sporadic occupation evidence is seen along ridge tops or temporary water sources e.g. creek headwaters.

The predictive model for site location developed as a result of this study can be summarised as follows:

- all site types can be found along watercourses;
- stone arrangements occur most frequently on knolls or prominent landscape features;
- larger campsites are most frequent along permanent watercourses, near springs or wetlands, although small campsites may be found anywhere. Because occupation was more intensive along major watercourses, more site complexes will be found there;
- scarred trees may be found anywhere, but especially where there are remnant stands of native trees;
- campsites would become smaller and more sporadic near the headwaters of creeks;
- grinding grooves are most frequent in association with appropriate sandstone, i.e., north and east of the Macquarie River;
- quarries may be found wherever there is a reliable sources of suitable stone; and
- Shell lenses (midden material²) would only be found along the Macquarie River.

Haglund (1985) conducted a study into the prehistoric heritage in the Mudgee Shire and noted that prior to European settlement small groups of approximately twenty Aborigines acted independently, but engaged in friendly contact. These groups moved after short intervals, often over a short distance or within the same area, to obtain and use different resources.

² Midden: A prehistoric refuse heap usually comprised of shells.

Early explorers and settlers noted considerable variation in the numbers of Aborigines that would gather for food procurement activities during different seasons of the year. This seasonality was most obvious in the case of gatherings along major rivers, and it has been suggested that during dry periods the water holes remaining in the major rivers would become focal points for the usually scattered groups (Haglund 1985: 5).

Concerning the Mudgee area, Haglund (1985: 3) notes that the distribution of known sites cannot be seen as accurately reflecting past Indigenous land use or site location patterns because of site loss since European settlement. Those sites known to exist, however, do fit within the general pattern for the various resource zones discerned by Koettig and Pearson.

Towards the eastern end of the proposed corridor, the Goulburn River National Park is in close proximity to the corridor. This reserve is listed on the Register of the National Estate, citing the native flora and fauna values of the reserve and also includes mention of significant Aboriginal cultural heritage values (DEH 2005).

The DEC AHIMS Aboriginal site register includes a recording for a Bora ceremonial ground situated just north of the proposed corridor within the Goulburn River National Park (DEC # 36-3-0044). A bora ground is a generic term used for an Aboriginal ceremonial ground, possibly where young males underwent an initiation involving ritualised instruction and traditional ceremony. Bora grounds generally consist of one or more circular rings defined by mounded earth and/or rocks. A pathway generally connected two of the rings and could be many hundreds of metres long. Typically one ring was associated with more public ceremonies and the second with restricted and sacred practice. Carved trees and incised or mounded ground sculptures were also a feature of the ground. Bora grounds are most often located on river flats and low ridges.

David Bell recorded the Bora ground on the AHIMS site register in 1981 as part of a larger NPWS research project on carved trees. Bell's recording is based solely on a description of the site published by R.H. Mathews in 1894. Bell did not visit or attempt to verify the grid reference provided by Mathews. The location identified is situated on the plateau margin of a major south facing escarpment above the proposed Wollar-Wellington easement corridor. This is contrary to Mathew's description of the site's context. Subsequent research of this site and its potential location has been recently undertaken by Navin Officer (2005: 51) although information relating to this site is only available on request as it is deemed culturally sensitive.

Development Driven Survey and Excavation

Excavations

Pearson's excavations at Botobolar 5 (c. 20 kms ENE of Mudgee) provides a rare sequence of early deposits in the region. At this site, a predominantly scraper based industry that Pearson termed 'pre-Bondaian', changed around $5,590 \pm 90$ BP to a Bondaian industry characterised by backed blades and a more diverse tool range. The oldest date at the site is $5,770 \pm 90$ BP and most recent date was $1,170 \pm 60$ BP. Pearson was able to demonstrate that with this shift from the Core and Flake Industry to the

Microblade Industry there was a shift to fine grained siliceous materials and chert predominating and that after 1,500 years ago that there is a decrease in formalised artefacts and the use of quartz. Backed artefacts were present within the more recent deposits, and bipolar artefacts were most frequent in the upper spit.

Near Ulan, east of Gulgong, several surveys and excavations have been carried with the largest lithic assemblages deriving from two dated shelter sites: Bobadeen 1 (Moore 1970, 1981) and SG5 (White 1999).

The Bobadeen 1 assemblage covers a considerable time span, with the earliest assemblage being perhaps 8, 000 years old. Only a fairly small sample of 70 lithics comes from the lowest spit, and only half of these are of quartz. The relative frequency of quartz then increases to 72% at c. 5, 000 to 7, 900 years ago, to decline gradually over time to a low of 44% in the upper spit, dated to within the last 700 years or so. Backed artefacts are present throughout occupation of the site, being most frequent between about 4, 000 and 1, 000 years ago. Identified bipolar artefacts are not common and increase very slightly in the upper spits.

The lithic assemblage from SG5 probably covers a shorter time span, but dating is complicated because most of the charcoal found with the lithics may have come from a single hearth complex, dated some time between c. 290 and 490 years ago. The lithic assemblages shows several changes through spits 2 and 5 which show these dates, suggesting that these age determinations may not necessarily date the lithics. Spit 7 has a notably older age determination of c. 3, 000 years old, and artefacts were found below this level. The dating of the lithics from SG5 should be regarded with caution, but it is likely that the assemblage indicates change within the last few thousand years.

In brief, quartz is predominant in the lowest assemblage, with 68% of artefacts of this material. A similar frequency was found at Bobadeen 1 sometime between 4, 000 and 5, 000 years ago. The frequency of quartz at SG5 declines to 50% at about 3, 000 years ago, and then continues to decline to a low of 34-35%, at an unknown time, probably sometime before 500 years ago. In the last few hundred years the use of quartz again became more frequent, comprising half the assemblage in the upper spit. Backed artefacts occur throughout the sequence, being most frequent within the last 3, 000 years, and less so in the last few hundred years. Bipolar and ground artefacts also became a little more frequent in the last few hundred years.

One final excavated site requiring mention is that of Yamble, located on the banks of the Cudgegong River c. 5 kms southeast of Goolma (Benton 2004b). Test excavations here revealed that the lower spit (4) was dominated by quartz artefacts, although a high proportion (in contrast to the upper spits) of silicified tuff was also recovered. Flaking made use of unifacial and bifacial techniques and the absence of Bondaian components (backed artefacts, asymmetric alternating flaking and faceted platforms), overall squat artefact shape and overall larger artefact size, indicates that this assemblage may be non-Bondaian. The depth of this deposit and its stratigraphic position below other spits showing Bondaian elements (see below) indicates that it is likely to be Pre-Bondaian in age and may have been occupied more than 7,000 years ago. Higher frequencies of retouched artefacts and the presence of two backed blades in the overlying Spit 3

together the presence of a flake with a faceted platform. suggests that this assemblage is Early Bondaian in age or is a mix of Bondaian and Pre-Bondaian artefacts. The upper two spits include evidence of faceted and ridged platforms and overall indicates a Bondaian date.

Surveys

Cubis (1981) found two open sites, two isolated artefacts, a shelter and a possible stone arrangement during his 35 km transmission line survey between Beryl and Ulan. These sites, recorded just south of the present study area, included open site # 36-3-48 that contained artefacts of chert and quartzite and site # 36-3-47 containing quartzite, chert, basalt, siltstone and greywacke artefacts. During this survey Cubis (1981: 11) also recorded two isolated finds on Stubbo Creek and Sportsmans Hollow Creek, two creek systems which the present survey also transacted, recording an open site and an isolated find (SC-OS10 and SHC-IF6).

A large sample of recorded artefacts derive from several sites in and around a hard rock quarry near Beryl, south of the Cudgegong River. The samples were reported by Brayshaw (1987) and Smith (1988), being sites CR1 to CR14. A total of 170 artefacts were recorded from these sites. Of these, quartz is predominant, making up 76% of the assemblage. The predominance of quartz is not surprising, given the presence of a large quartz quarry in the area (site CR12), the rock occurring as reef outcrop on a ridge. Other materials variously recorded as “indurated mudstone”, “chert” and “FGS” make up 20%. Small numbers of artefacts of siltstone, silcrete, quartzite and basalt were also seen. The assemblages included cores of quartz and chert, and one of basalt, along with other retouched and/or usewear artefacts. A bifacially flaked axe, a silcrete anvil, and a flat “mudstone” cobble with flaking, usewear and pounding marks, were found (Brayshaw 1987; Smith 1988). Witter (1988) noted a cluster of basalt pieces which he suggested were block fracture from production of an axe; but when the material was collected, most of the 227 fragments did not reveal diagnostic features of flaking (Brayshaw 1988).

Two open sites were found along Goolma Creek, along the Goolma to Dubbo road (Kelton 1999). “Many tens of artefacts” were seen at G-OS-1 but only 13 were recorded. Half of these were of grey “chert”, the rest of quartz, “indurated mudstone”/siltstone and greywacke. Also present were a small bifacially ground axe of greywacke, a chert backed artefact, and chert and quartz “scraper”-like artefacts. At G-OS-2 only 11 artefacts were recorded, most of those also being of grey “chert”, and one of red-brown jasper; fractured quartz pieces were also seen but it was not known if they were stone artefacts or not (Kelton 1999).

Further afield, a total of 77 artefacts were recorded at Tallawang Creek (north of Gulgong). These were predominantly of quartz (87%) with small numbers of “indurated mudstone” and “FGS” materials, greywacke and basalt. Cores, retouched and/or usewear artefacts, and a backed artefact, were seen (Smith and Rich 1985).

In a larger regional survey of previously recorded sites, Kerry Navin (1990) noted that there were 580 previously recorded sites within a 50 km radius of the township of Ulan.

Nearly half these sites were shelters with deposits (47%) while open sites (30%), art sites (11%) and axe grinding grooves (9%) constitute the major categories of sites in this region. This study area includes much of the Goulburn River National Park explaining the large percentage of shelter sites, and while this study only pertains to the eastern portion of the present study area, it nevertheless gives a good indication of the types of sites in the region.

Numerous studies undertaken over the past twenty-five years for the Ulan Coal Mine over all portions of their lease areas have recorded hundreds of Aboriginal sites. Surveys carried out through the 1980's and 1990's by Haglund have been summarised by Kuskie (2000). As expected, the variety of landforms present within the Ulan project area resulted in all site types being recorded as a result of these studies (including more unusual sites such as ochre quarries and a utilised rock pool), although it was noted that in general, the landscapes were highly disturbed as a result of agricultural activities (clearing, ploughing, grazing) and erosional processes. Overall quartz appears to be the predominant raw material recorded within Ulan, although significant quantities of chert are also present (Kuskie and Webster 2002, Corkill 1999, Haglund 1996).

In summary, the archaeological research undertaken across the region indicates that a long history of Indigenous occupation has occurred and that the most common type of site (in landforms away from escarpment country) are open sites near watercourses. The available information suggests that quartz was generally a prominent raw material used for artefact manufacture, but also used were other fine-grained siliceous materials (FGS) referred to variously as "mudstone", "indurated mudstone", "chert", FGS, siltstone and silcrete. Quartzite, greywacke and basalt were also reported. Quartz appears to be predominant.

Although a significant body of research material exists concerning shelter sites, especially around the eastern of the current study corridor, review of this data has been limited as there are no projected impacts to shelters from the proposed transmission line easement project.

4.3 Local Context

A site search was undertaken on the DEC AHIMS database for encompassing an area within 2 kilometres of the proposed electricity corridor. This search revealed thirty-four (34) recorded sites, ranging from open artefact scatters to art sites (Table 1).

Of these, the following equivalences to sites recorded during the present survey can be made:

- Previously recorded site # 36-3-0236 (MC3) is probably continuous with site MC-OS19 recorded during the current study. Site manifestations
- WCP 174 (Navin Officer 2005 - not yet on the AHIMS database), is probably identical to this survey's WC-IF3.

When mapped (see Figures 4 - 6) the location of these sites confirm that the majority are associated with watercourses (open sites) or the resources of the escarpment country (art sites etc). It is also clear from these maps that recorded sites diminish as you move to the west and away from the concentration of development (and associated archaeological work) around the Wollar-Gulgong corridor.

The most recent study in the region close to, and partly within, the proposed transmission corridor was carried out in 2004 by Navin Officer (2005). The most northerly portion of this survey included sections of Wilpinjong Creek between Wollar and Ulan, areas also included within the present study. The Navin Officer survey located hundreds of sites (224), but of those on valley floors in areas such as Wilpinjong Creek (96 in total), 53% were in a basal slope position, followed by a position on the margin of a minor stream line (32% of recordings), a valley floor context (25%), spurlines (17%) and crests (14%). All of these categories were relatively evenly represented by both isolated finds and open sites.

Sites recorded by this survey (WCP 174 and WCP 193, WCP 151 and WCP 134) are either within, or very close to, the present study area.

Table 1: Previously recorded sites in the vicinity of the study area from the AHIMS database.

DEC site number	Locality	Site Type
36-2-0014	Two Mile Flat;	Artefact
36-2-0019	Goolma;	Artefact
36-2-0036	Goolma;	Modified Tree (Carved or Scarred)
36-2-0099	Stony Creek 3 SC3	Artefact
36-2-0101	Wialdra Creek 1. WC1	Artefact
36-3-0039	Ulan;	Modified Tree (Carved or Scarred)
36-3-0042	Ulan Creek;Site 2;	Artefact
36-3-0042	Ulan Creek;Site 2;	Art (Pigment or Engraved)
36-3-0042	Ulan Creek;Site 2;	Grinding Groove
36-3-0044	Ulan;Wilpinjong Creek;	Ceremonial Ring (Stone or Earth)
36-3-0044	Ulan;Wilpinjong Creek;	Modified Tree (Carved or Scarred)
36-3-0047	Stubbo Creek 3;	Artefact
36-3-0060	Ulan Creek;Site 18;	Artefact
36-3-0061	Ulan Creek;Site 19;	Artefact
36-3-0063	Ulan Creek;Site 21;	Artefact
36-3-0068	Bobadeen;	Art (Pigment or Engraved)
36-3-0075	Wollar Creek;Wandoona;Gulgong;	Artefact
36-3-0076	Wollar Creek;Wandoona;Gulgong;	Artefact

36-3-0098	Wattle Creek NO:2;	Art (Pigment or Engraved)
36-3-0101	Yawanna NO:2;	Art (Pigment or Engraved)
36-3-0103	Wilpinjong;	Modified Tree (Carved or Scarred)
36-3-0106	Yawanna No.1;	Art (Pigment or Engraved)
36-3-0115	Yawanna No.3;	Grinding Groove
36-3-0116	Yawanna No.4;	Artefact
36-3-0133	Wattle Creek No:1;	Art (Pigment or Engraved)
36-3-0159	X 29;	Artefact
36-3-0163	Ulan 102;	Artefact
36-3-0236	MC3	Artefact
36-3-0287	WC/1	Art (Pigment or Engraved)
36-2-0105	YBCR-PAD1	Potential Archaeological Deposit (PAD)
36-2-0108	YBCR-OS3	Artefact
36-2-0109	YBCR-OS4	Artefact
36-3-0335	Wollar Creek 1	Artefact
36-3-0336	Wollar Creek 2	Artefact

Figure 4: Map of previously recorded sites (Wollar to Wellington). Purple line shows location of proposed corridor.

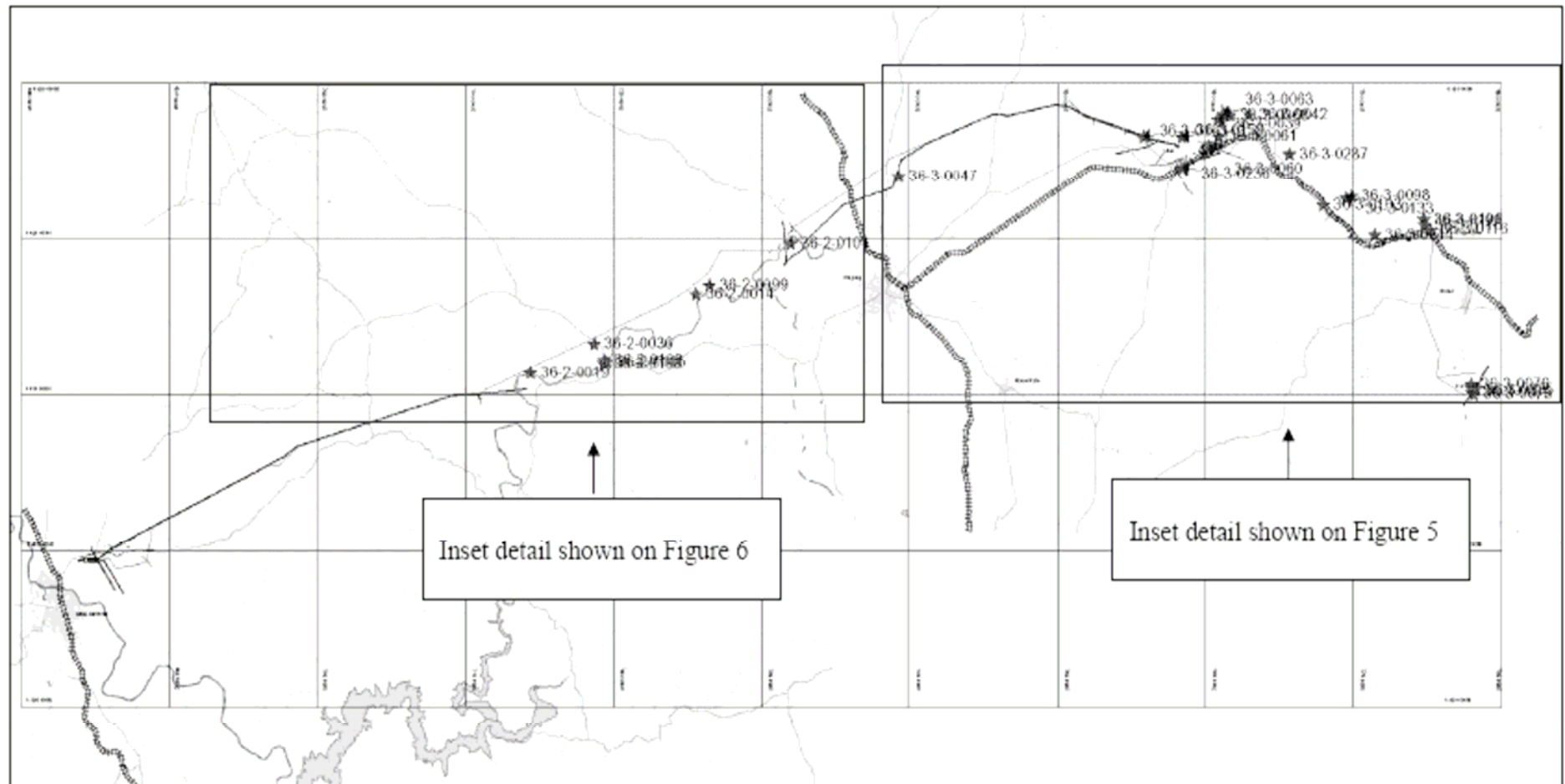


Figure 5: Map of previously recorded sites (Gulgong to Wollar)

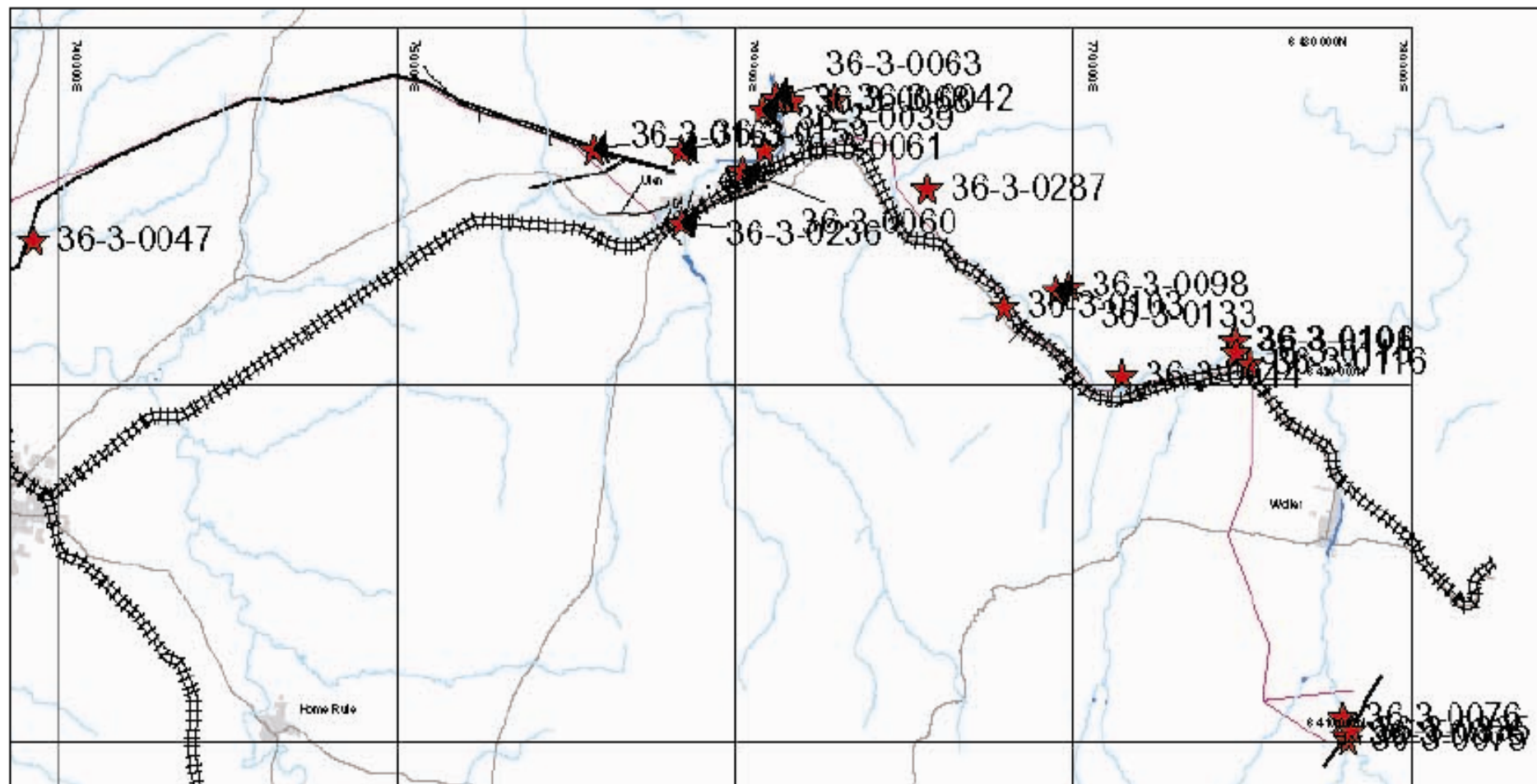
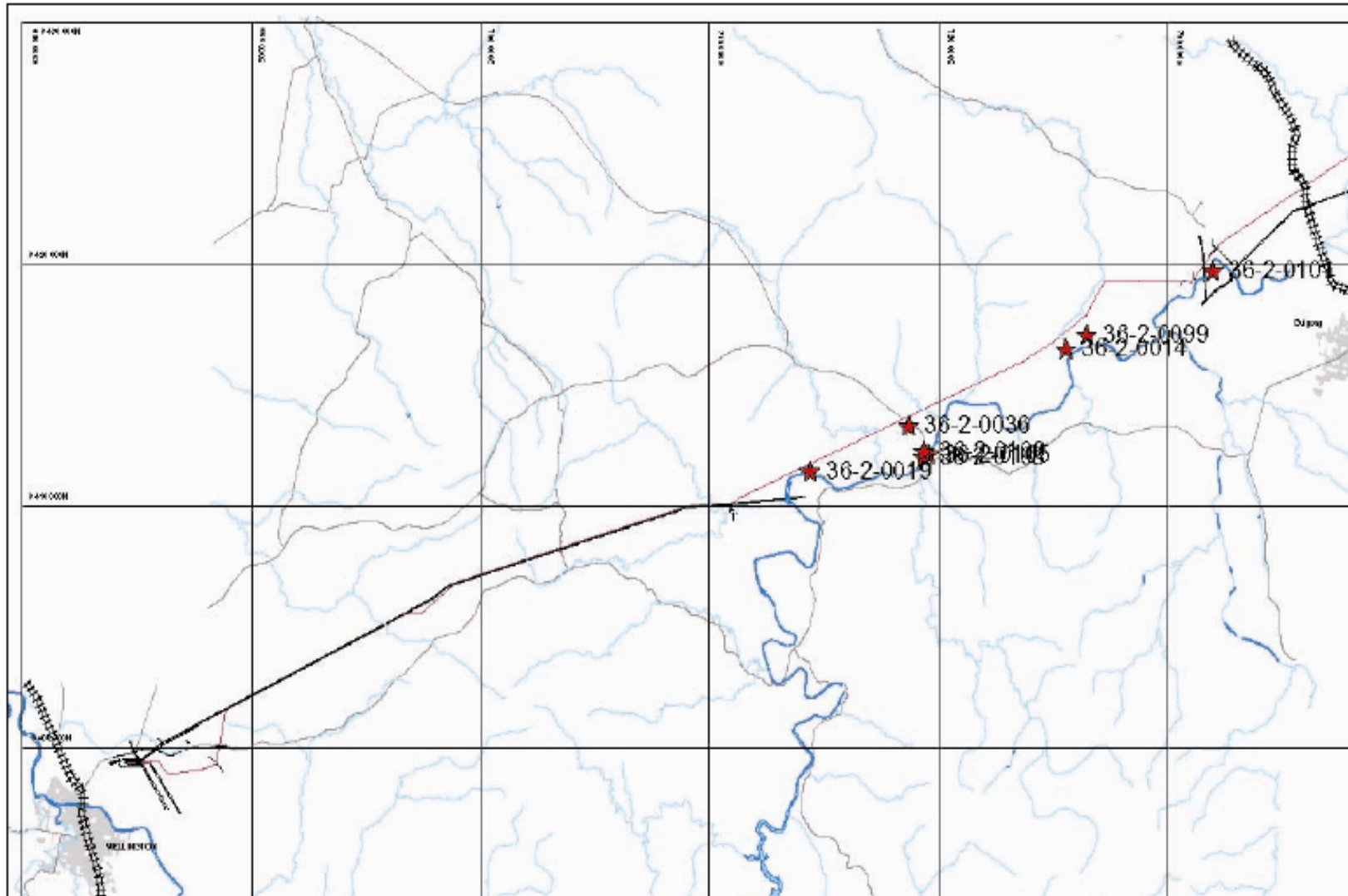


Figure 6: Map of previously recorded sites (Gulgong to Wellington)



4.4 Predictive Model for Site Location

Proximity to a permanent water supply is the primary factor appearing to determine the location of Aboriginal campsites. Results of an integrated series of studies including a serious excavation component, suggests a high correlation between the permanence of a water source and the permanence and/or complexity of the areas' Aboriginal occupation (McDonald 1997). This was further reflected in the lithic assemblages from sites close to permanent water, which suggested that a greater range of activities were represented (e.g. tool use, manufacture and maintenance, food processing and quarrying). Sites near ephemeral water sources had evidence for one-off occupation (e.g. isolated knapping floors or tool discard), and creek junctions were also proven to be foci for site activity.

Using the concept of stream ordering, the following general predictions can be made regarding the nature of sites and their location in the current study area (not taking into account factors of site preservation):

- The area surrounding first order streams and headwaters is most likely to contain evidence of sporadic occupation and may consist of little more than a background scatter of artefactual material.;
- In the vicinity of second order creeks, archaeological evidence may be sparse, but may indicate focussed activity (one-off camp sites and knapping events);
- In the lower reaches of tributary creeks (third order), archaeological evidence will be more frequent and intense, indicating more permanent or repeated occupation by small groups and may show evidence of concentrated activities;
- On major creek lines and rivers (fourth order) more permanent and repeated occupation may be evidenced by a more diverse stone tool assemblage indicating greater range of lithic activities. Sites in this location may even be stratified;
- Creek junctions may provide a popular location for occupation and the size of the confluence (in terms of stream ranking nodes) may influence the size of the site;
- Ridgetop locations between drainage lines are likely to contain limited archaeological evidence in the form of one-off activities.

From the known sites of the region outlined previously in Section 4.2, it is possible to say that the most likely sites to be encountered in the study area are:

- Scarred trees (frequently close to creeks and rivers but also found further a field);
- Open sites, close to permanent / temporary water;
- Isolated finds may occur anywhere, especially in disturbed locations near water sources on red soil or in areas close to ephemeral water – i.e. headwaters;

- Carved trees (unlikely);
- Rock shelters (unlikely because very little of the easement traversed landform in which shelter sites are likely to occur) .

For the purposes of the current study, the site type definitions are presented in Appendix 5.

4.5 Survey Results

The present survey recorded nineteen (19) open sites (OS), nine (9) with associated Potential Archaeological Deposits (PAD). In addition there were seven (7) isolated finds (IF) and two areas that were designated Potential Archaeological Deposits (PAD's) with no surface manifestations. Table 2 tabulates the major features for each of these sites, while full site descriptions can be found in Section 4.5 and site location per map sheet can be seen in Figures 6 a -d.

As well as recording these 28 Indigenous sites, the study also identified archaeological sensitivity at several tower locations or creek crossings, often close to recorded sites. These tower sites or creek crossings are listed in Table 24 of this report.

Brief mention is also made here of the three areas that were inaccessible during the current survey, being towers 59-63, 181-190 and 234-242. Desktop assessment of these areas has been undertaken based on application of the predictive model outlined in Section 4.4 as well as knowledge of the surrounding landscape achieved through survey of the current study corridor. The results of this assessment are presented in the Discussion, Section 4.6.1. Overall, of the 24 towers over the three inaccessible sections, 13 were assessed as having low archaeological sensitivity, two as low-moderate, two as moderate and seven as having moderate to high archaeological sensitivity.

Table 2: Descriptions of Indigenous sites recorded during the current survey.

Site Number	Site Type	GPS	Artefacts	Landform	Level of disturbance	Arch. Potential
UC-OS1 with PAD	Artefact scatter >20 artefacts	710371 E 6408520 N	good quality quartz flakes and several hornsfeld flakes	Creek bank	Low-Moderate	Moderate
UC-OS2	Artefact scatter <5 artefacts	710270 E 6409577 N	quartz and quartzite flakes	Creek bank	Moderate	Low
UC-OS3 with PAD	Artefact scatter <15 artefacts	709935 E 6409813 N	Chert, good quality quartz, quartzite and hornsfeld whole and broken flakes and cores	Creek bank	Low-Moderate	Moderate
CR-OS4 with PAD	Artefact scatter >1000 artefacts	713405 E 6411246 N	good quality quartz, quartzite, hornsfeld, chert and rhyolite. flakes, cores, retouched tools, and a Bondi point	Elevated terrace near water	Low	High

Site Number	Site Type	GPS	Artefacts	Landform	Level of disturbance	Arch. Potential
GC-OS5 with PAD	Artefact scatter >100 artefacts	716819 E 6412701 N	whole and broken flakes, a ground edged axe and cores	Elevated creek bank	Low	High
GC-OS6	Artefact scatter >15 artefacts	717231 E 6412758 N	Whole and broken flakes, a pounder and cores	Elevated creek bank	Moderate	Low
WC-IF1	Isolated Find	730960 E 6419061 N	Quartz flake	Floodplain	Moderate	Low
CT-OS7	Artefact scatter >10 artefacts	717231 E 6412758 N	Chert core fragment, a Quartzite flake, a Chert blade and Chert flakes	Degraded floodplain	Moderate: Erosion and depletion of A horizon soils	Low-Moderate: Landform suggests very little A horizon soils remaining (ca 5 cm)
BSR-OS8	Artefact scatter >10 artefacts	746098 E 6427869 N	Chert core and flake, a Chert scrapper and a number of other Chert and Quartz flakes	Degraded floodplain	Moderate: Erosion and depletion of A horizon soils	Low-Moderate: Landform suggests very little A horizon soils remaining (ca 5 cm)
SDC-OS9 with PAD	Artefact scatter <5 artefacts	746098 E 6427869 N	Two fine grained volcanic flakes and a mudstone core	Alluvial terrace near water	Low-moderate: Erosion and depletion of A horizon soils	Moderate: Sensitive landform and good depth of A horizon soils
SC-OS10	Artefact scatter <5 artefacts	746098 E 6427869 N	Tuff flake and a Quartzite flake	Plateau above creek (creek level now 4 metres below plateau level)	Moderate: Erosion and depletion of A horizon soils	Low: Landform suggests very little A horizon soils remaining (ca 5 cm)
WC-OS11	Artefact scatter <5 artefacts	777749 E 6409065 N	Chert flake with retouch, a mudstone flake, a Chert blade and a broken Chert flake	High ground above Wollar Creek	Moderate: Erosion and depletion of A horizon soils	Low: Landform suggests very little A horizon soils remaining (ca 5 cm)
WC-OS12 with PAD	Artefact scatter <5 artefacts	746098 E 6427869 N	Chert flake and a fine-grey volcanic flake	low terrace 50 m from water	Moderate: Site has been ploughed and it is within the impact zone of severe floods	Moderate: Sensitive landform and good depth of A horizon soils
WC-IF2	Isolated Find	774081 E 6420248 N	Silcrete flake	Floodplain	Moderate: Site has been ploughed and it is within the impact zone of severe floods	Low: Landform suggests artefact not <i>in situ</i>
WC-IF3	Isolated Find	771371 E 6419748 N	grey volcanic scraper	Floodplain	Moderate: Site has been eroded	Moderate: Part of Navin Officer WCP 174

Site Number	Site Type	GPS	Artefacts	Landform	Level of disturbance	Arch. Potential
					and it is within the impact zone of severe floods	
WC-PAD1	PAD	771627 E 6419797 N		Floodplain	Moderate: Site has been eroded and it is within the impact zone of severe floods	Moderate: Part of Navin Officer WCP 174
WC-PAD2	PAD	770833 E 6419666 N		Floodplain	Moderate: Site has been eroded and it is within the impact zone of severe floods	Moderate: Close to Navin Officer WCP 134
WC-OS13 with PAD	Artefact scatter <5 artefacts	769987 E 6420251 N	Tuff blade, two Quartz flakes, one with single edge retouch, and a fragment of a grindstone	Elevated terrace, 30 metres from water	Moderate: Site has been ploughed and it is within the impact zone of severe floods	Moderate: Sensitive landform and good depth of A horizon soils
WC-OS14	Artefact scatter <5 artefacts	769878 E 6420402 N	Quartz flakes	Floodplain	High: Dam construction	Low: Heavy disturbance of archaeological deposits
WC-IF4	Isolated Find	769272 E 6420809 N	Chert Blade	Valley slopes	Moderate: Erosion	Low: Eroded archaeological deposits
WC-OS15 with PAD	Artefact scatter >5 artefacts	769001 E 6421143 N	Tuff blade, a Chert blade and a Quartz flake	Low terrace on floodplain (ca. 1 metre above surrounding land)	Moderate: Site has been cleared and it is within the impact zone of severe floods	Moderate: Moderately sensitive landform and good depth of A horizon soils
WC-OS16 with PAD	Artefact scatter >15 artefacts	767367 E 6422761 N	Chert flake, a Chert core element, a Quartz flake and a Chert blade	Knoll top 250 metres away from water	Low: Some deflation of A horizon soils by erosion	Moderate: Moderately sensitive landform and good depth of A horizon soils
WC-IF5	Isolated Find	767284 E 6422874 N	Chert blade	Valley slope 75 metres from water	High: Artefact probably not <i>in situ</i>	Low: 5 degree slope suggests artefact not <i>in situ</i>
SHC-IF6	Isolated Find	757719 E 6424379 N	Quartz flake	Floodplain	High: Heavy erosion of creek bank	Low: Heavy erosion suggests artefact not <i>in situ</i>
WC-OS17	Artefact scatter >20 artefacts	766479 E 6423495 N	Chert flakes, a Chert core, and Quartz flakes	knoll above floodplain close to water	Low: Some deflation of landscape through erosion	Moderate: Sensitive Landform and good depth of A horizon soils
WC-OS18	Artefact scatter	765865 E 6423952 N	Chert flakes	Floodplain	High: Erosion.	Low: Heavy erosion

Site Number	Site Type	GPS	Artefacts	Landform	Level of disturbance	Arch. Potential
	<5 artefacts				Artefacts probably not <i>in situ</i>	suggests artefact not <i>in situ</i> and a landform with low sensitivity (floodplain)
MC-OS19	Artefact scatter >5 artefacts	758251 E 6424320 N	Quartz flakes/chips	Floodplain/sandy soil	Moderate: Some deflation of landscape through landuse and erosion	Moderate: Moderately sensitive landform and good depth of A horizon soils
WW-IF7	Isolated Find	775615 E 6412143 N	Quartz flake	Valley slope	Moderate: Erosion	Low

UC-OS1 with PAD**Goolma 1: 50K****AGD 710371 E 6408520 N**

The open site Uamby Creek UC-OS1 with PAD is located within an embankment at a creek crossing on the access track to Wollar -Wellington TransGrid tower 208 at an altitude of 400 m. A map showing the location of UC-OS1 with PAD in relation to other nearby sites is shown in Figure 7. A sketch of UC-OS1 with PAD in relation to nearby features is shown in Figure 8.

Surface exposures associated with the surface of the cutting, revealed c. 20 + artefacts (Plates 1 & 2). Most (70%) were of good quality quartz and were generally undiagnostic, however, the presence of several hornsfeld flakes increased the likelihood of the quartz being artefactual.

The track traverses a well drained cleared and possibly ploughed creek bank that very slowly rises (by only 1–2 m) in elevation to become yellow box woodland 50 m south of the exposure. The artefacts were eroding from the embankment cutting and the track surface below was comprised of imported fill.

Due to the nature of the landform and the relatively low levels of disturbance, it is assessed that there is moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 6 a: Indigenous site locations – Goolma 8733-II & III 1: 50K map sheet

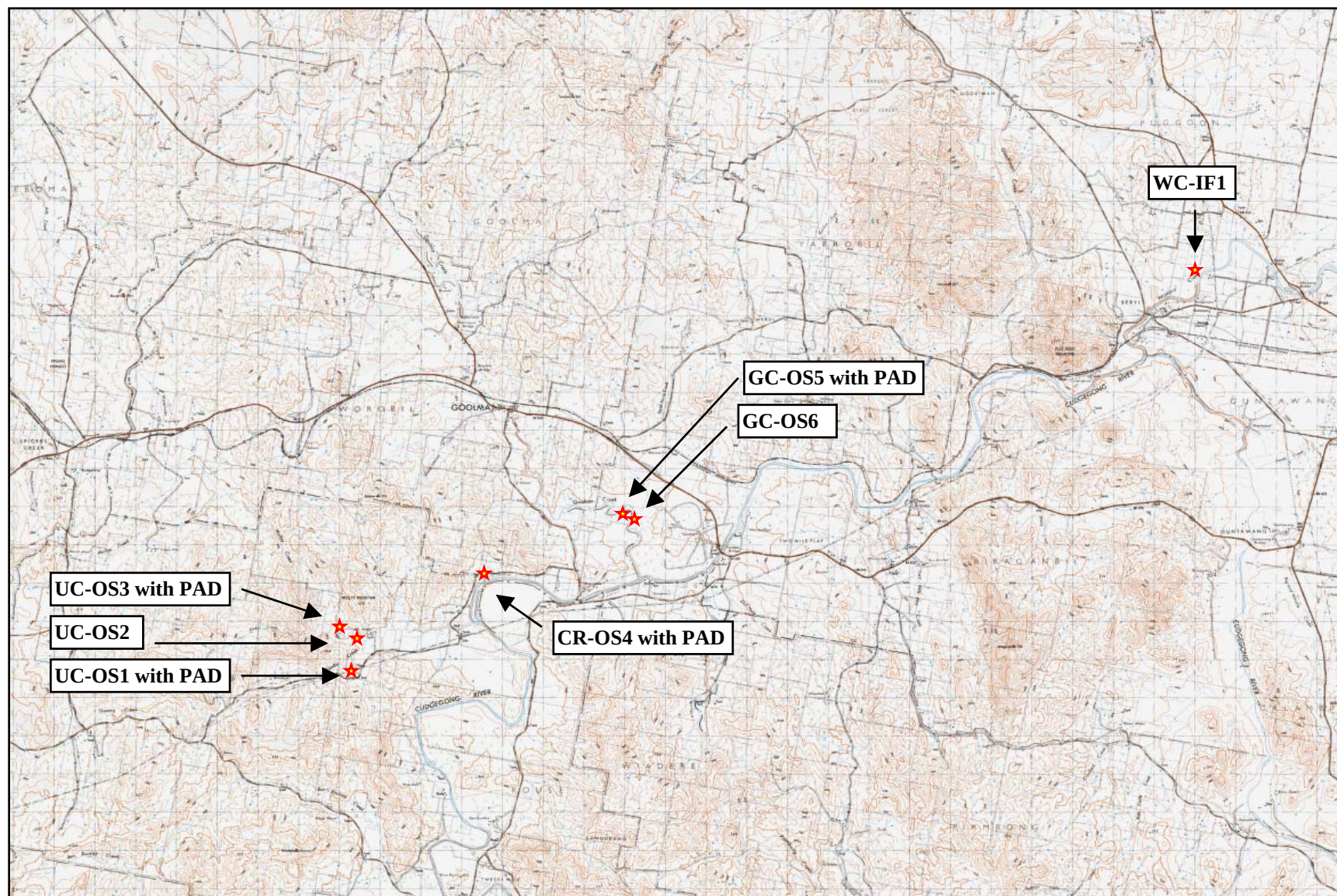


Figure 6 b: Indigenous site locations – Gulong 8833-3-N 1: 25K map sheet

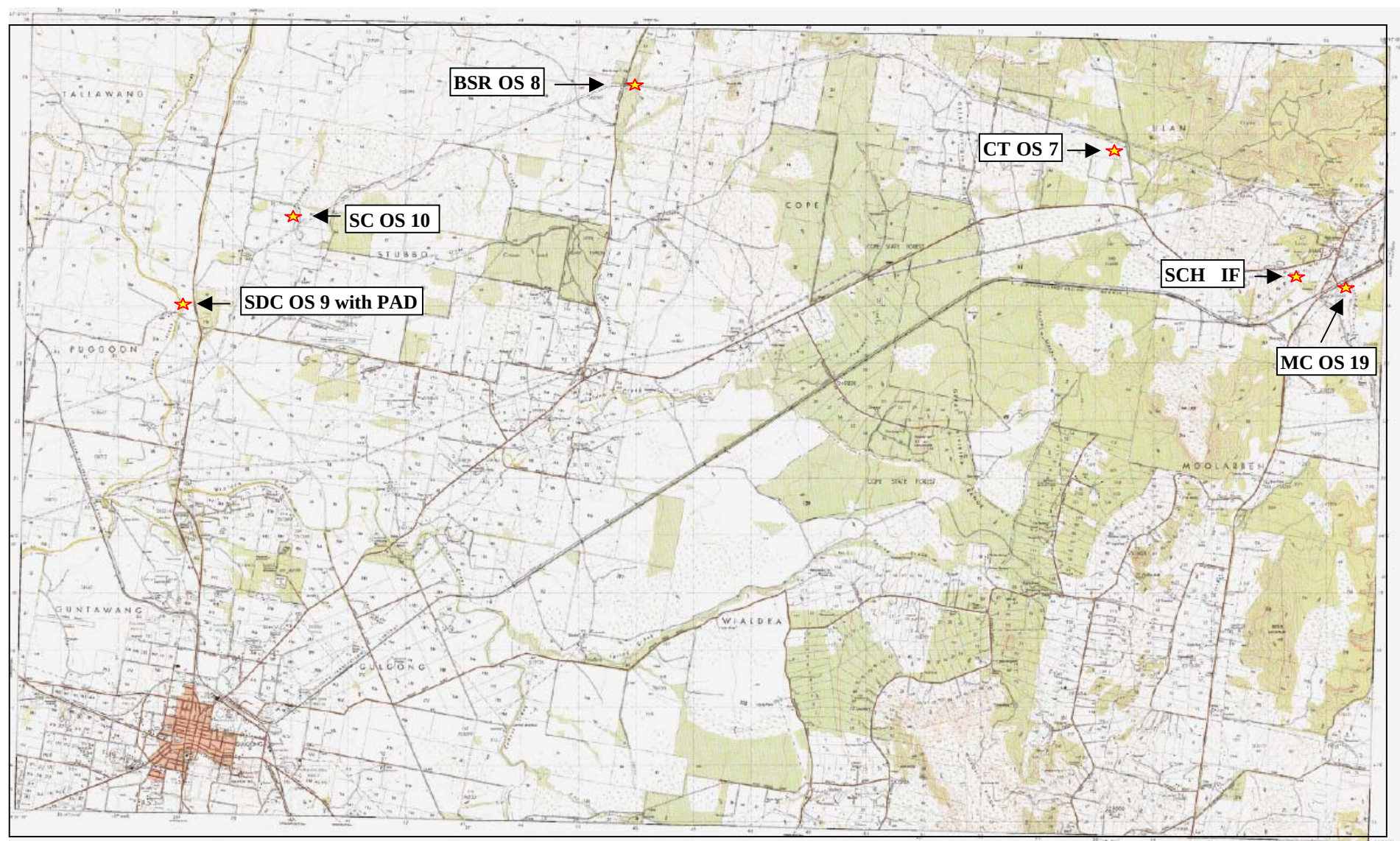


Figure 6 c: Indigenous site locations – Wollar 8833-2-N 1: 25K map sheet

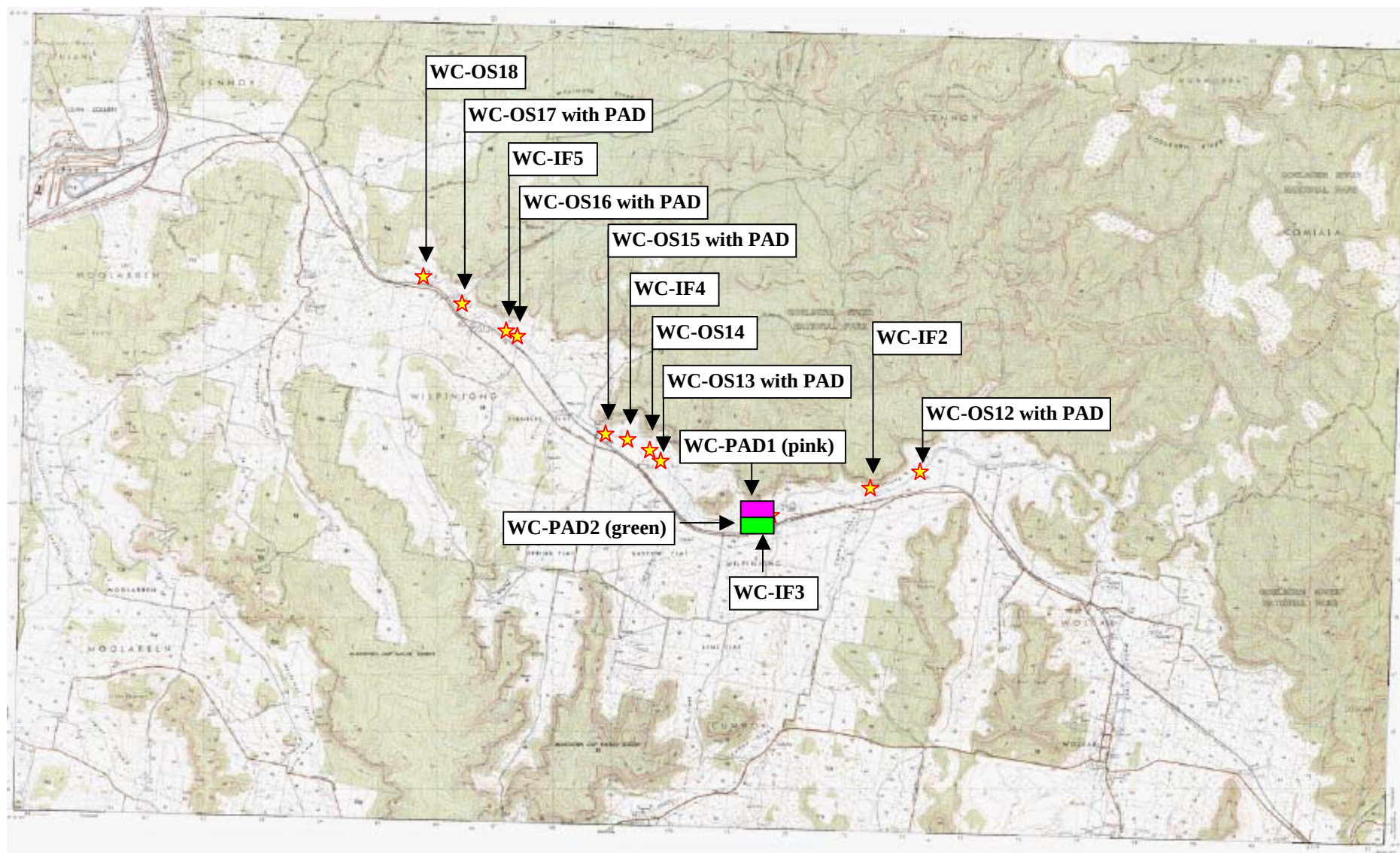


Figure 6 d: Indigenous site locations –Munghorn 8833-2-S 1: 25K map sheet

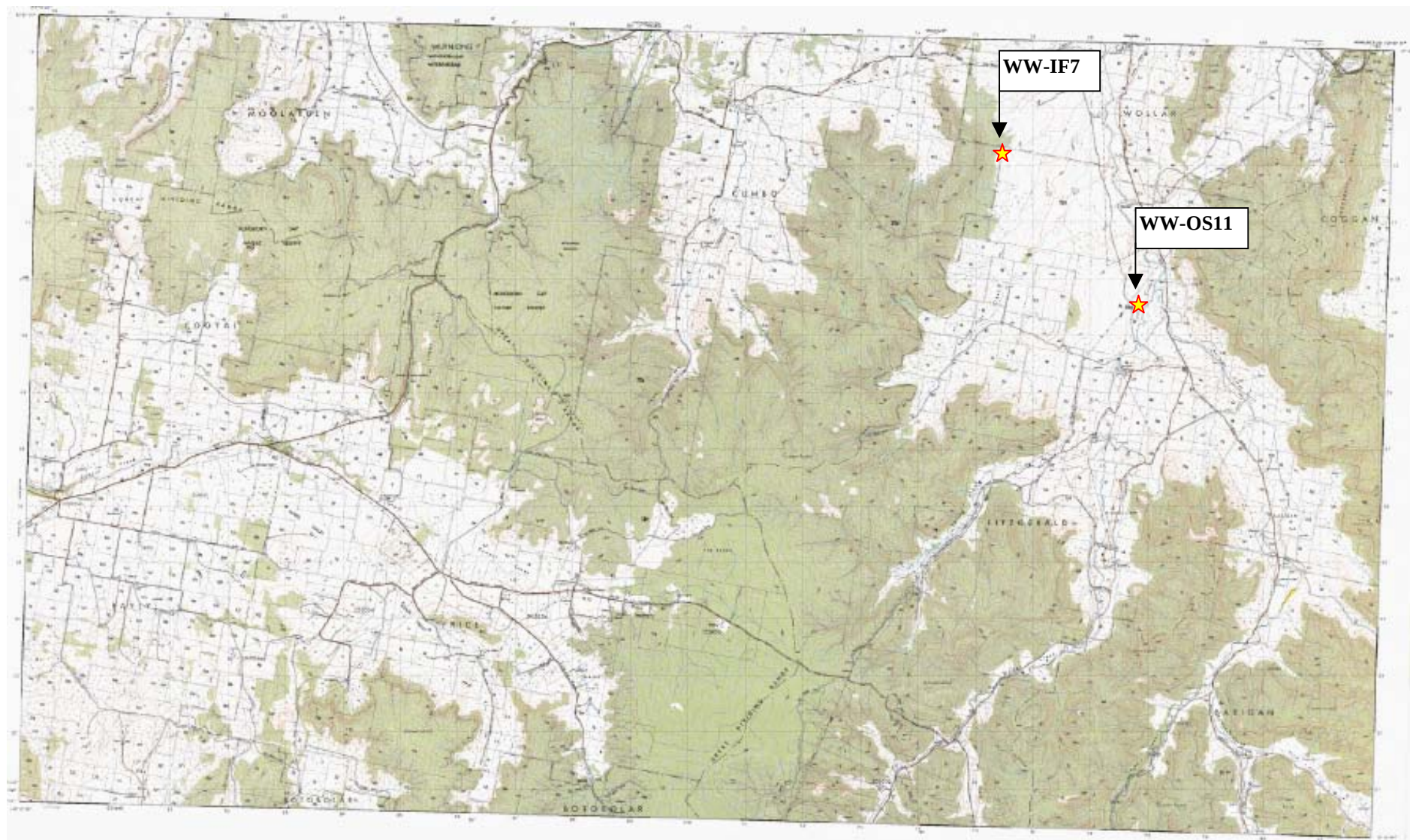


Figure 7: Locality map showing the locations of UC-OS1 with PAD, UC-OS2 & UC-OS3 with PAD (Goolma 1:50 k, 8733-II & III, map additions not to scale)

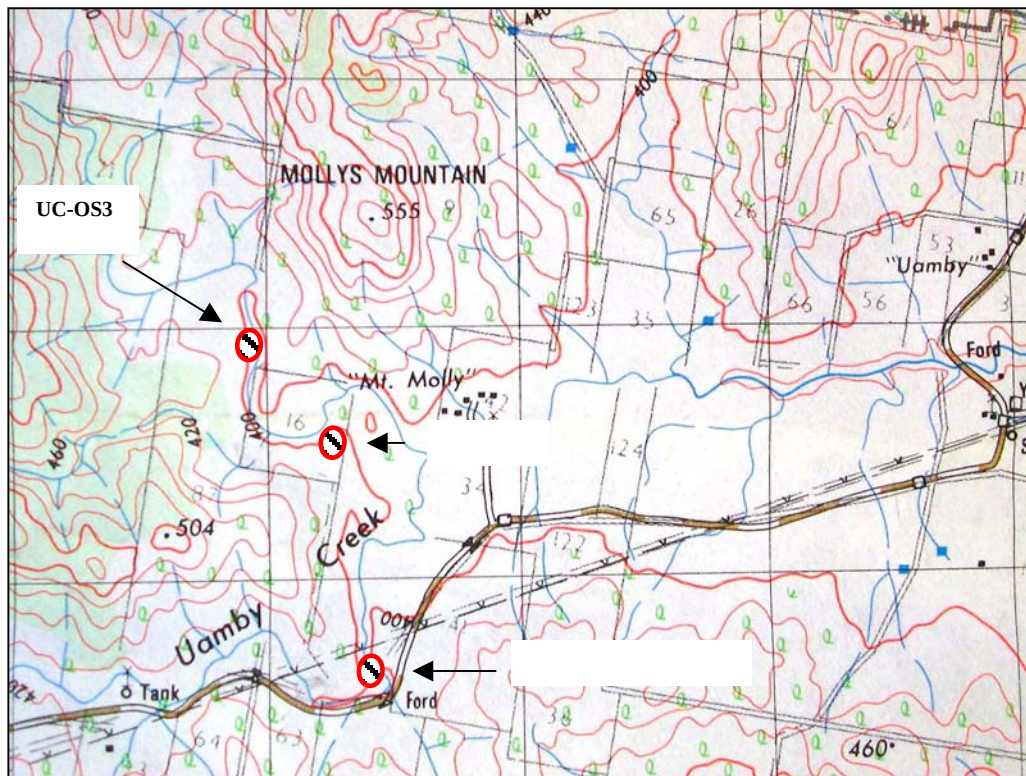
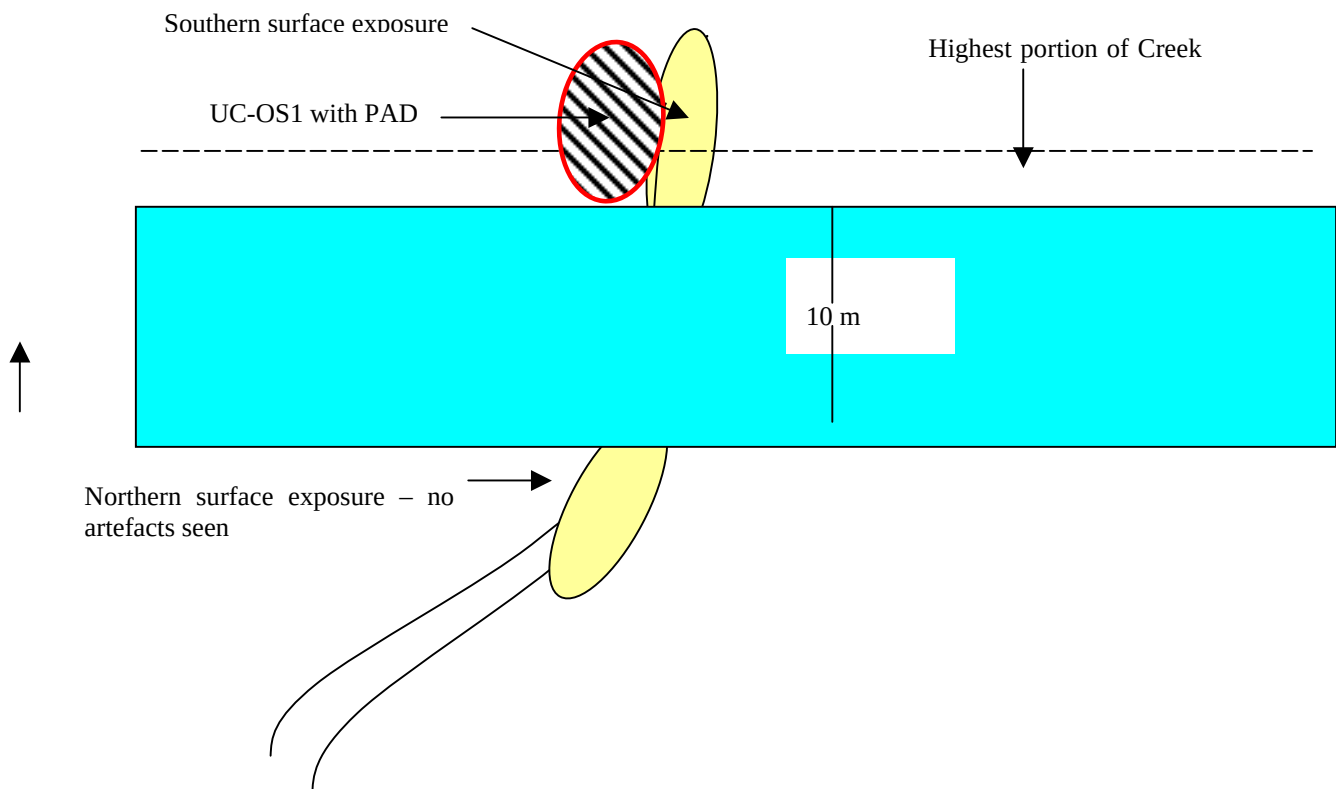


Figure 8: Site plan UC-OS1 with PAD (w-w) (not to scale)



UC-OS2**Goolma 1: 50K****AGD 710270 E 6409577 N**

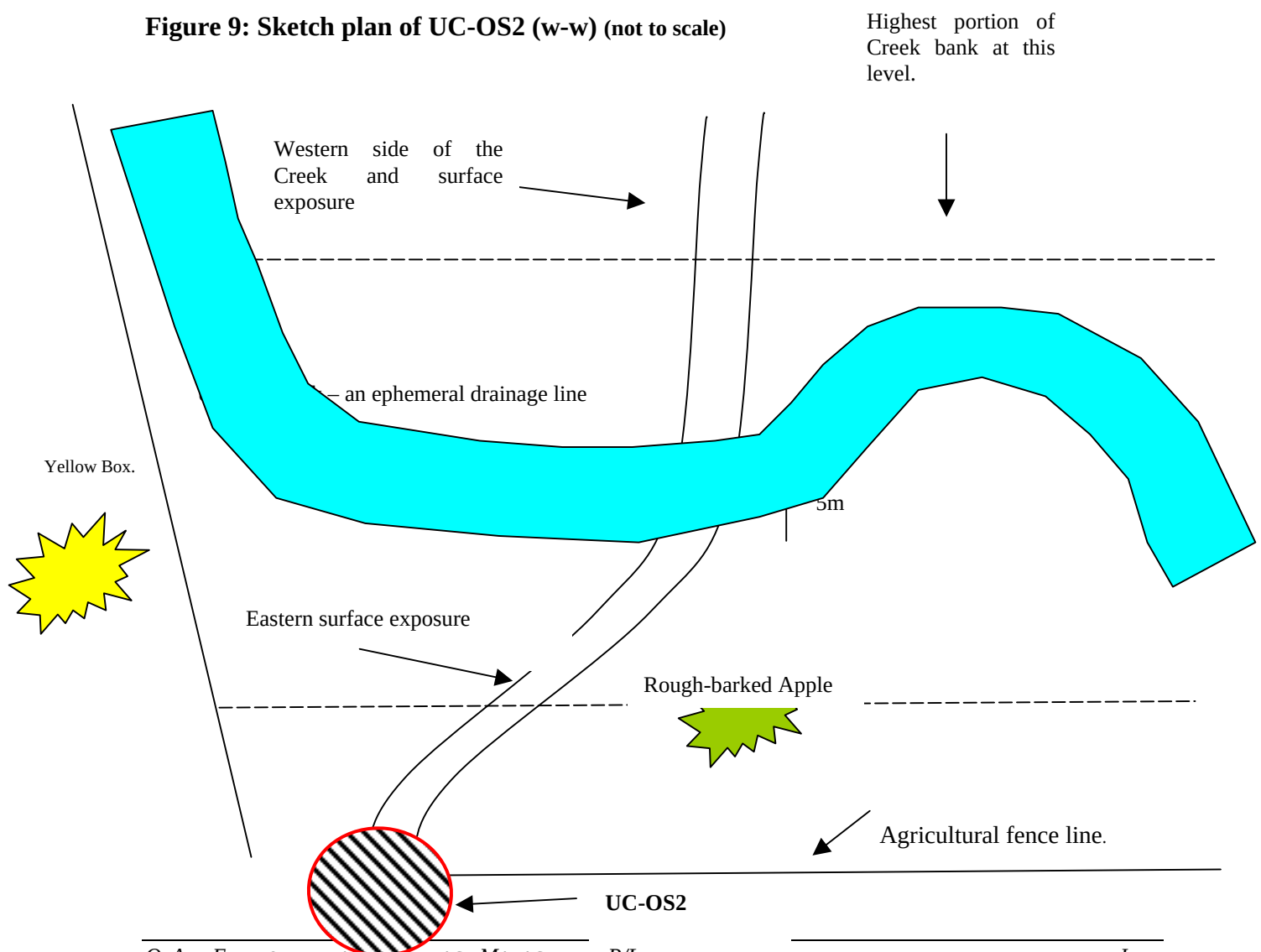
The open site Uamby Creek UC-OS2 is located along a potential access track to the Wollar - Wellington TransGrid 330 kV transmission line tower 208 (Figure 7). It is located on the eastern side of a tributary to Uamby Creek at an altitude of 400 m. Mt Molly is a prominent, nearby landscape feature and the Cudgegong River lies 3 km to the east. A sketch of the site in relation to nearby features is shown in Figure 9.

Surface exposures associated within a dirt track at a farm gate revealed a low density scatter in the area of survey (c. 4 artefacts, Plates 3 & 4). Hornsfield flakes increased the likelihood of the quartz and quartzite present being artefactual.

The track traverses a well drained cleared and ploughed creek bank that was once yellow box woodland but is now cleared for grazing and would have provided enough natural resources for short term occupation. This portion of the track was the least favoured of one of two possible creek crossing and will most likely not be impacted.

Due to the nature of the landform and the levels of disturbance present, it is assessed that there is low potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 9: Sketch plan of UC-OS2 (w-w) (not to scale)



UC OS 3 with PAD**Goolma 1: 50K****AGD 709935 E 6409813 N**

The Open Site Uamby Creek (UC) OS 3 with PAD is located along a potential access track to the Wollar -Wellington TransGrid 330 kV transmission line tower 208 (Figure 7). It is located on the northern side of a tributary to Uamby Creek at an altitude of 420 m. A sketch of the site in relation to nearby features is shown in Figure 10.

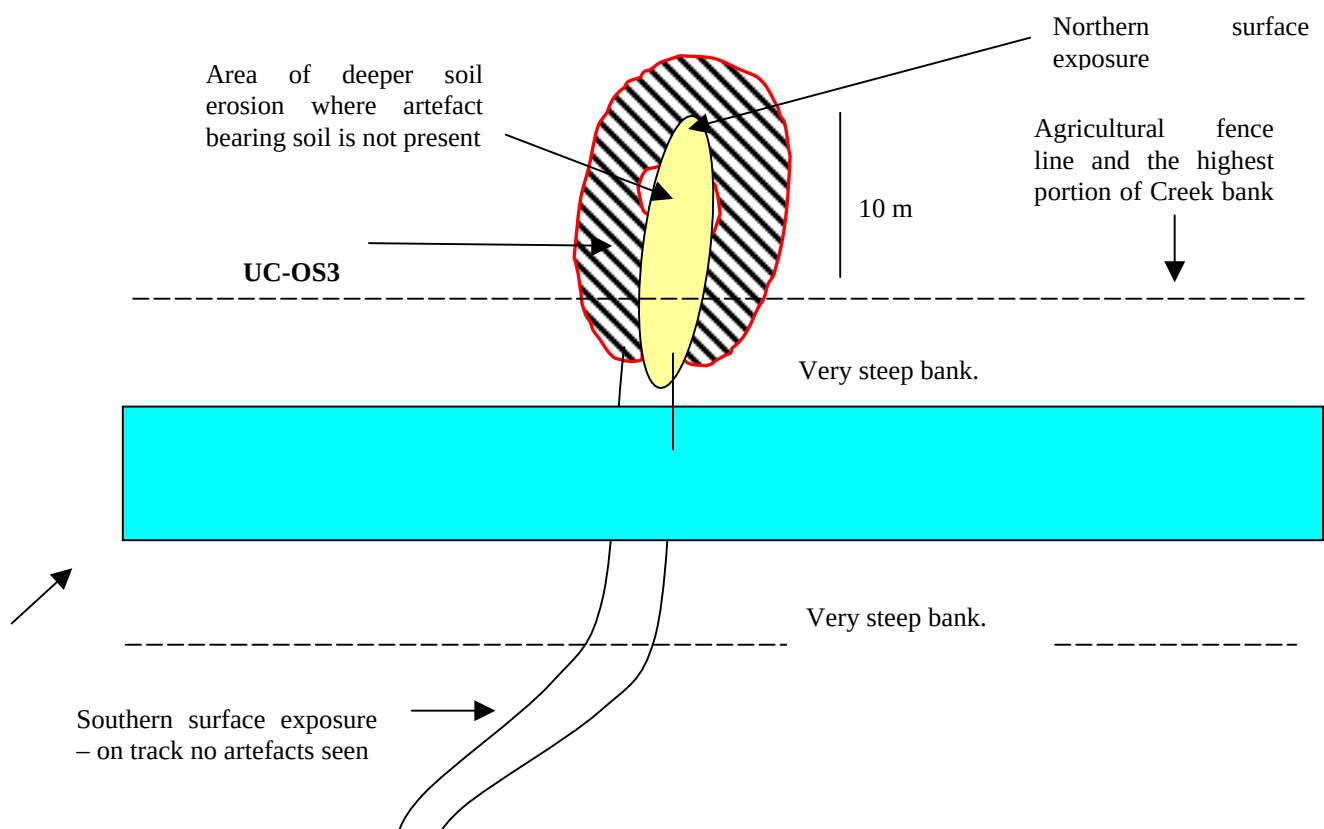
Surface exposures associated within an exposed eroded embankment where the track crosses the creek, revealed c. 15 artefacts (Plates 5 & 6). The artefact raw material at this location was at a superficial level more diverse than previously observed at UC OS 1 with PAD & UC OS 2 although this may have resulted from higher levels of visibility at this site. Chert, good quality quartz, quartzite and hornfels whole and broken flakes and cores were evident.

The track traverses a well drained cleared and ploughed creek bank that very quickly rises by 2-3 m in elevation either side of the creek. Prior to clearing it would have been yellow box / rough-barked apple woodland providing enough natural resources for short term occupation. The artefacts were eroding from the erosion associated with the embankment or were located on the surface of the track.

The A horizon soils at the site are eroding to 10 m in a straight line from the gates, with deep erosion mostly occurring within the first 2 m of the gate posts.

Due to the nature of the landform and the relatively low levels of disturbance, it is assessed that there is moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 10: Sketch plan of UC-OS3 (not to scale)



CR-OS4 with PAD Goolma 1: 50K AGD 713405 E 6411246 N

The open site Cudgegong River CR-OS4 with PAD is located on the eastern side of the Cudgegong River at an altitude of 380 m between Wollar -Wellington TransGrid 330 kV transmission line towers 198 and 197 (Figures 11 & 12).

A small ephemeral drainage line extends up the middle of the valley containing CR-OS4 with PAD and drains into the Cudgegong River. A limited survey of the area revealed that the site is potentially most dense on an elevated terrace at the confluence of the two waterways; however it is unknown how far it continues up the valley. The local Aboriginal community representative stated that it appears to extend for some distance from his independent investigations. The area surrounding this site is rich in raw materials and has several high quality quartz reefs occurring on the elevated terrace that have been utilised extensively. The area is rich in natural resources, is well drained and sheltered from prevailing winds.

Surface exposures associated with natural exposures (clay pan in appearance) and the cutting where the road bisects the valley floor, revealed over 1000 artefacts (Plates 7 - 12). A wide diversity of raw materials was located within a 20 x 20 m sample area consisting of good quality quartz, quartzite, hornfels, chert and rhyolite. Flakes, cores, retouched tools, and a Bondi point were located with relative ease with nearly all potential artefactual materials showing characteristic signs of anthropomorphic manipulation some of which appeared *in situ*.

Evidence of ploughing is not present and surface disturbance is mainly from stock trampling.

Due to the nature of the landform and the relatively low levels of disturbance, it is assessed that there is high potential for undisturbed sub-surface archaeological deposits to be present at this site.

This site has high cultural significance and undetermined scientific significance and upon community request will have restricted access to site details on the AHIMS database.

Figure 11: Locality map showing CR-OS4 with PAD (Goolma 1:50 k, 8733-II & III, map additions not to scale)

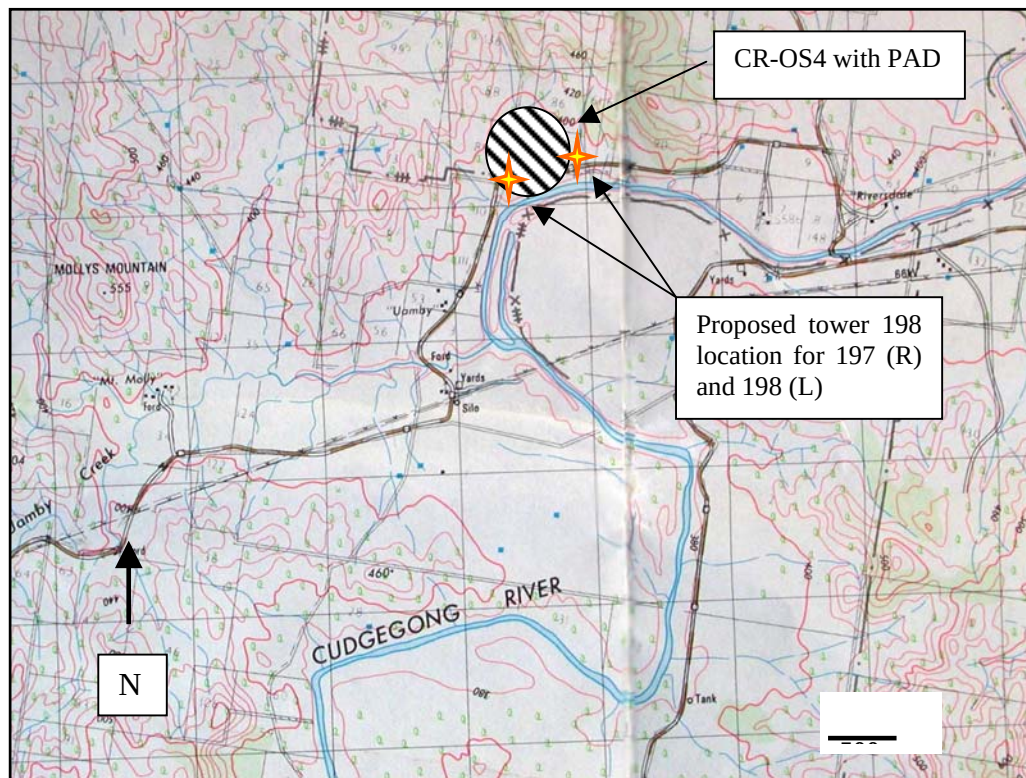
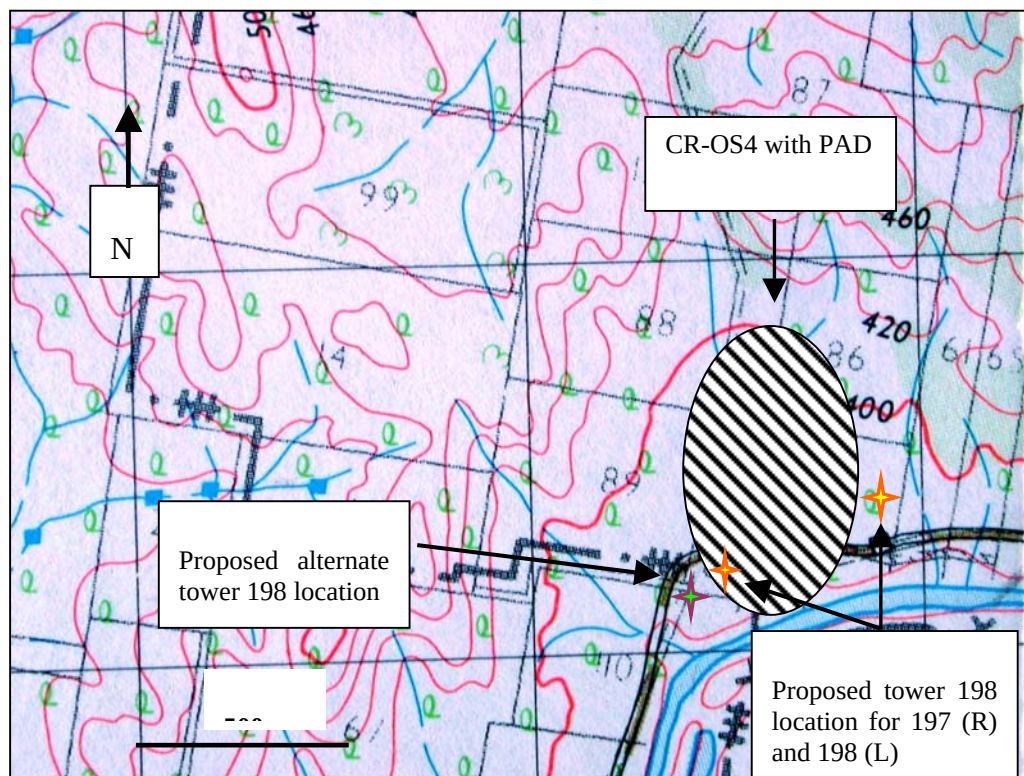


Figure 12: Detail map showing CR-OS4 with PAD (Goolma 1:50 k, 8733-II & III, map additions not to scale)



GC-OS5 with PAD**Goolma 1: 50K****AGD 716819 E 6412701 N**

The open site Goolma Creek GC-OS5 with PAD is located at the site of proposed tower 191 for the Wollar -Wellington TransGrid 330 kV transmission line at an altitude of 395 m (Figure 14 & 15). The site is on the southern side of Goolma Creek, and within the 60 m study corridor, it extends for 130 metres either side of the pegged tower location. A sketch of the site in relation to nearby features is shown in Figure 13.

Surface exposures associated with ploughing and overgrazing on skeletal soils, revealed 100+ artefacts (Plates 13 & 14). The raw materials the artefacts were manufactured from included chert, good quality quartz, quartzite and rhyolite. Whole and broken flakes, a ground edged axe and cores were evident.

The proposed electricity easement traverses a slightly elevated landform consisting of well-drained soils. Goolma Creek is approximately 80 metres away. Much of the site has been cleared of native vegetation and ploughed. Surface artefacts were not present where the land dropped in elevation c. 50 m from the creek bank. The site also dissipated 130 m south of the pegged tower location.

Prior to clearing the area would have been yellow box open woodland, rich in natural resources suitable for short term occupation.

Due to the nature of the landform and the relatively low levels of disturbance (especially deposits below ca. 20 cm from ground surface that will not have been disturbed by ploughing), it is assessed that there is high potential for undisturbed sub-surface archaeological deposits to be present at this site.

GC-OS6**Goolma 1: 50K****AGD 717231 E 6412758 N**

The Open Site Goolma Creek GC-OS6 is located along a potential access track between Wollar -Wellington TransGrid 330 kV transmission line towers 190 and 191 (Figures 14 -16). The site is located within a ploughed agricultural field, immediately to the east of GC-OS5; although GC-OS6 is on the northern side of Goolma Creek at an altitude of 420 m. A sketch of the site in relation to nearby features is shown in Figure 16.

Surface exposures associated with ploughing and overgrazing on skeletal soils, revealed 15 artefacts within a 60 m square area (Plates 15 & 16). The artefacts were comprised of chert, good quality quartz, quartzite and rhyolite. Whole and broken flakes, a pounder and cores were evident.

The landform the site is on is a slightly elevated terrace above the 1:100 flood levels at the confluence of Goolma Creek and a minor tributary. The terrace consists of well-drained soils and it has been cleared of its native vegetation and ploughed in the recent past. The soils are very shallow in this location; the A horizon appears to have ended in the plough zone. Surface artefacts were not present where the land dropped slightly in elevation toward the creek bank. Prior to clearing the area would have been a yellow box / rough-barked apple open woodland, rich in natural resources for short term occupation.

Due to the nature of the landform and the levels of disturbance present, especially the shallow soils, it is assessed that there is low potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 13: Plan of GC-OS5 with PAD (not to scale)

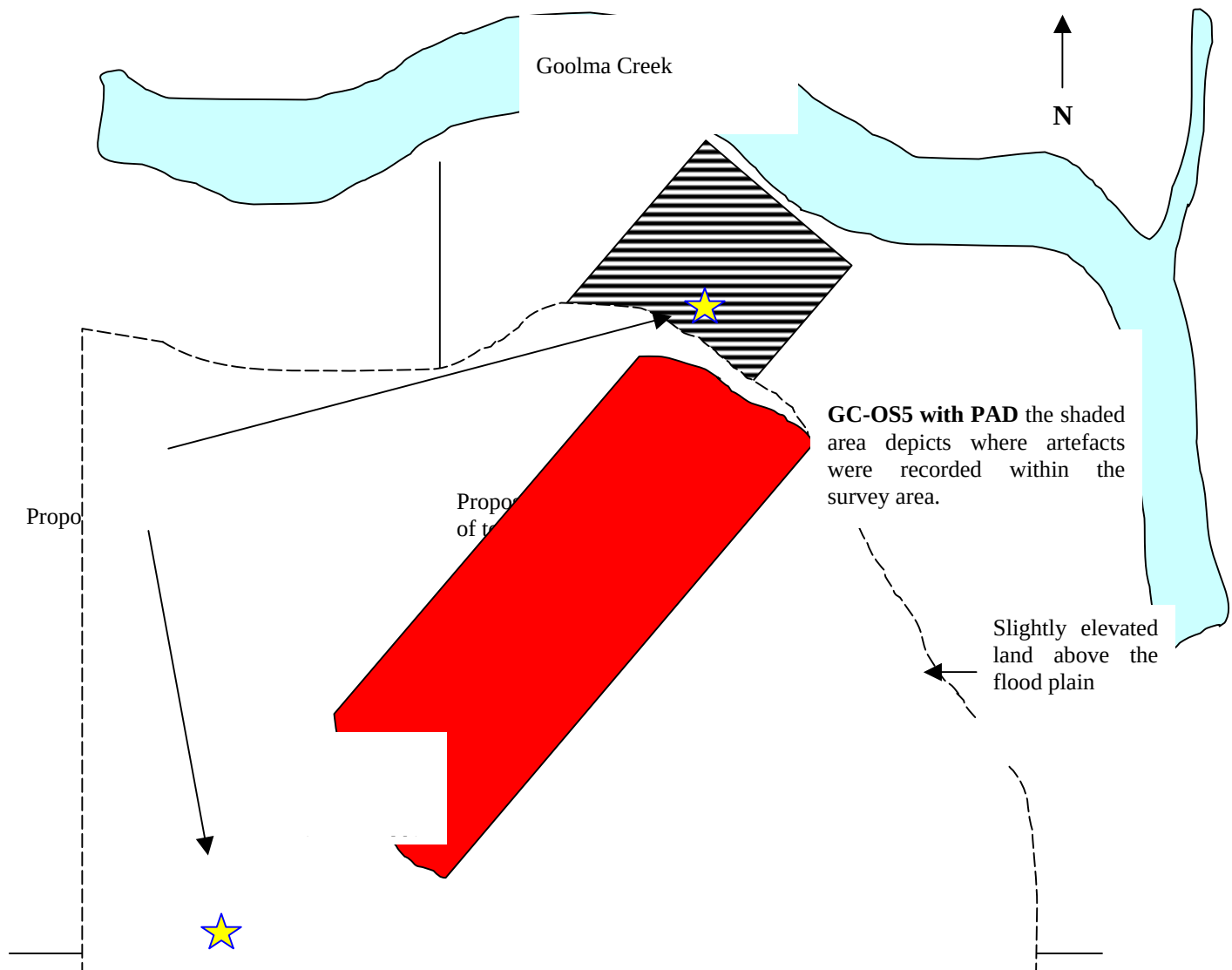


Figure 14: Map showing the location of GC-OS6 and GC-OS5 with PAD (Goolma 1:50 k, 8733-II & III, map additions not to scale)

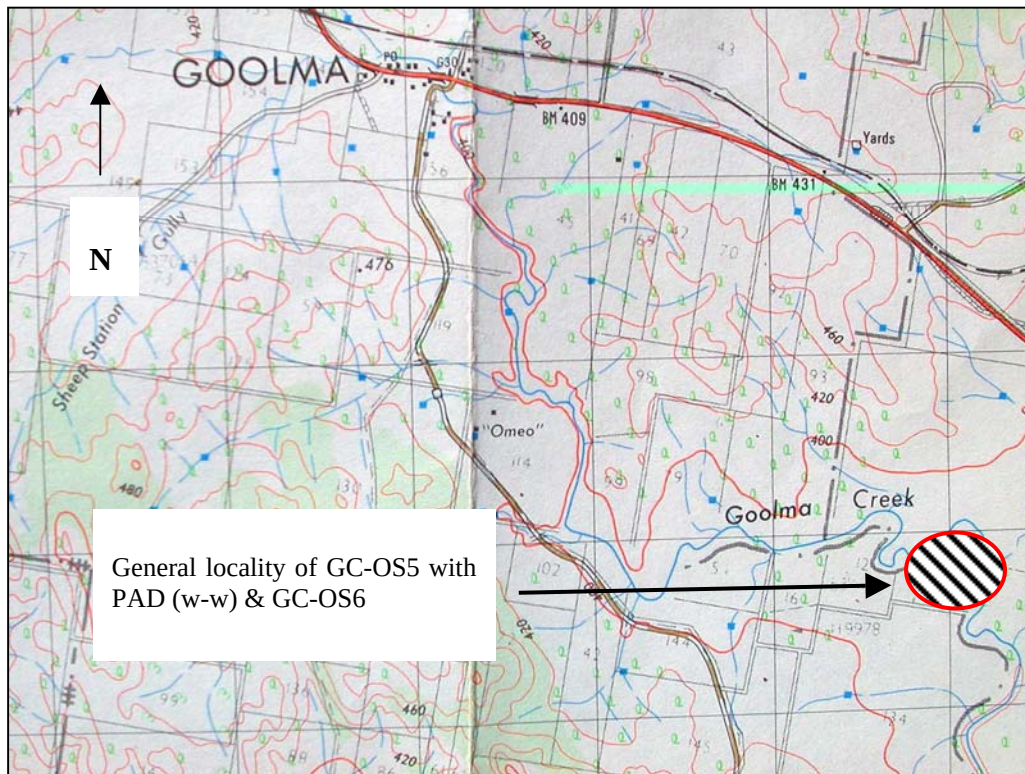


Figure 15: Detail map of GC-OS6 in relation to GC-OS5 with PAD (not to scale)

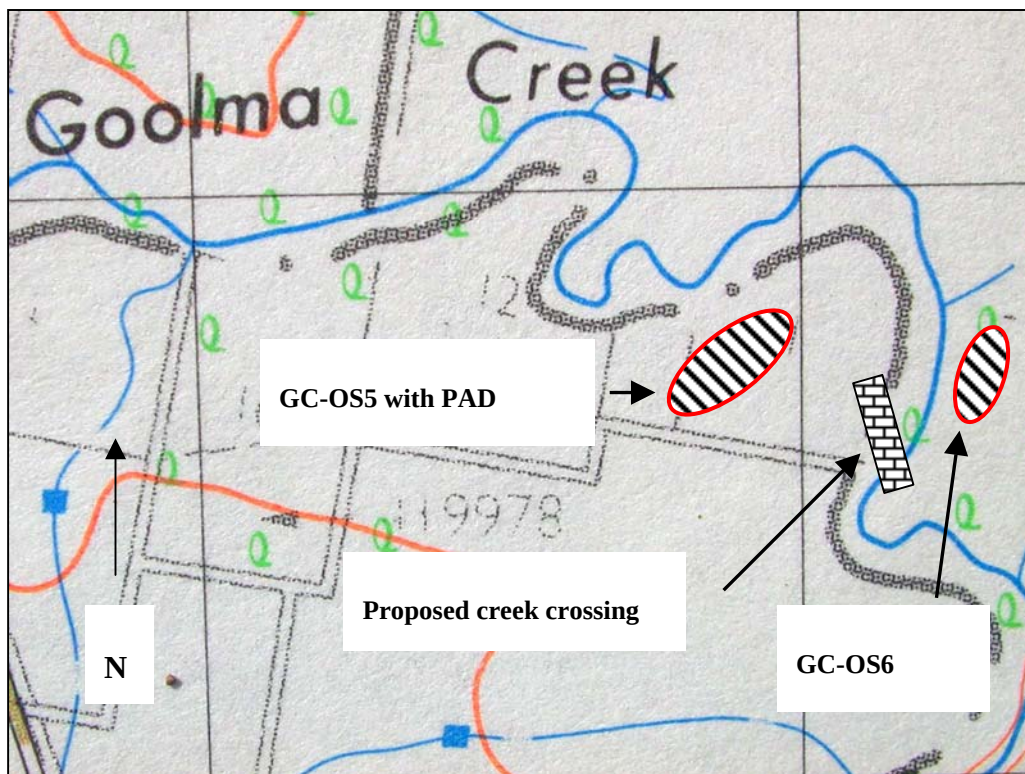
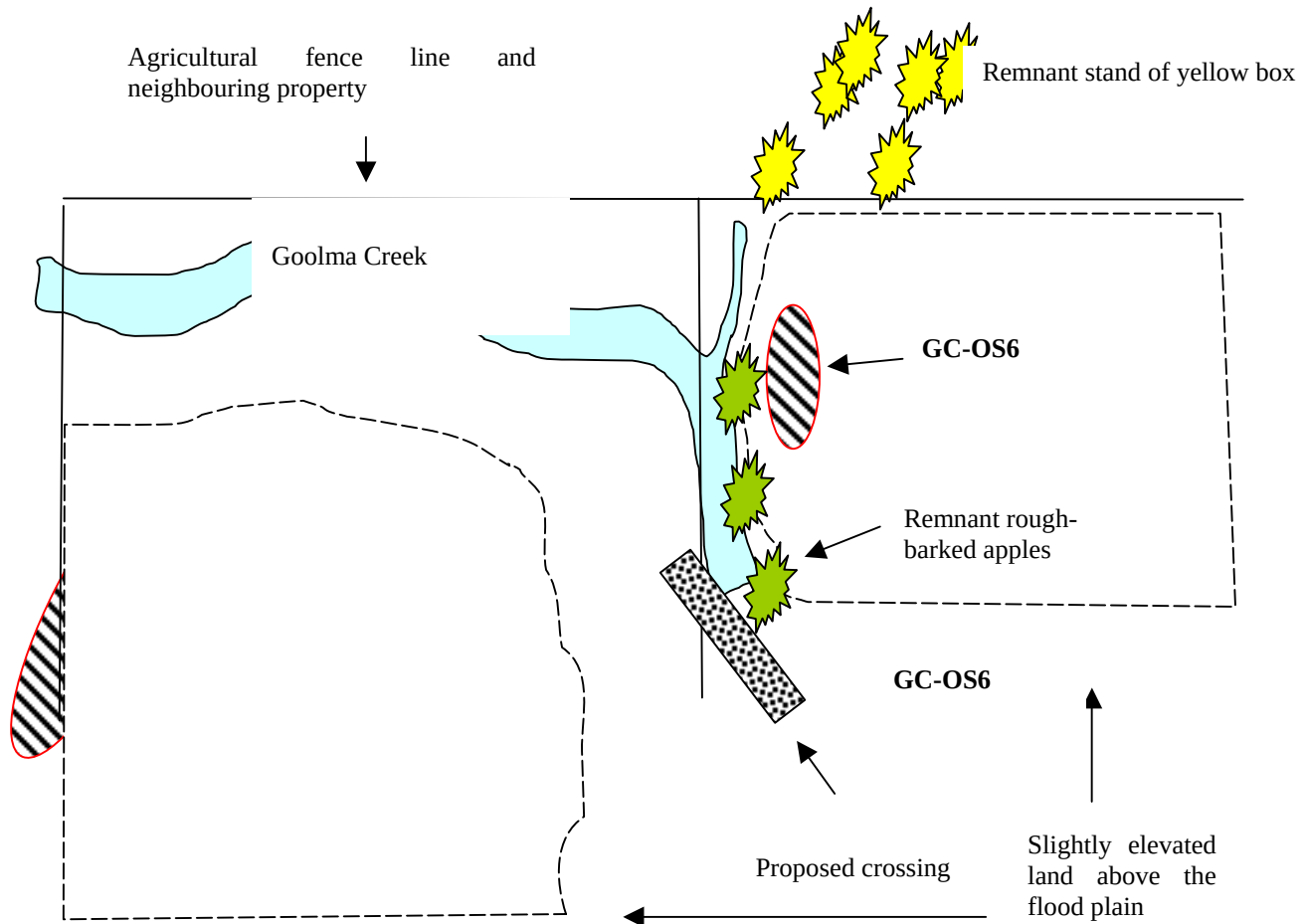


Figure 16: Sketch of GC-OS6 in relation to GC-OS5 with PAD (not to scale)

**WC-IF1****Goolma 1: 50K****AGD 730960 E 6419061 N**

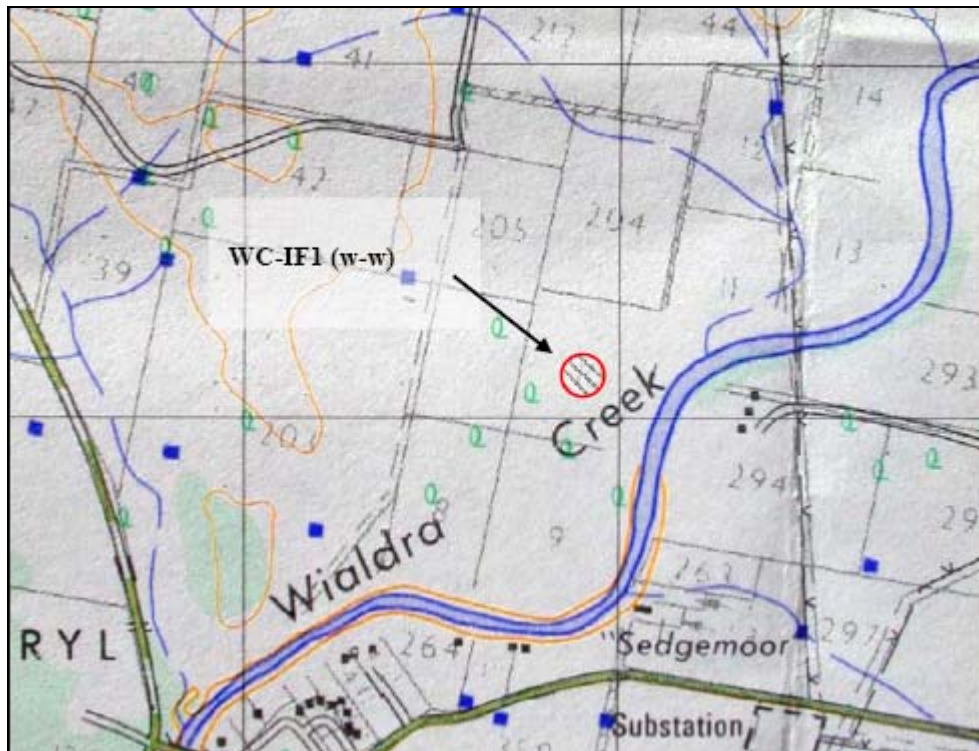
The isolated find, Wialdra Creek WC-IF1 is located at the proposed location of tower 155 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies at an altitude of 420 m. A map showing the location of the find in relation to nearby features is shown in Figure 17.

The present survey located good quality quartz flake in a surface exposure associated with grazing on floodplain soils (Plates 17-18).

The proposed electricity easement traverses the floodplain which has been cleared and ploughed. Prior to clearing it would have been red gum – yellow box open woodland rich in natural resources but frequently inundated during larger weather events.

WC-IF1 is located on Wialdra Creek's floodplain and it is highly likely that the artefact is not *in situ* as it may have been moved from its original location by agricultural practices or floods. There is therefore a low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Figure 17: Map showing the location of WC-IF1. (Goolma 1:50 k, 8733-II & III, map additions not to scale)

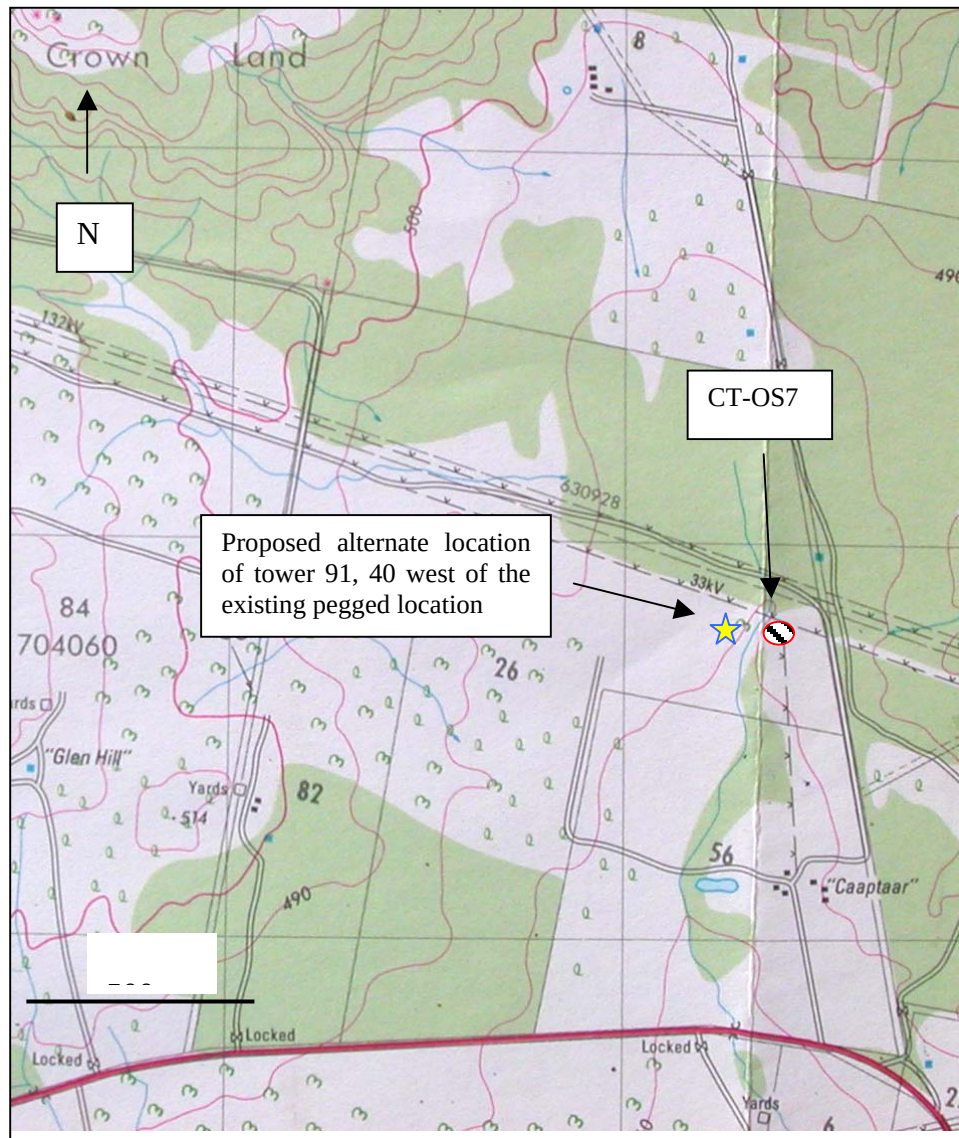
**CT-OS7****Gulgong 1:25K****AGD 717231 E 6412758 N**

The open site Caaptaar CT-OS7 is situated within a ploughed agricultural field adjoining a very small north-south unnamed ephemeral drainage line at an altitude of 477 m. This site is within the impact zone for tower 91 for the Wollar – Wellington TransGrid 330 kV transmission line. A map showing the location of the site and nearby features is shown in Figure 18.

Disturbance to archaeological deposits at CT-OS7 have resulted from recent land-use practices such as clearing and grazing that have resulted in the deflation of A horizon level soils.

The present survey located 15 artefacts at CT-OS7 (Table 3), among them; a chert core fragment, a quartzite flake, a chert blade and further chert flakes (Plates 19 & 20). The artefacts were concentrated in a 50 x 15 m area running along the bank of the ephemeral watercourse. The landform is comprised of a well-drained sandy soil much deflated by erosion.

Due the level of depletion of A horizon soils in the area, it is assessed that there is low to moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 18: Plan of CT-OS7 (Gulgong 8833-3N 1:25k)**Table 3: A summary of the artefacts at CT-OS7.**

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Core (fragment)	Chert (fine)	N/A	7+	10	3.7x4.5x5
Blade	Chert	narrow	2	0	3x2x1.5
Flake	Quartzite (rose)	narrow	3	0	1.8x2.5x0.9
Flake	Chert (cream)	medium	1	0	1.8x2.6x0.8
Flake	Chert (fine)	medium	4	0	2.6x2.2x1.1

BSR-OS8**Gulgong 1:25K****AGD 746098 E 6427869 N**

The open site Blue Springs Road BSR-OS8 is situated within a ploughed agricultural field adjoining a very small north – south unnamed ephemeral drainage line at an altitude of 523 m. This site is within the impact zone for tower 112 for the Wollar – Wellington TransGrid 330 kV transmission line. A map showing the location of the site and nearby features is shown in Figure 19.

Disturbance to archaeological deposits at BSR-OS8 have resulted from recent land-use practices such as clearing, grazing and ploughing that have resulted in the deflation of A horizon level soils.

The present survey located 12 artefacts at BSR-OS8 (Table 4), among them; a chert core and flake, a chert scraper and a number of other chert and quartz flakes (Plates 20 & 21). The artefacts were concentrated in a 60 square metre area running along the bank of the ephemeral watercourse. The landform is comprised of a well-drained sandy soil much deflated by erosion and ploughing.

In the past the general area would not have been abundant in natural resources and would most likely only be attractive to short-term occupation. Prior to clearing it would have been an *E. dealbata*, broad-leaved ironbark and grey box open woodland with wide open grassland between.

Due the level of depletion of A horizon soils in the area, it is assessed that there is low to moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 19: Plan of BSR-OS8 (Gulgong 8833-3N 1:25k)

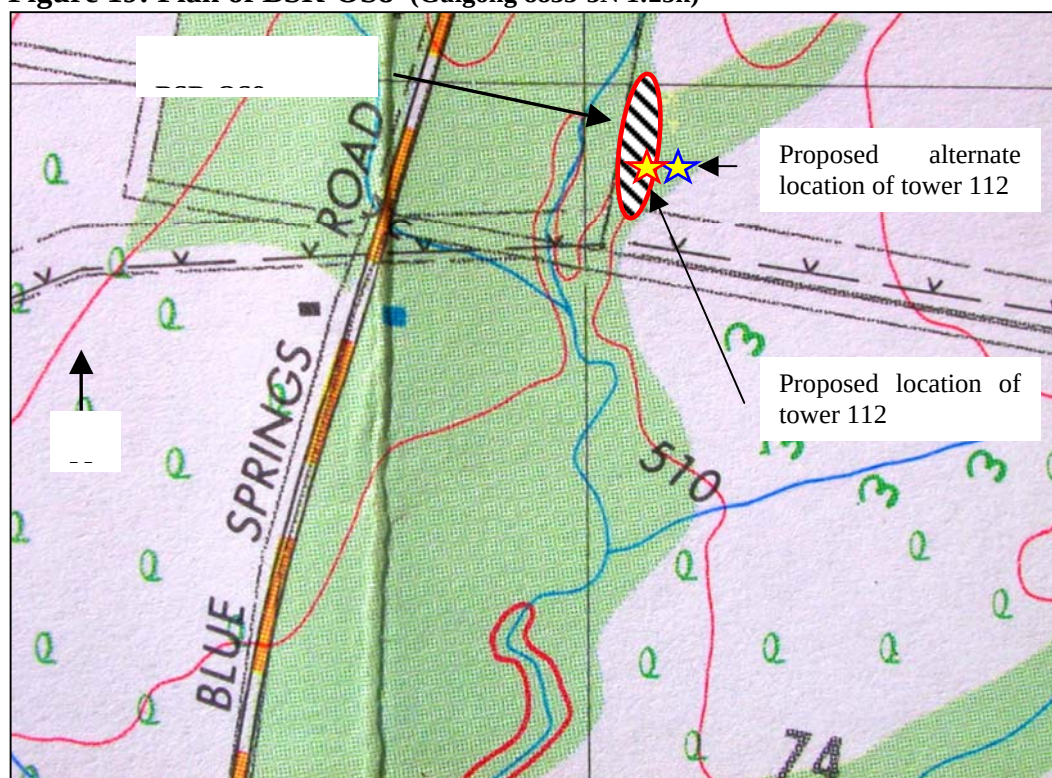


Table 4: Summary of artefacts at BSR-OS8.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Core	Chert	N/A	9	0	6.8x4.8x5
Scraper	Chert	broad	3	0	7.5x6.8x7
Flake	Cream Chert	broad	4	10	3x3.5x3
Flake	Grey Chert	medium	5	0	3.5x3.5x2
Flake	Cream Chert	narrow	5	0	4.3x2.6x2

SDC-OS9 with PAD Gulgong 1:25K AGD 746098 E 6427869 N

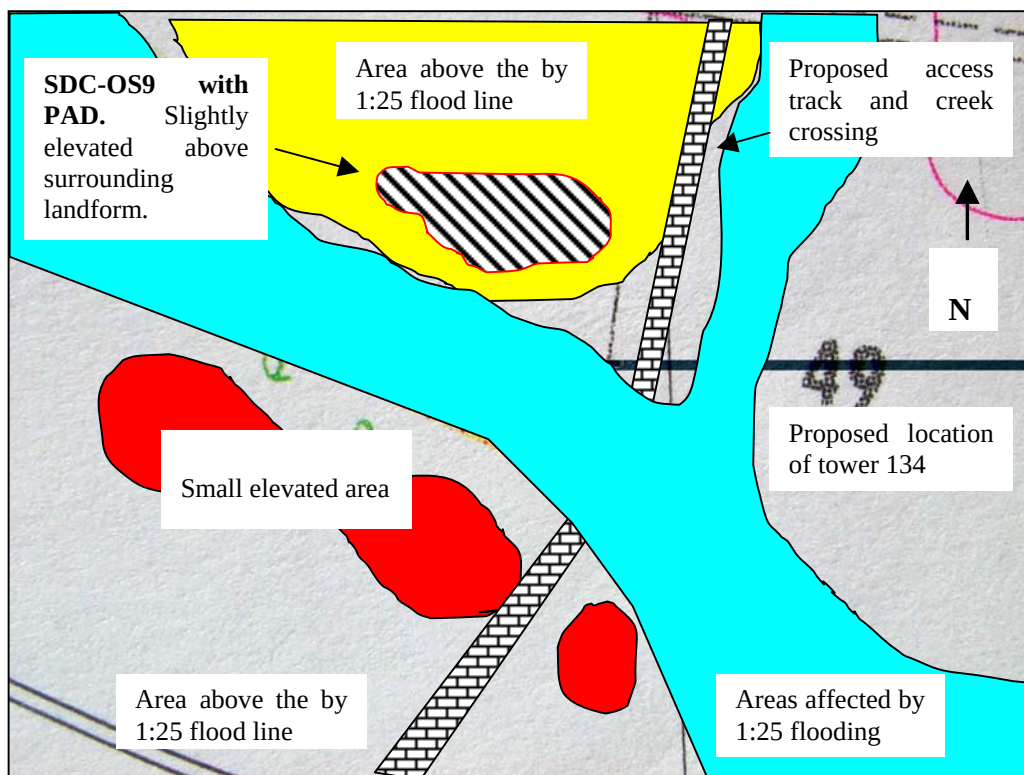
The open site Slapdash Creek SDC-OS9 with PAD is situated on the northern bank of Slapdash Creek at an altitude of 431 m. This area was examined by the present survey as a possible access track across Slapdash Creek to tower 135 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a raised terrace within 100 m of a major drainage line. Maps showing the location of the site and nearby features are shown in Figure 20 (top and bottom).

The site is located within a ploughed agricultural field adjoining Slapdash Creek although evidence of ploughing is not recent. SDC-OS9 with PAD is elevated above the 1:100 flood levels of the area.

Surface exposures associated with erosion, ploughing and overgrazing on skeletal soils, revealed 3 artefacts within a 60 m square area (Plates 23 & 24). Two broken flakes were constructed from a fine grained volcanic, while the other, a core, was knapped from a mudstone. Several pieces of good quality quartz were noted further from the study area on the elevated terrace and were potentially artefactual.

The landform of the site is an alluvial terrace with well drained sandy soils. The general area would have been richly abundant in natural resources suitable for short term occupation. Prior to clearing it would have been a river red gum community on the banks of the creek that diffused into yellow box open woodland and grassland.

Due to the nature of the landform (a low terrace adjacent to permanent water) and the depth of A horizon soils in the area, it is assessed that there is moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 20: Locality map of SDC-OS9 with PAD (Gulgong 8833-3N 1:25k)

SC-OS10**Gulgong 1:25K****AGD 746098 E 6427869 N**

The open site Stubbo Creek SC-OS10 is situated on the northern bank of Stubbo Creek at an altitude of 450 m. This area was examined by the present survey as a possible access track across Stubbo Creek to tower 128 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on farm track in an agricultural field that has been cleared and ploughed. A map showing the location of the site and nearby features is shown in Figure 21.

Disturbance to archaeological deposits at SC-OS10 have resulted from recent land-use practices such as clearing, grazing and ploughing. This has led to heavy erosion along the creek banks and a general deflation of A horizon soils further away from the creek.

The present survey located 2 artefacts at SC-OS10 (Table 5); a tuff flake and a quartzite flake (Plates 25 & 26). The artefacts were concentrated in a 5 x 3 m area on the farm track running along the north bank of Stubbo Creek.

Due the depletion of A horizon soils in the area, it is assessed that there is low potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 21: Locality map of SC-OS10 (Locality map of SDC-OS10 and Stubbo Creek crossing (Gulgong 8833-3N 1:25k. Not to scale)

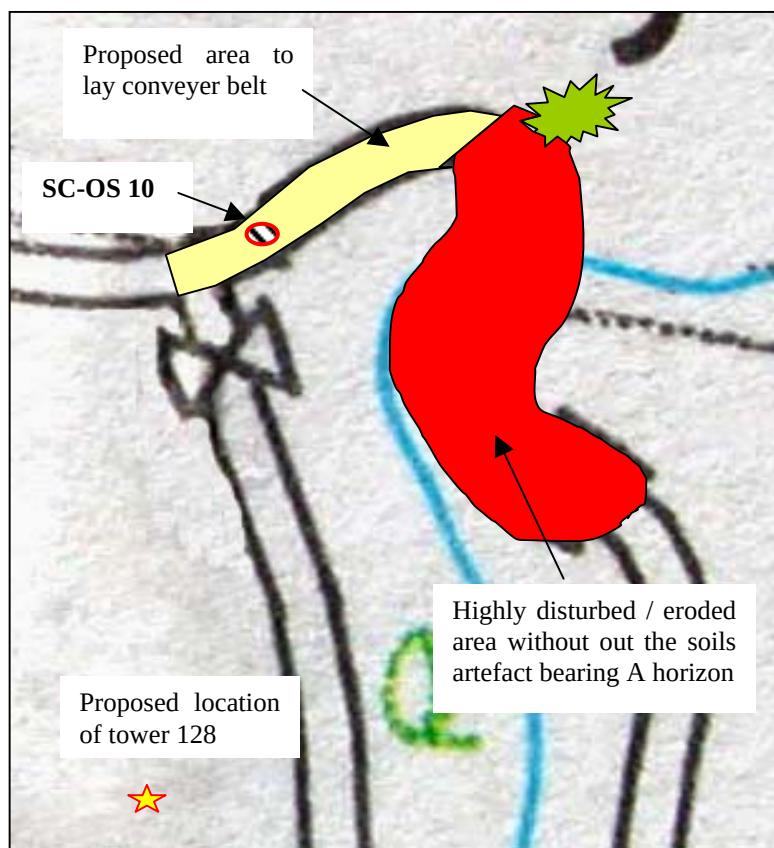


Table 5: Summary of artefacts at SC-OS10.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Grey Tuff	broad	5	0	3x2.4x2
Flake	Orange Quartzite	medium	2	0	2.1x1.4x0.8

WC-OS11**Munghorn 1:25K****AGD 777749 E 6409065 N**

The open site Wollar Creek WC-OS11 is situated on the northern bank of Wollar Creek at an altitude of 397 m. This area was examined by the present survey as a possible creek crossing for the access track to the switching station and tower 1 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on an agricultural field that has been cleared and ploughed. A map showing the location of the site and nearby features is shown in Figure 22.

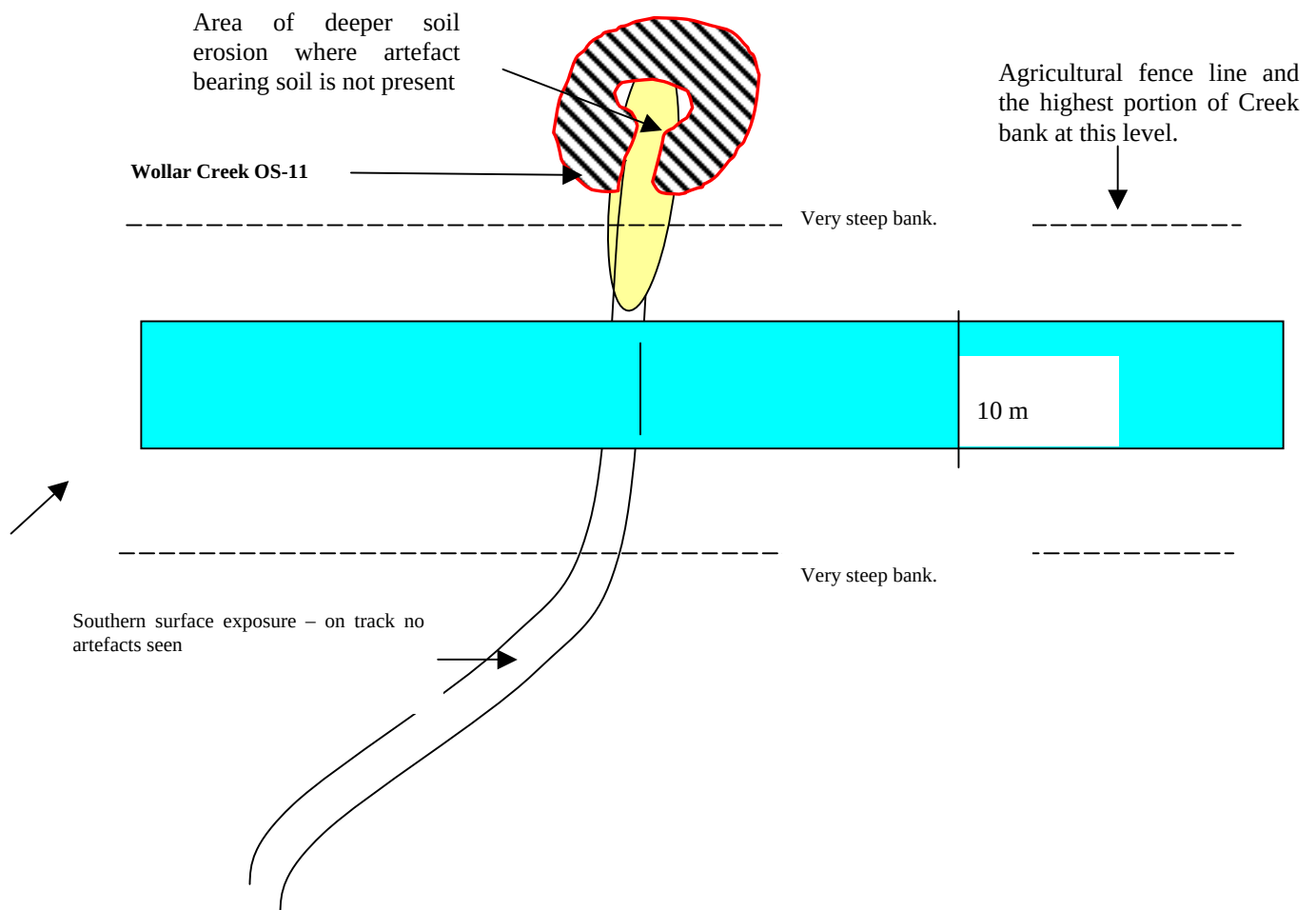
Disturbance to archaeological deposits at WC-OS11 have resulted from recent land-use practices such as clearing, grazing and ploughing. This has led to erosion around the farm gate and fence on the north bank where the site was located.

The present survey located 4 artefacts at WC-OS11 (Table 6); a chert flake with retouch, a mudstone flake, a chert blade and a broken chert flake (Plates 27 & 28). The artefacts were concentrated in a 5 x 5 m area surrounding the farm gate where stock tracks offered good ground visibility.

Due the depletion of A horizon soils in the area, it is assessed that there is low potential for undisturbed sub-surface archaeological deposits to be present at this site.

Table 6: Summary of artefacts at WC-OS11.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake (with retouch)	Grey Chert	narrow	3+	0	2.7x1.7x0.4
Flake	Mudstone	medium	5	0	3.6x2x0.6
Flake (broken)	Grey Chert	broken	3	0	1.7x1.2x0.2
Blade (broken)	Grey Chert	narrow	3	0	2.9x1x0.3

Figure 22: Sketch plan of WC-OS11 (not to scale)**WC-OS12 with PAD****Wollar 1:25K****AGD 746098 E 6427869 N**

The open site Wilpinjong Creek WC-OS12 with PAD is situated on the southern floodplain of Wilpinjong Creek at an altitude of 367 m, 50 m south from the present bank of Wilpinjong Creek. This site is 20 m north of tower 30 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on an agricultural field that has been cleared and ploughed. A map showing the location of the site and nearby features is shown in Figure 23.

Disturbance to archaeological deposits at WC-OS12 have resulted from recent land-use practices such as clearing, grazing and ploughing, and because the landform is not sufficiently elevated, it would have also been impacted during severe flood events.

The present survey located 2 artefacts at WC-OS12 (Table 7); a chert flake and a fine-grey volcanic flake (Plates 29 & 30). The artefacts were concentrated in a 5 x 5 m area 20 m north of tower 30 where stock tracks offered good ground visibility. The landform is comprised of a well-drained brown loam soil that is characteristic of the valley infill material along Wilpinjong Creek.

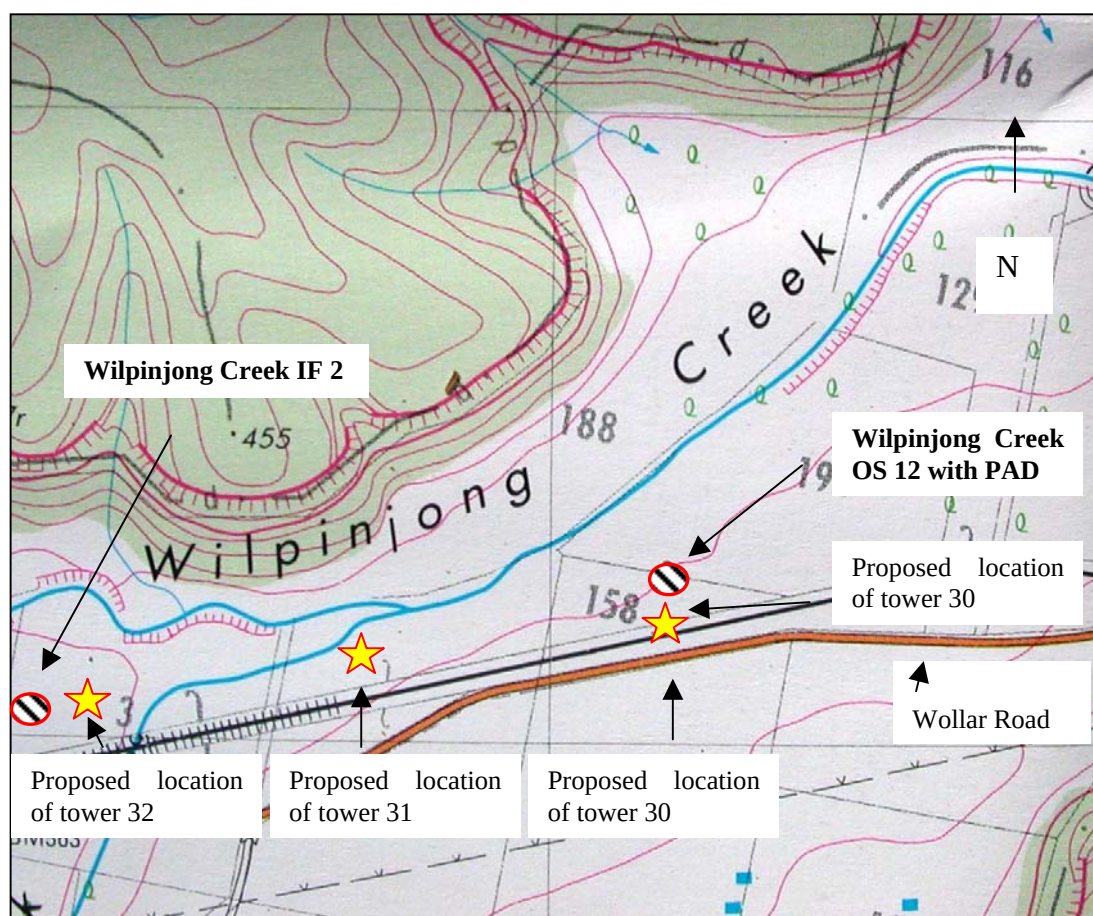
The general area of WC-OS12 would have provided rich natural resources suitable for moderate term occupation. Prior to clearing it would have been a River red & Blakely's red gum community on the banks of the creek that diffused into yellow, fuzzy and grey box open woodland and grassland beyond.

Due the nature of the landform (a low terrace adjacent to permanent water) and the depth of A horizon soils in the area, it is assessed that there is moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Table 7: Summary of artefacts at WC-OS12.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake (broken)	Cream Chert	medium	3	5	3.5x2.5x0.6
Flake	Grey Volcanic (fine grained)	narrow	5	0	2x4x0.5

Figure 23: Locality map of WC-OS12 (Wollar 8833-3N 2:25k: added features not to scale)



WC-IF2**Wollar 1:25K****AGD 774081 E 6420248 N**

The isolated find, Wilpinjong Creek-WC-IF2 is located on a ploughed agricultural field near a small dam, 100 metres from Wilpinjong Creek. This find is between towers 32 and 33 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies within the proposed corridor at an altitude of 368 m. A sketch of the find in relation to nearby features is shown in Figure 23.

The present survey located a Silcrete flake WC-IF2 (Table 8) in an area where tracks from stock movement allowed greater ground visibility (Plates 31 & 32).

WC-IF2 is located on Wilpinjong Creek's floodplain and it is highly likely that the artefact is not *in situ* as it may have been moved from its original location by agricultural practices or floods. There is therefore a low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Figure 24: Locality map of WC-IF2 (not to scale)

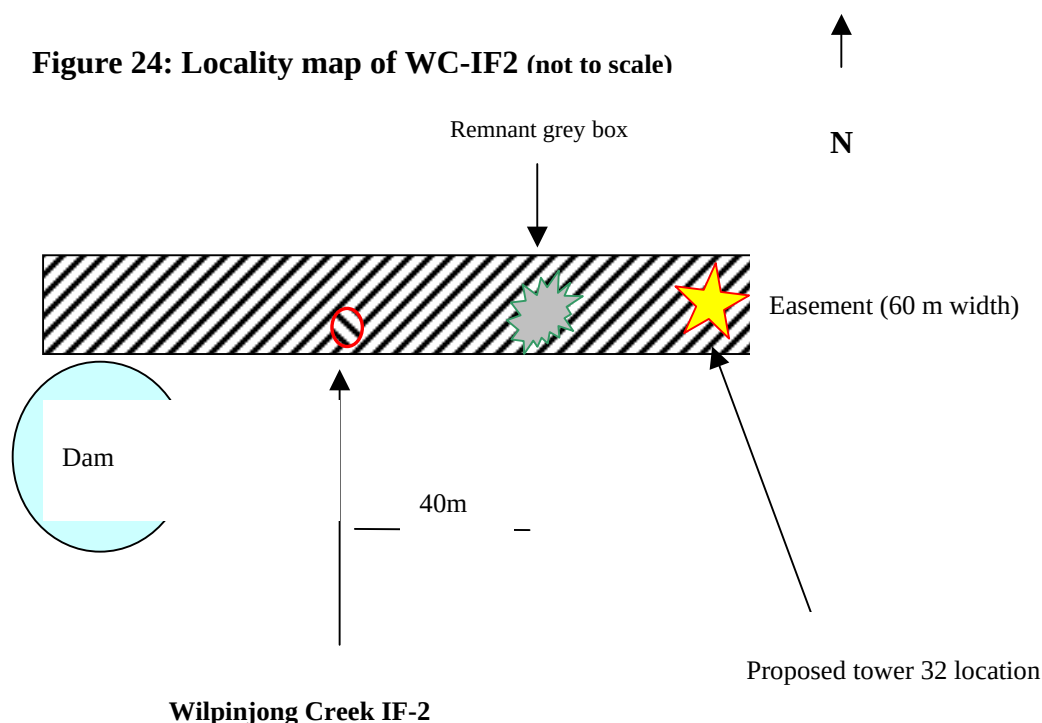


Table 8: Details of artefact at WC-IF2.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Silcrete (orange)	narrow	1	30	3.5x3.3x0.5

WC-IF3**Wollar 1:25K****AGD 771371 E 6419748 N**

The Isolated Find, Wilpinjong Creek WC-IF3 is located near the north bank of Wilpinjong Creek on a cleared agricultural paddock. This find is between towers 36 and 37 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies within the proposed corridor at an altitude of 377 m. A map showing the location of the find in relation to nearby features is shown in Figure 25.

The present survey located a grey volcanic scraper (Table 9) with signs of both retouch and edge wear (WC-IF3) in an area where erosion along the creek bank allowed greater ground visibility (Plates 33 & 34).

WC-IF3 is located on Wilpinjong Creek's floodplain near a previously recorded site (Navin Officer: WCP 174) that consisted of over 500 artefacts. It is therefore highly likely that artefact WC-IF3 is part of WCP 174 and that this area represents a large open site. While both WC-IF3 and WCP 174 are within the easement of the proposed transmission line, they occupy an area that will not be traversed during construction or maintenance of the transmission line.

Given the nature of the landform and finds there is a moderate potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Figure 25: Locality map of WC-IF3 (Wollar 8833-3N 2:25k: added features not to scale)

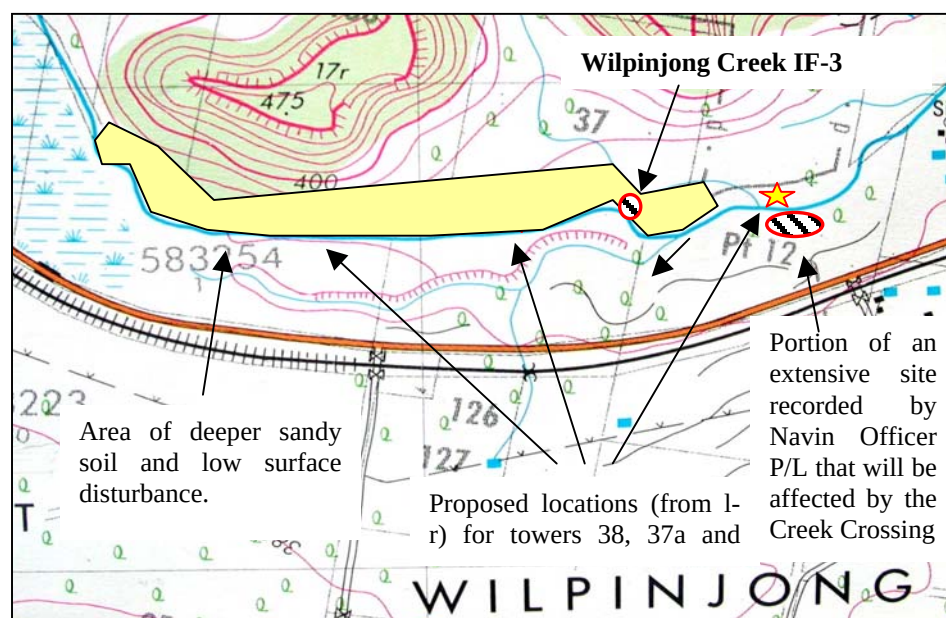


Table 9: Artefact details WC-IF3.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Scraper	Grey Volcanic	N/A	4	40	5.3x5.6x4

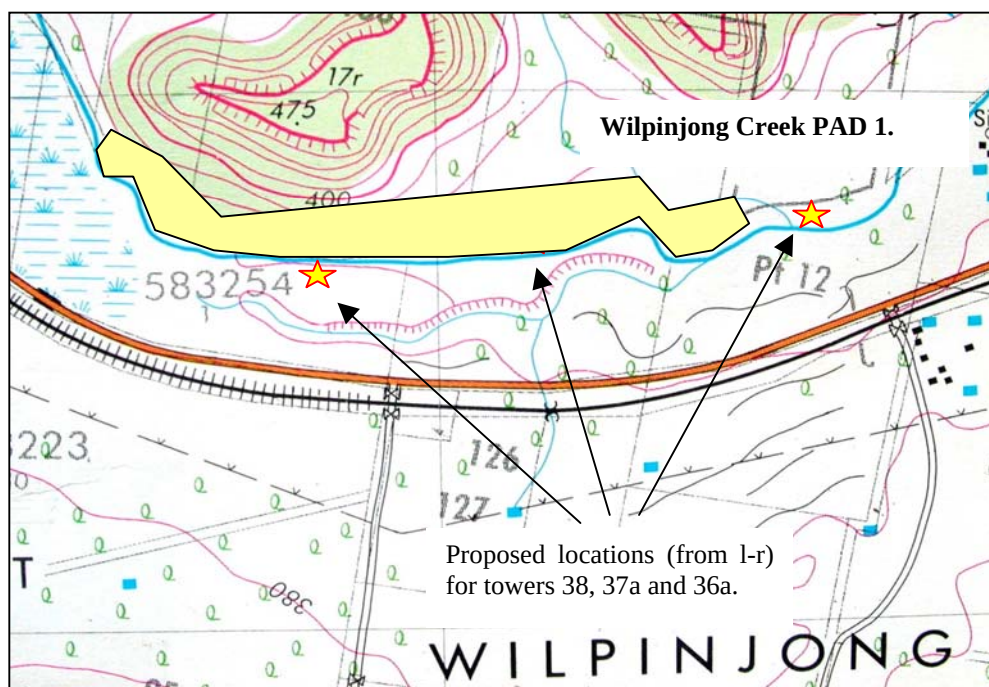
WC-PAD1

Wilpinjong Creek WC-PAD1 is located on the north bank of Wilpinjong Creek encompassing towers 36 and 37 for the Wollar – Wellington TransGrid 330 kV transmission line (Figure 26).

This area on the north bank of the creek has been impacted by agricultural practices far less than corresponding areas on the southern bank. Numerous wombat burrows attest to A horizon soils (a brown loam characteristic of valley in-fill material in this area) being of a depth of up to 4 metres. The landform is floodplain but sites in similar landform zones have been previously recorded in the immediate vicinity (Navin Officer WCP 174, an open artefact scatter with >500 artefacts that is located within WC-PAD1).

Due to the nature of the landform, depth of A horizon soils, proximity to permanent water and proximity to other recorded sites, it is assessed that this area has a moderate potential to contain intact sub-surface archaeological deposits.

Figure 26: Locality map of WC-PAD1 (Wollar 8833-3N 2:25k: added features not to scale)



WC-PAD2

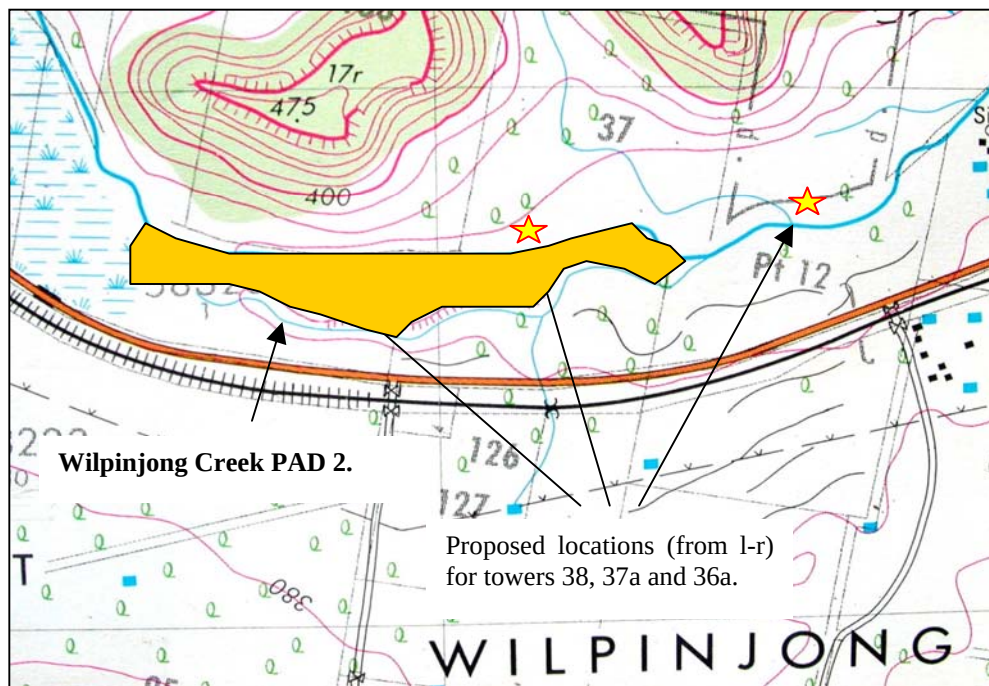
Wilpinjong Creek WC-PAD2 is located on the south bank of Wilpinjong Creek surrounding tower 38 for the Wollar – Wellington TransGrid 330 kV transmission line (Figure 27).

This area on the south bank of the creek has been impacted by agricultural practices more than corresponding areas on the northern bank. Sheet erosion in this area has reduced the depth of A horizon soils to 10-20 cm. The landform is floodplain but sites in similar landform

zones have been previously recorded in the immediate vicinity (Navin Officer WCP 134, an open artefact scatter with >500 artefacts that is located 70 metres south of WC-PAD2).

Due to the nature of the landform, proximity to permanent water and proximity to other recorded sites, it is assessed that this area has a moderate potential to contain intact sub-surface archaeological deposits.

Figure 27: Locality map of WC-PAD2 (Wollar 8833-3N 2:25k: added features not to scale)



WC-OS13 with PAD

Wollar 1:25K

AGD 769987 E 6420251 N

The Open Site Wilpinjong Creek WC-OS13 with PAD is situated on a slight rise at an altitude of 375 m, 30 metres west from the present bank of Wilpinjong Creek. This site is 30 m southeast of tower 41 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a ploughed agricultural field. A sketch of the site in relation to nearby features is shown in Figure 28.

Disturbance to archaeological deposits at WC-OS13 have resulted from recent land-use practices such as ploughing, and because the landform is not sufficiently elevated, it would have also been impacted during severe flood events.

The present survey located 4 artefacts at WC-OS13 (Table 10); a tuff blade, two quartz flakes, one with single edge retouch, and a fragment of local stone that appears to have been used as a grindstone (Plates 35 & 36). The artefacts were concentrated in a 30 x 10 m area to the north of a stand of Fuzzy Box trees that lie to the south of tower 41. The landform is comprised of a well-drained brown loam soil that is characteristic of the valley infill material along Wilpinjong Creek.

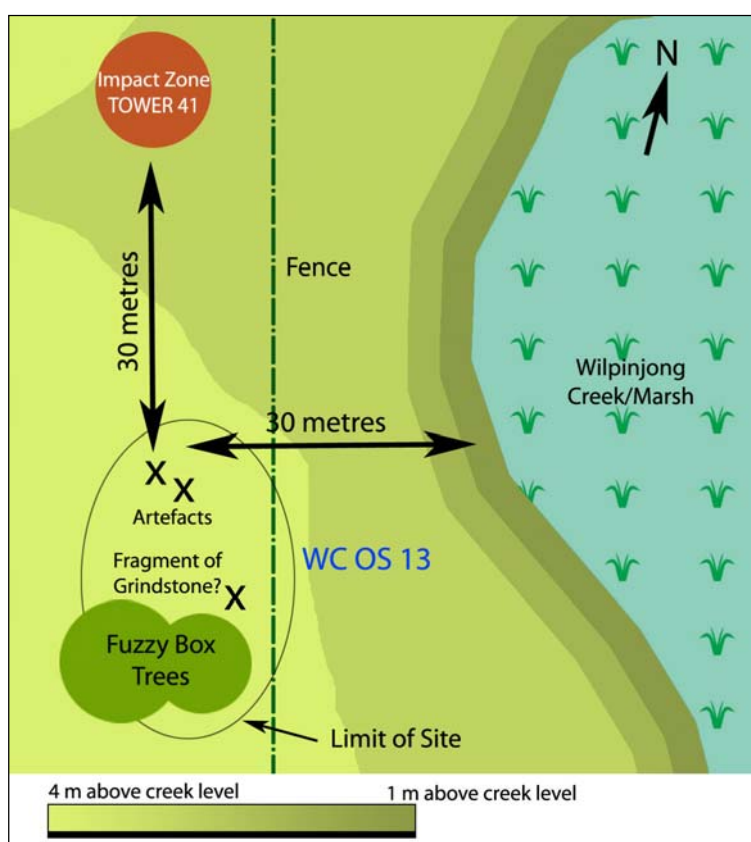
The general area of WC-OS13 would have provided rich natural resources suitable for moderate term occupation. Prior to clearing it would have been a River red & Blakely's red gum community on the banks of the creek that diffused into yellow, fuzzy and grey box open woodland and grassland beyond.

Due the nature of the landform (a low terrace adjacent to permanent water) and the depth of A horizon soils in the area, it is assessed that there is moderate potential for undisturbed sub-surface archaeological deposits to be present at this site.

Table 10: Summary of artefacts at WC-OS13.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Blade	Tuff	narrow	3	0	2.6x1.1x0.3
Flake	Quartz	narrow	0	20	1x1.6x1.1
Flake (retouch)	Quartz	medium	2	0	1.4x1.2x0.3
Grindstone Fragment	Volcanic				11.8x7x7.5

Figure 28: Locality map of WC-OS13 (not to scale)



WC-OS14**Wollar 1:25K****AGD 769878 E 6420402 N**

The open site Wilpinjong Creek WC-OS14 is situated at an altitude of 383 m in an area that has been highly disturbed by the building of a nearby dam. This site is between towers 42 and 43 for the Wollar – Wellington TransGrid 330 kV transmission line. A sketch of the site in relation to nearby features is shown in Figure 29.

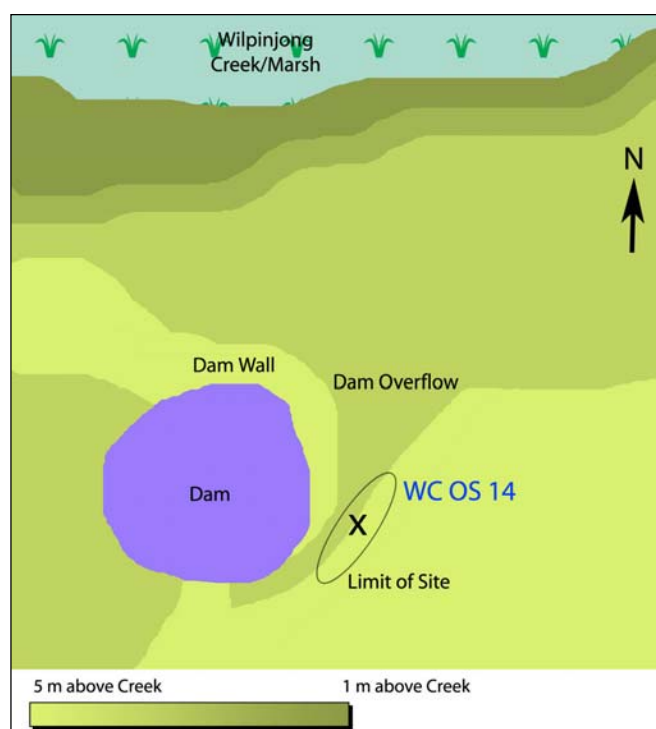
The present survey located 2 artefacts at WC-OS14 (Table 11); both quartz flakes (Plates 37 & 38). The artefacts were concentrated in a 10 x 5 m area to the east of the dam; particularly where exposures had been created by a bulldozer cutting the dam's overflow. The landform is comprised of a well-drained brown loam soil.

The location of the site suggests that archaeological deposits may have been heavily disturbed by landuse practices, particularly the construction of the dam. The site is therefore assessed as having a low potential for the presence of intact sub-surface deposits.

Table 11: Summary of artefacts at WC-OS14 follows.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Quartz	broad	0	20	2.3x0.4x1.8
Flake	Quartz	broad	0	0	3.2x0.9x2.8

Figure 29: Locality map of WC-OS14 (not to scale)



WC-IF4**Wollar 1:25K****AGD 769272 E 6420809 N**

The isolated find, Wilpinjong Creek WC-IF4, is situated in a cleared agricultural paddock within an area that has been exposed by erosion from water run-off. This find is between towers 43 and 44 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies to the south of proposed corridor at an altitude of 387 m. A sketch of the find in relation to nearby features is shown in Figure 30.

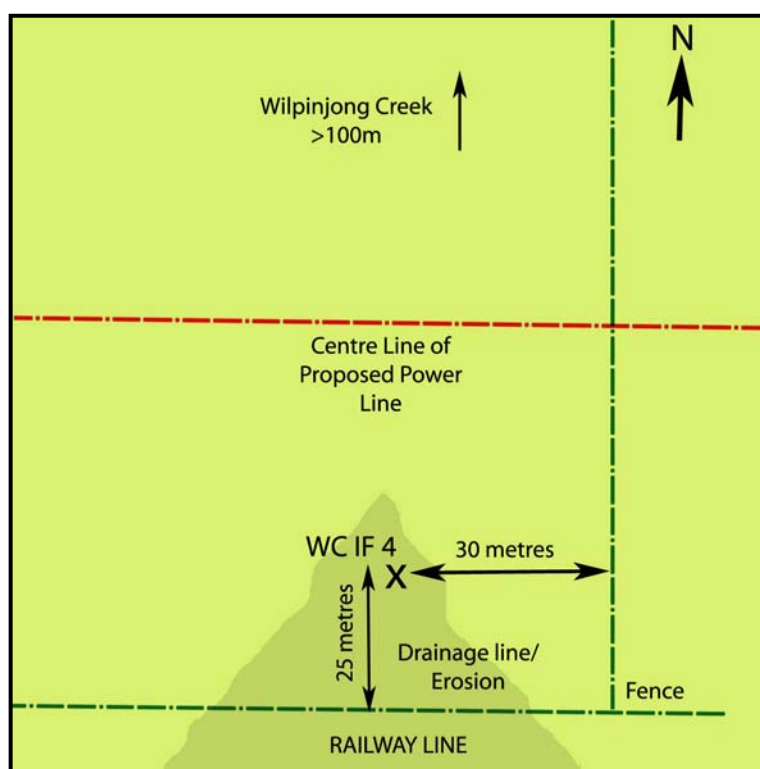
The present survey located a chert blade WC-IF4 (Table 12) in an area deflated of its' A horizon by erosion (Plates 39 & 40).

The eroded nature of the landform containing IF4 suggests the artefact is not *in situ* and that there is low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Table 12: Summary of artefact at WC-IF4 follows.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Blade	Chert	medium	3	0	2.8x1.5x0.6

Figure 30: Locality map of WC-IF4 (not to scale)



WC-OS15 with PAD**Wollar 1:25K****AGD 769001 E 6421143 N**

The open site Wilpinjong Creek WC-OS15 with PAD is situated at an altitude of 388 m, 10 m south from the present bank of Wilpinjong Creek. This site is between towers 45 and 46 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a cleared agricultural field. A sketch of the site in relation to nearby features is shown in Figure 31.

The location and nature of WC-OS15 suggests that archaeological deposits at the site may well have been disturbed by land-use practices such as clearing and grazing as well as by severe flood events as the site is very low-lying.

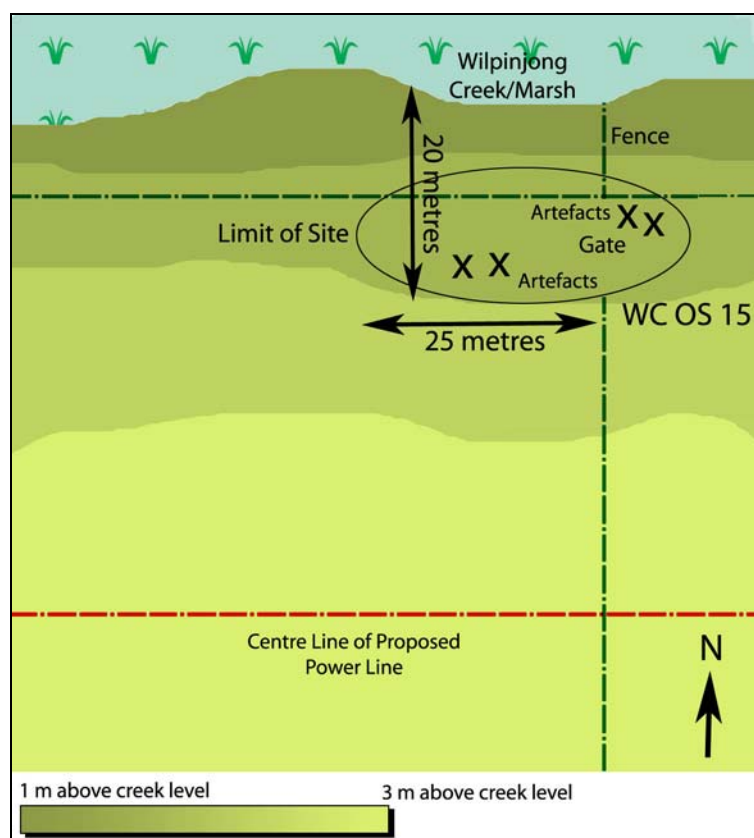
The present survey located 3 artefacts at WC-OS15 (Table 13); a tuff blade, a chert blade and a quartz flake (Plates 41 & 42). In addition were a number of quartz chips that may have been the result of knapping. The artefacts were concentrated in a 25 x 8 m area centred on an area where stock movement had created exposure along a fence. The landform is comprised of a sandy brown loam soil.

The general area would have provided rich natural resources suitable for moderate term occupation. Prior to clearing it would have been a River Red & Blakely's red gum community on the banks of the creek that diffused into yellow, fuzzy and grey box open woodland and grassland beyond.

Due the nature of the landform (sandy soils adjacent to permanent water) and the depth of A horizon soils in the area, it is assessed that there is moderate potential for further undisturbed sub-surface archaeological deposits to be present at this site.

Table 13: Summary of artefacts at WC-OS15.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Blade	Orange Chert (fine grained)	narrow	6	0	4.1x1x2
Blade (broken)	Coarse Mudstone	narrow	3	0	3x1.6x0.5
Flake	Quartz	medium	0	0	3.7x1.3x1

Figure 31: Locality map of WC-OS15 (not to scale)**WC-OS16 with PAD****Wollar 1:25K****AGD 767367 E 6422761 N**

The open site Wilpinjong Creek WC-OS16 with PAD is situated at an altitude of 405 m, 26 metres south from the centre of the proposed corridor. This site is between towers 50 and 51 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a cleared agricultural field on top of a knoll that rises prominently in the landscape. A sketch of the site in relation to nearby features is shown in Figure 32.

The nature of WC-OS16 indicates that archaeological deposits at the site have been disturbed by landuse practices such as clearing and grazing that have resulted in erosion, although A horizon soils are still present across the site.

The present survey located over 15 artefacts at WC-OS16 (Table 14), among them; a chert flake, a chert core element, a quartz flake and a chert blade (Plates 43 & 44). More artefacts were present at the site than were recorded during this survey.

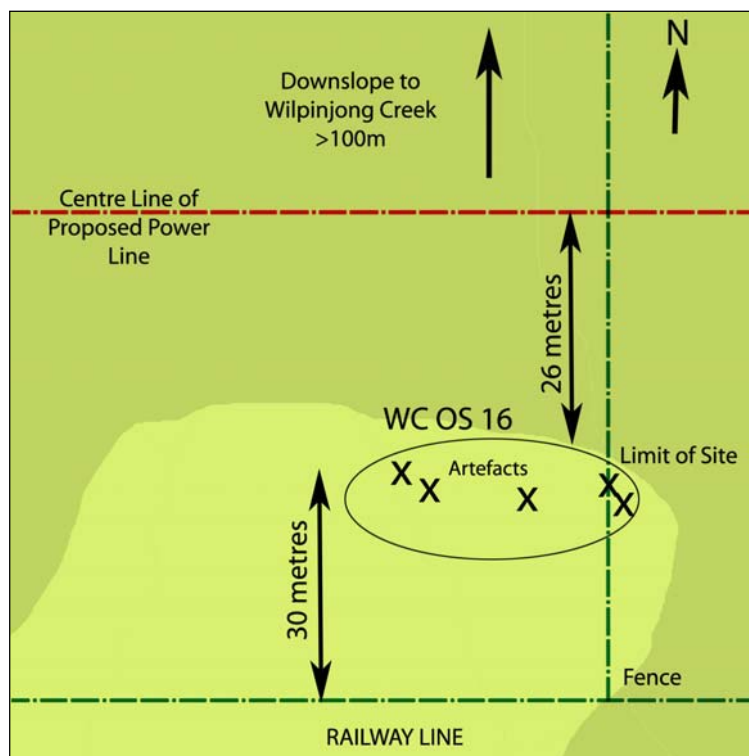
The artefacts were concentrated in a 20 x 10 m area centred on the top of the knoll. The site spans the agricultural fence and would have once occupied a prominent position in the landscape. Although Wilpinjong Creek is over 250 m away to the north this does not preclude the fact that WC-OS16 would have offered a convenient camp area away from the immediate environs of the creek.

Due the nature of the landform (elevated knoll at an altitude above severe flood events) and the depth of A horizon seen in rabbit burrows nearby, it is assessed that there is moderate potential for further undisturbed sub-surface archaeological deposits to be present at this site.

Table 14: Summary of artefacts at WC-OS16.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Red Chert (fine-grained)	moderate	0	0	1.8x3x1.3
Core Element	Pale Chert (fine-grained)	N/A	5	0	2.3x2x2.4
Flake	Quartz	moderate	0	50	1.4x1.3x0.5
Blade (broken)	Pale Chert	narrow	3	0	1.5x1.6x0.8
Blade (broken)	Pink Chert	(platform broken)	1	20	1.8x1.4x0.4
Flake	Quartz	narrow	0	0	2.5x1.3x0.8

Figure 32: Locality map of WC-OS16 (not to scale)



WC-IF5**Wollar 1:25K****AGD 767284 E 6422874 N**

The isolated find, Wilpinjong Creek WC-IF5, is situated in a semi-cleared agricultural paddock within an area that has been exposed through use as a vehicle track. This find is between towers 50 and 51 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies to the north of proposed corridor at an altitude of 405 m. WC-IF5 are within 150 metres of WC-OS16. A sketch of the find in relation to nearby features is shown in Figure 33.

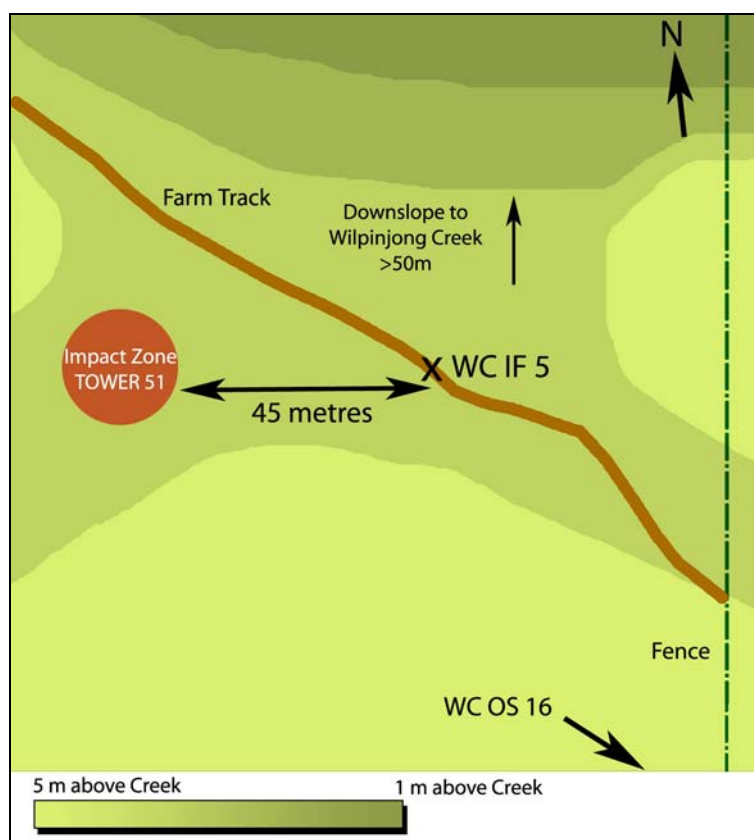
The present survey located a chert blade (WC-IF5 - Table 15) on the edge of the farm track (Plates 45 & 46).

The sloping nature of the landform containing IF5 suggests the artefact is not *in situ* (perhaps washed down slope from WC-OS16) and that there is low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Table 15: Summary of artefact at WC-IF5.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Blade	Orange Chert (un-waxy)	narrow	6	0	2x1x0.3

Figure 33: Locality map of WC-IF5 (not to scale)

**SHC-IF6****Gulgong 1:25K****AGD 757719 E 6424379 N**

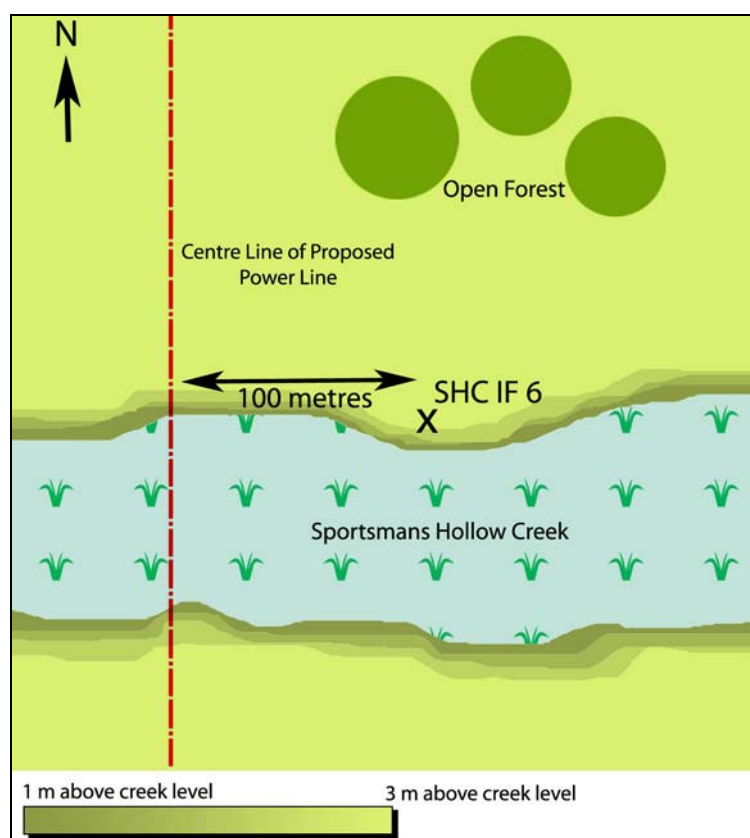
The isolated find at Sportsmans Hollow Creek SHC-IF6, is situated on the north bank of Sportsmans Hollow Creek in a zone of heavy erosion. This find is between towers 81 and 82 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies 100 m to the east of proposed corridor at an altitude of 428 m. A sketch of the find in relation to nearby features is shown in Figure 34.

The present survey located a quartz flake (SHC-IF6, Table 16) at the top of the creek bank, which at present, is 3 m above the present basal level of the creek (Plates 47 & 48). The eroded nature of the landform containing IF6 suggests the artefact is not *in situ* and that there is low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Table 16: Summary of artefacts at SHC-IF6.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Quartz	narrow	0	0	2.3x1.5x0.6

Figure 34: Locality map of SHC-IF6 (not to scale)



WC-OS17 with PAD

Wollar 1:25K

AGD 766479 E 6423495 N

The open site Wilpinjong Creek WC-OS17 with PAD is situated at an altitude of 405 m, directly on the site for tower 53 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a cleared agricultural field on top of a low knoll that rises above

the upper floodplain of Wilpinjong Creek. A sketch of the site in relation to nearby features is shown in Figure 35.

The nature of WC-OS17 indicates that archaeological deposits at the site have been disturbed by land-use practices such as clearing and grazing that have resulted in erosion, although A horizon soils are still present across the site. The altitude of the site in comparison to Wilpinjong Creek would have placed the site above most flood events.

The present survey located over 20 artefacts at WC-OS17 (Table 17), among them; chert flakes, a chert core, and quartz flakes (Plates 49 & 50). More artefacts were present at the site than were recorded during this survey.

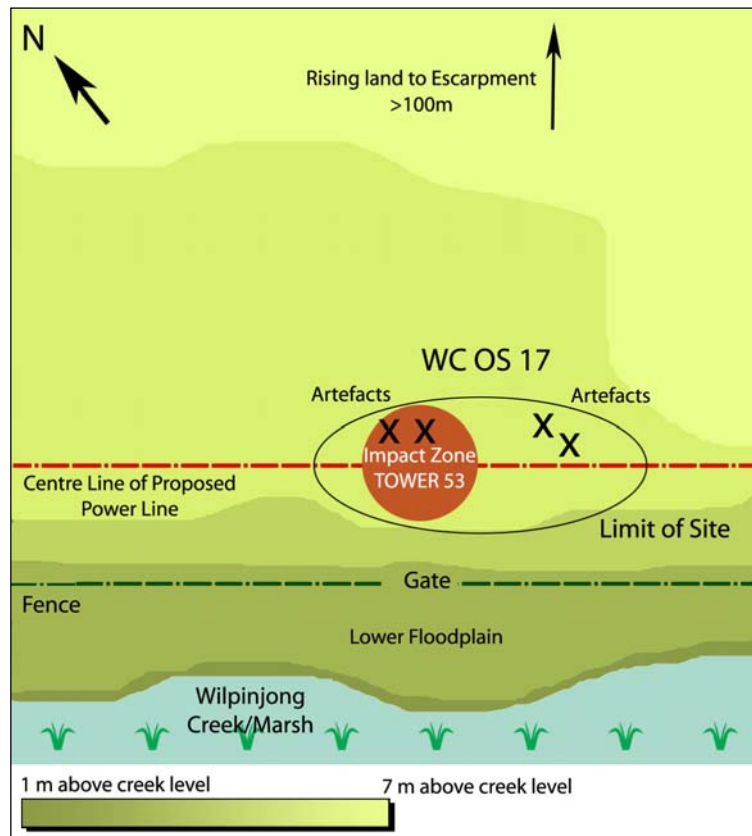
The artefacts were concentrated in a 15 x 15 m area centred on the top of a knoll that overlooks the lower floodplain of Wilpinjong Creek. The soil of the knoll is sandy and the location would make an ideal camp area. The general area would have provided rich natural resources suitable for moderate term occupation. Prior to clearing it would have been a River red & Blakely's red gum community on the banks of the creek that diffused into yellow, fuzzy and grey box open woodland and grassland beyond.

Due the nature of the landform (elevated knoll in close proximity to water) and the depth of A horizon soils, it is assessed that there is moderate potential for further undisturbed sub-surface archaeological deposits to be present at this site.

Table 17: Summary of artefacts at WC-OS17.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Grey Chert	narrow	4	10	1.3x0.4x2.5
Core	Chert (poor-quality)	N/A	6	0	2.7x2.7x4.2
Flake	Chert	narrow	6	0	3.6x1.6x3.8
Core	Chert	N/A	3	0	3.4x2.7x2.5
Flake	Chert	moderate	2	0	3.2x2.4x0.6
Flake	Quartz	narrow	0	0	2.3x2x0.8
Blade	Chert	narrow	3	0	3.7x1.9x0.9

Figure 35: Locality map of WC-OS17 (not to scale)

**WC-OS18****Wollar 1:25K****AGD 765865 E 6423952 N**

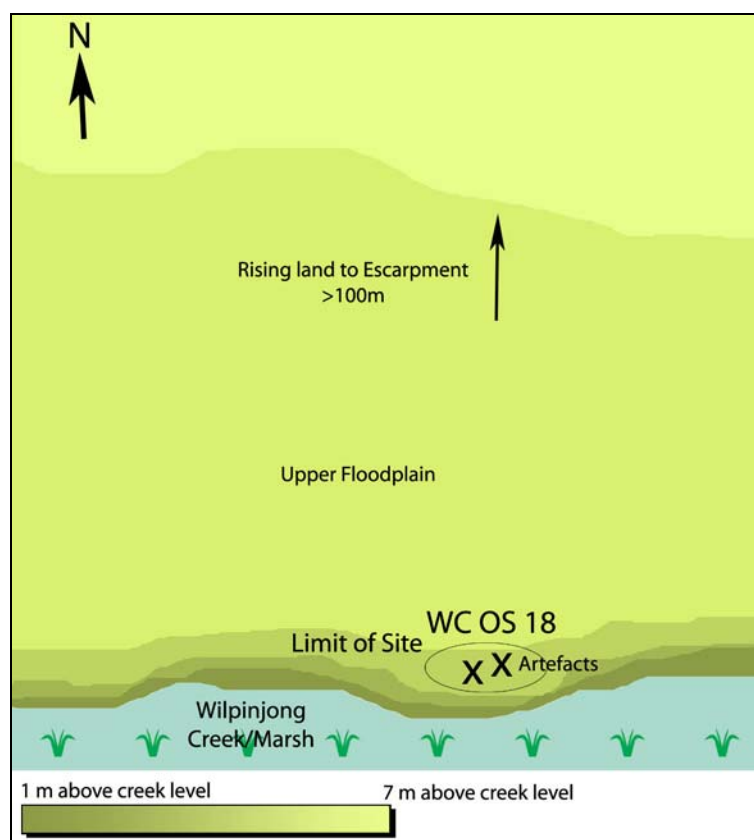
The open site Wilpinjong Creek WC-OS18 is situated at an altitude of 407 m, on the north bank of Wilpinjong Creek. The site lies between towers 55 and 56 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located in an area of erosion along the bank of creek. A sketch of the site in relation to nearby features is shown in Figure 36.

The nature of WC-OS18 indicates that archaeological deposits at the site have been disturbed by land-use practices such as clearing and grazing, as well as by severe flood events as the site is very low-lying.

The present survey located 2 artefacts at WC-OS18 (Table 18), both chert flakes (Plates 51 & 52).

The artefacts were concentrated in a 10 x 5 m area along the north bank of Wilpinjong Creek. The landform is comprised of a well-drained brown loam soil that is characteristic of the valley infill material along Wilpinjong Creek.

Due the nature of the landform (floodplain) and the eroded nature of the deposits, it is assessed that there is low potential for further undisturbed sub-surface archaeological deposits to be present at this site.

Figure 36: Locality map of WC-OS18 (not to scale)**MC-OS19****Gulgong 1:25K****AGD 758251 E 6424320 N****Table 18: Summary of the artefacts located during the survey at WC-OS18 follows.**

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Chert	moderate	4	0	3.2x2.2x1.2
Flake	Chert	narrow	2	0	2.8x2x1

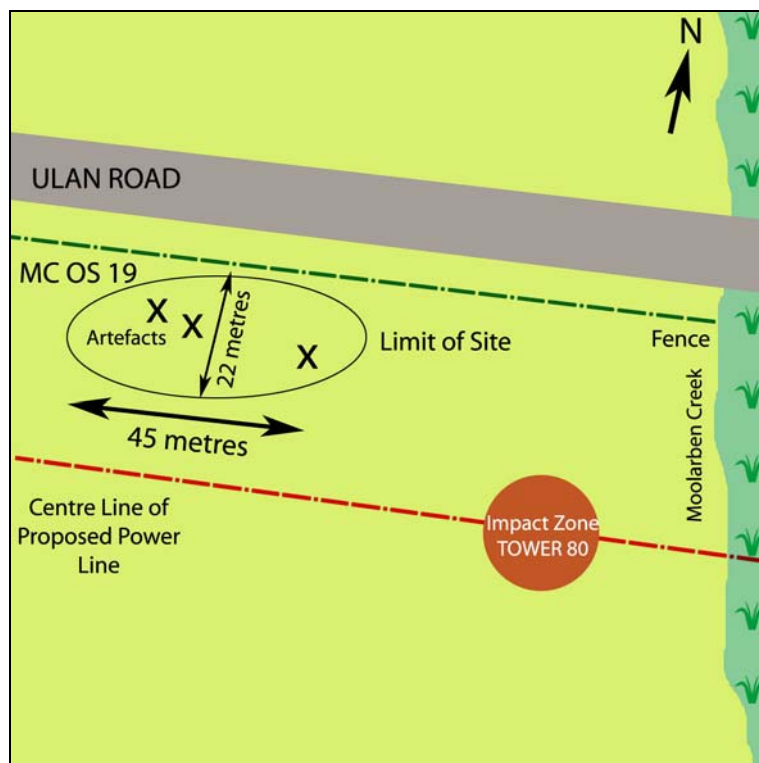
The open site Moolarben Creek MC-OS19 is situated on the floodplain of Moolarben Creek at an altitude of 427 m. This site is 90 m northeast of tower 80 for the Wollar – Wellington TransGrid 330 kV transmission line. The site is located on a ploughed and degraded agricultural field. A sketch of the site in relation to nearby features is shown in Figure 37.

Disturbance to archaeological deposits at MC-OS19 has resulted from recent land-use practices that have led to sheet erosion and deflation of topsoils across much of the site.

The present survey located a number of quartz and chert chips that are probably the result of knapping across the area (Plate 53). While the survey failed to locate any more substantial lithics, the concentration of this lithic material indicted human activity at the site. The artefacts were concentrated in a 45 x 22 m area and are probably a continuation of a much larger site that has been noted to the north of Ulan Road in this area (D. Maynard *pers. com*).

Due to the nature of the nature of the disturbances impacting site MC-OS19, it is assessed that there is low potential for undisturbed sub-surface archaeological deposits to be present at this site.

Figure 37: Locality map of MC-OS19 (not to scale)



WW- IF7

Munghorn 1:25K

AGD 775615 E 6412143 N

The Isolated Find, Wollar-Wellington WW-IF7, is situated 30 metres west of tower 9 for the Wollar – Wellington TransGrid 330 kV transmission line. It lies outside the proposed corridor at an altitude of 441 m.

The present survey located a quartz flake (WW-IF7 – Table 19) in a zone of erosion on the hill slope above the site for tower 9 (Plate 54).

The eroded nature of the landform containing IF7, and the slope of the land, suggests the artefact is not *in situ* and that there is low potential for intact sub-surface deposits to be present in the immediate vicinity of the find.

Table 19: Summary of artefacts at WW-IF7.

Artefact Description	Material	Platform Size	Reverse Scars	% Cortex	Dimensions (cm)
Flake	Quartzite	broad	4	0	3.7x2.5x1.1

4.6 Discussion

4.6.1 Aboriginal site distribution

In general the sites found during the present survey confirm the predictive model set out in Section 4.3. The majority of sites were found within 200 m of water, either on the valley slopes or the valley floors (terraces / banks of watercourses). This general picture confirms the predictive model that sites near water are more common than in areas away from water. Also confirming the predictive model is the fact that the largest site recorded during the present survey (CR-OS4 with PAD) occupies a topographic zone in a location exactly as predicted by the model, namely; an elevated terrace near the convergence of two watercourses.

While the predictive model indicated that certain features, such as stone formations (e.g. bora rings) and stone quarries, might be located on ridge tops, none were identified during the present survey as the majority of the proposed corridor avoided such topographic barriers.

It is also noteworthy at this point to bear in mind that the field survey at each tower location and along any proposed or 'upgrade required' access tracks was able to remain physically limited in nature due to the precision with which the Proponent could define their proposed impacts. Consequently, broad areas did not require field investigation thereby limiting the number of sites one may expect to record on a survey the scale of the current project length.

The majority of areas surveyed have been impacted by agricultural practices and it is highly likely that a number of potential archaeological deposits or other site types along the corridor have been destroyed either directly by these practices or from the resulting erosion and saltation processes.

As the proposed work is the construction of an electricity transmission line, the potential for adverse impacts to archaeological deposits within the proposed corridor is relatively limited. This impact will arise both from the construction phase of the proposed works (excavation of tower foundations and transport of materials on access roads) and the maintenance phase (infrequent use of access tracks by soft-wheeled vehicles and periodic clearing of vegetation along the corridor). Thus, between tower sites, potential impact to archaeological deposits by the proposed works is low. Further minimising the potential for adverse impacts on archaeological deposits is the fact that the majority of the survey traversed landforms that the predictive model indicated have low potential for the occurrence of Indigenous sites.

A few tower sites will, however, directly impact archaeological sites recorded during this survey and recommendations for these particular towers are set out in Section 6.

Predictive modelling for inaccessible corridor sections

Area 1, towers 59-63

Towers 59-61: These are situated on apparently elevated landforms within cleared land close to the northern banks of Wilpinjong Creek. Many sites were recorded along this creekline to the east of this area (see site descriptions below). Consequently, due to proximity to water and possibly appropriate landform, these tower locations are preliminarily assessed as having

moderate to high archaeological sensitivity, although local ground surface disturbance at these locations cannot be commented upon.

Towers 62-63: These are situated on slightly sloping land that is uncleared and some distance from water, but still within easy reach of the Wilpinjong Creek system. Consequently these tower locations are assessed as having low-moderate archaeological sensitivity. The age of the tree canopy here cannot be determined from the aerial photography, but if mature trees are present then there is also moderate potential for scarred trees.

Area 2, towers 181-190

Towers 181-183: These are situated on apparently elevated, flat landforms within cleared land c. 200-600 m north of the Cudgegong River and west of Mebul Creek. Many sites have been recorded along the Cudgegong River, usually within c. 200-300 m of its banks. Consequently, due to proximity to water and possibly appropriate landform, these tower locations are preliminarily assessed as having moderate to high archaeological sensitivity. From the aerial photograph, this area appears to have been ploughed, thus reducing the likelihood of undisturbed sites, although there is always potential for intact deposits beneath the plough zone.

Towers 184-189: These are to be situated on flat to undulating land that is cleared, grazed and probably ploughed. They are generally some distance from permanent water (over 600 m). Consequently these tower locations are preliminarily assessed as having low archaeological sensitivity.

Tower 190: This is to be situated in a semi-cleared area east of Goolma Creek. A site was recorded on the opposite bank of the Creek (GC-OS5 with PAD) and further artefacts were noted on west bank, south of this tower location near the proposed creek crossing (GC-OS6). As a result, taking proximity to water and possibly appropriate landform into account, this tower location is preliminarily assessed as having moderate to high archaeological sensitivity, although local ground surface disturbance at this location cannot be commented upon.

Area 3, towers 234-242

Towers 235-236: These are to be located on apparently elevated, flat landforms within cleared semi-cleared land close to an ephemeral drainage line. Due to proximity to water and possibly appropriate landform, these tower locations are preliminarily assessed as having moderate archaeological sensitivity. From the aerial photograph, this area appears to have been ploughed, reducing the likelihood of undisturbed sites, although there is always potential for intact deposits beneath the plough zone.

Towers 234, 237-242: These are to be situated on flat to undulating land that is cleared, grazed and probably ploughed. They are generally some distance from permanent water (over 600 m). Consequently these tower locations are preliminarily assessed as having low archaeological sensitivity.

4.6.2 Aboriginal Site Assessment

The appropriate management of cultural heritage items is usually determined on the basis of their assessed significance as well as the likely impacts of any proposed developments. Scientific, cultural and public significance are currently identified as baseline elements of this assessment, and it is through the combination of these elements that the overall cultural heritage values of a site, place or area are resolved.

Cultural significance

These areas of assessment concern the importance of a site or feature to the relevant cultural group, in this case the Aboriginal community. Aspects of cultural significance include assessment of sites, items, and landscapes that are traditionally significant or that have contemporary importance to the Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for their sites generally and the continued protection of these. This type of significance may not be in accord with interpretations made by the archaeologist - a site may have low scientific significance but high Aboriginal significance (or *vice versa*).

Scientific significance

Assessing a site in this context involves placing it into a broader regional framework, as well as assessing the site's individual merits in view of current archaeological discourse. This type of significance relates to the ability of a site to answer current research questions and is also based on a site's condition (integrity), content and representativeness.

The overriding aim of cultural heritage management is to preserve a representative sample of the archaeological resource. This will ensure that future research within the discipline can be based on a valid sample of the past. Establishing whether or not a site can contribute to current research also involves defining 'research potential' and 'representativeness'. Questions regularly asked when determining significance are: can this site contribute information that no other site can? Is this site representative of other sites in the region?

Open Sites

The scientific significance of open artefact scatters and isolated finds is extremely variable and dependent upon several factors relating to:

- **Preservation:** Whether the site has the potential for the presence of intact, sub-surface deposit, or whether disturbance (human: land surface impacts, or environmental: erosion, deflation) has reduced its integrity and thus its potential.
- **Representativeness:** Is this the type of site one may expect in this landscape (i.e. does it relate back to the predictive model)?; Do many such sites occur nearby? Etc.
- **Are there artefacts present (material, types or combinations thereof) that are rare in the area or unusual for that type of site?**

PADs

It is impossible to determine the significance of PADs as there is often no site material (if there are no associated surface artefacts) or soil data to assess. Consequently, should impact to PADs be unavoidable, test excavation is recommended to investigate the presence, extent, nature and integrity of any possible archaeological deposits such that the PAD's significance can be assessed and appropriate management recommendations devised.

Public significance

Sites that have public significance do so because they can educate people about the past. By reducing ignorance about why sites are important to the Aboriginal and scientific community, important sites can be protected from ignorant or inadvertent destruction. Educating the public to understand the need for site preservation should increase the likelihood of maintaining an archaeological resource into the future. For a site to have high public significance it should contain easily identifiable and interpretable elements, and be relatively easily accessed.

Although scarred trees are easily appreciated due to their obvious visual manifestation, their general significance is reduced by their common occurrence in non-urban areas. Most open sites and isolated finds, when *in-situ*, are usually extremely difficult for the lay person to appreciate unless the artefact(s) is/are in someway very unusual, numerous or interpreted through signage and graphics.

4.6.3 Assessed significance of the Aboriginal sites along the Wollar - Wellington 330kV transmission line study corridor

Cultural

A general discussion was held on site with representatives from GTAC, MGATSIC and Warrabinga to initiate a determination of the cultural significance of the sites recorded in the vicinity of proposed transmission corridor. All sites recorded are of high cultural significance to the Aboriginal community who would like to see sites avoided when at all possible. Letter from these groups detailing their individual assessment of the recorded sites has been requested by OzArk and, when provided, these letters will be presented in Appendix 2 to this report.

Scientific

The overall location of sites discovered during the current survey conforms to the general archaeological settlement pattern that has already been established throughout the broader region. Namely the sites are open camp sites or isolated finds in association with seasonal water courses or springs. All sites discovered during the survey were on flat to gently sloping land, again conforming to a pattern that has been noted elsewhere.

Table 20 details the scientific assessment of each site recorded during the current survey. Each site has been assessed according to levels of disturbance (low, moderate or high) to the archaeological deposits or site manifestations that comprise each site. Ranking has also been accorded to sites based on their assessed archaeological potential. With regards to sites

described as possessing PAD, this refers to the likelihood of the site having associated, intact, sub-surface deposits. In the case of simple open sites or isolated finds, this column refers to the likelihood of further surface artefacts being present or some degree of likelihood that sub-surface material may occur, although potential not as intact archaeological deposits. The assessments in this column have been arrived at through overlaying the overall sensitivity of the landform (from the predictive model) with assessed levels of disturbance so as to arrive at their archaeological potential. The final column details the assessed scientific significance of the recorded sites. For sites with PAD, this assessment is only preliminary, as not enough information on the site is available from a pure surface recording.

Table 20: Scientific assessment of sites recorded during this survey

Site Number	Type of Site	Disturbance Levels	Archaeological Potential	Scientific significance
UC-OS1 with PAD	Artefact scatter >20 artefacts	Low-Moderate	Moderate	Preliminarily Moderate-High
UC-OS2	Artefact scatter <5 artefacts	Moderate	Low	Low
UC-OS3	Artefact scatter <15 artefacts	Low-Moderate	Moderate	Low-Moderate
CR-OS4 with PAD	Artefact scatter >1000 artefacts	Low	High	High
GC-OS5 with PAD	Artefact scatter >100 artefacts	Low	High	Preliminarily High
GC-OS6	Artefact scatter >15 artefacts	Moderate	Low	Low
WC-IF1	Isolated Find	Moderate	Low	Low
CT-OS7	Artefact scatter >10 artefacts	Moderate	Low-Moderate	Low-Moderate
BSR-OS8	Artefact scatter >10 artefacts	Moderate	Low-Moderate	Low-Moderate
SDC-OS9 with PAD	Artefact scatter <5 artefacts	Low-moderate	Moderate	Preliminarily Moderate
SC-OS10	Artefact scatter <5 artefacts	Moderate	Low	Low
WC-OS11	Artefact scatter <5 artefacts	Moderate	Low	Low
WC-OS12 with PAD	Artefact scatter <5 artefacts	Moderate	Moderate	Preliminarily Moderate
WC-IF2	Isolated Find	Moderate	Low	Low
WC-IF3	Isolated Find	Moderate	Moderate	Low
WC-OS13 with PAD	Artefact scatter <5 artefacts	Moderate	Moderate	Preliminarily Moderate
WC-OS14	Artefact scatter <5 artefacts	High	Low	Low
WC-IF4	Isolated Find	High	Low	Low
WC-OS15 with PAD	Artefact scatter >5 artefacts	Moderate	Moderate	Preliminarily Moderate
WC-OS16 with PAD	Artefact scatter >15 artefacts	Low	Moderate	Preliminarily Moderate
WC-IF5	Isolated find	High	Low	Low
SHC-IF6	Isolated find	High	Low	Low
WC-OS17 with PAD	Artefact scatter >20 artefacts	Low	Moderate	Preliminarily Moderate
WC-OS18	Artefact scatter <5 artefacts	High	Low	Low
MC-OS19	Artefact scatter >5 artefacts	Moderate	Moderate	Moderate
WW-IF7	Isolated Find	Moderate	Low	Low
WC-PAD 1	Potential Archaeological Deposit	Low	High	Preliminarily

Site Number	Type of Site	Disturbance Levels	Archaeological Potential	Scientific significance
				Moderate
WC-PAD 2	Potential Archaeological Deposit	Low	High	Preliminarily Moderate

Public

All but one of the recorded open sites (OS) and Potential Archaeological Deposits (PADs) located during the present survey are assessed as having low public significance due to the nature of the sites (i.e. they are artefact scatters with relatively low numbers of artefacts per square metre). They are also all located on privately owned land causing them to be inaccessible to the general public. As such these sites are therefore difficult for the lay person to interpret. The only site that may be of public significance is CR-OS4. The extensive distribution of the surface artefacts at this site and the unusually high frequency of artefacts eroding from *in situ* deposits causes this site to be more interpretable to the lay person, especially with the aid of interpretation.

4.6.4 Likely impacts of the proposed Wollar - Wellington 330kV transmission line to Indigenous sites

The 330kV transmission line between Wollar and Wellington will consist of up to 275 towers to be constructed at intervals along a linear easement in locations assessed as having the least environmental and aesthetic impact (Figure 3). Existing tracks will be used where possible to access the easement with some requiring upgrading. Infrequently, new access roads will also be required, some of which are needed at creek crossings. Access roads will be used for construction purposes and also for ongoing line maintenance. Tracks will be generally 4-5 m in width. The location of the proposed access roads were marked as dotted lines on aerial photographs overlain with the route plan supplied to the OzArk. These aerial images could not be reproduced in the current report (due to size and volume), but form part of the associated EIS documents.

The impact footprint and ground disturbing activity of each tower structure is c. 10 x 10 m, with each of the four legs requiring a 1 x 1 m excavation for footings. Although the direct impact area is limited, a broader area of disturbance will be associated with construction at each tower location for vehicle parking and equipment storage, likely to cover an area of approximately 50 x 50 m. Very little ground disturbance will be associated in the inter-tower span distance, although portions of the study corridor will require vegetation removal due to the interference with the lines from large trees.

Because the Proponent sent senior engineering and environmental officers to accompany the heritage assessment team during field survey it has been possible to avoid impact to the majority of the recorded sites through the relocation of towers or access tracks. This process proved to be extremely efficient for all parties involved as site management (include impacts etc.) could be discussed on location at each Indigenous site and alternatives explored that minimised or mitigated against impact thus resulting in better conservation outcomes for many of the recorded sites.

Table 21 below details the assessed likely impacts to recorded sites after the mitigative measures developed during the project have been applied. To this end it is important to remember that sites were only recorded in or very close to delineated impact areas, and the reduction of proposed impacts from all 28 recorded sites to only 11 can be seen as a measure of the success of the survey process undertaken during the current project.

Beyond impacts to individual recorded sites, the current study identified areas of archaeological sensitivity at several tower locations or creek crossings. These areas were often near recorded sites and subsequently, it was assessed that monitoring of construction impacts under a Section 87(1) permit at these locations was appropriate. Table 24 in Section 6.1 details these tower locations and creek crossings.

Impacts to heritage within the three inaccessible sections are at this point unknown. Predictive modelling (section 4.6.1) has assessed that of the 24 tower locations that have not undergone physical survey, 13 are situated in areas of low archaeological sensitivity, two in areas of low-moderate sensitivity, a further two in moderately sensitivity areas and the final seven in locations of moderate to high archaeological sensitivity. Once property access issues are resolved, potential impacts at these tower locations will be ground-truthed.

Table 21: Summary of Likely Impacts to Recorded Indigenous Sites.

Site Number	Type of Site	Detailed Impacts from Proposed Works	To be Impacted
UC-OS1 with PAD	Artefact scatter >20 artefacts	UC-OS1 will be impacted by the construction of an access track across Uamby Creek.	Yes
UC-OS2	Artefact scatter <5 artefacts	UC-OS2 will be not impacted as it has been decided not to use this access track.	No
UC-OS3	Artefact scatter <15 artefacts	UC-OS3 is near a creek crossing of Uamby Creek that requires excavation to reduce the grade of the bank such that an access track can be constructed.	Yes
CR-OS4 with PAD	Artefact scatter >1000 artefacts	Although TransGrid have tried to shift this tower to avoid this site, it has proven impossible to do. Tower 198 is located within the boundaries of this site, although near a disturbed portion of it.	Yes
GC-OS5 with PAD	Artefact scatter >100 artefacts	Under the current proposed impact plan GC-OS5 will be impacted by tower 191, although TransGrid are seeking to move this tower so as to span the site.	Yes
GC-OS6	Artefact scatter >15 artefacts	GC-OS6 will not be impacted by the proposed development if all vehicles follow the existing agricultural fence lines and do not cut across the paddock	No
WC-IF1	Isolated Find	WC-IF1 will be impacted by tower 155.	Yes
CT-OS7	Artefact scatter >10 artefacts	Although originally within the proposed impact zone, TransGrid shifted tower 91 such that CT-OS7 will now not be impacted.	No
BSR-OS8	Artefact scatter >10 artefacts	BSR-OS8 lies within the impact zone of tower 128.	Yes

Site Number	Type of Site	Detailed Impacts from Proposed Works	To be Impacted
SDC-OS9 with PAD	Artefact scatter <5 artefacts	SDC-OS9 lies to the west of the easement corridor and will not be impacted by the proposed works or access roads.	No
SC-OS10	Artefact scatter <5 artefacts	SC-OS10 will be impacted as it is on the access track that will be used during construction of tower 128.	Yes
WC-OS11	Artefact scatter <5 artefacts	WC-OS11 will not be impacted as the proposed creek crossing will not be constructed here.	No
WC-OS12 with PAD	Artefact scatter <5 artefacts	WC-OS12 lies 20 m north of tower 30 and will not be impacted by the proposed works.	No
WC-IF2	Isolated Find	WC-IF2 lies within the easement corridor but will not be impacted by the proposed works or access tracks.	No
WC-IF3	Isolated Find	WC-IF3 lies within the easement corridor but will not be impacted by the proposed works or access tracks.	No
WC-OS13 with PAD	Artefact scatter <5 artefacts	WC-OS13 lies 30 m south of tower 41 and will not be impacted by the proposed works.	No
WC-OS14	Artefact scatter <5 artefacts	WC-OS14 lies to south of the easement corridor and will not be impacted by the proposed works.	No
WC-IF4	Isolated Find	WC-IF4 lies 21 m south of the centre line of the easement corridor and will not be impacted by the proposed works.	No
WC-OS15 with PAD	Artefact scatter >5 artefacts	WC-OS15 lies to the north of the easement corridor and will not be impacted by the proposed works.	No
WC-OS16 with PAD	Artefact scatter >15 artefacts	WC-OS16 lies 26 m south of the centre line of the easement corridor and will not be impacted by the proposed works.	No
WC-IF5	Isolated find	WC-IF5 lies to the north of the easement corridor and could be impacted by the proposed works as it lies on a track that could be used as access during construction.	Yes
SHC-IF6	Isolated find	SHC-IF6 lies 100 m to the east of the easement corridor and will not be impacted by the proposed works.	No
WC-OS17 with PAD	Artefact scatter >20 artefacts	WC-OS17 will be directly impacted by the building of tower 53.	Yes
WC-OS18	Artefact scatter <5 artefacts	WC-OS18 lies outside of the easement corridor and will not be impacted by the proposed works.	No
MC-OS19	Artefact scatter >5 artefacts	MC-OS19 lies to the north of the easement corridor and will not be impacted by the proposed works.	No
WW-IF7	Isolated Find	WW-IF7 lies outside of the easement corridor and will not be impacted by the proposed works.	No

Site Number	Type of Site	Detailed Impacts from Proposed Works	To be Impacted
WC-PAD 1	Potential Archaeological Deposit	WC-PAD 1 will be directly impacted by the construction of tower 37a.	Yes
WC-PAD 2	Potential Archaeological Deposit	WC-PAD 2 will be directly impacted by the construction of tower 38.	Yes

4.6.5 Management Options

Appropriate management of cultural heritage items is primarily determined on the basis of their assessed significance as well as the likely impacts of the proposed development. Sections 4.6.3 and 4.6.4 described respectively the significance/potential of the recorded site and the likely impacts of the proposed transmission line. The following management options are general principles, in terms of best practice and desired outcomes, rather than mitigative measures against individual site disturbance.

- Avoid impact by altering the development proposal. If this can be done, then a suitable curtilage around the site must be determined so as to ensure its protection both during the short term construction phase of development and in the long term use of the area. If plans are altered, care must be taken to ensure that sites previously assessed as not impacted, remain so. This may be facilitated where necessary through the fencing off of sites during construction so as to minimise inadvertent impacts.
- If impact is unavoidable then a Section 90 (Consent to Destroy)³ or Section 87(1) permit may be applied for from the NSW DEC and approval will depend on many factors including the site's assessed significance. Sites of moderate to high significance and/or potential may require either test or salvage excavation, or more detailed recording, as part of the conditions of a Section 87 / 90 being granted. Sites of low significance may have a Section 90 or 87(1) approved with no further archaeological assessment being required, or with an approved monitoring programme. Once granted, the local Aboriginal communities may wish to collect or relocate artefacts, whether temporarily or permanently, if necessary.⁴

To this end it should be noted that TransGrid has altered their development proposal at many points to ensure that Indigenous sites are not impacted by their proposed construction of electricity towers and associated access tracks. Tower locations have been shifted and access tracks re-routed to provide a conservation outcome for the majority of recorded Indigenous sites. Further, mitigative measures have been devised to minimise the degree of impact at locations where impacts are unavoidable. These measures include the fencing off of sites where possible to avoid inadvertent impact during construction, the use of geotextile over sensitive deposits for the construction of access tracks and the battering / shoring up of

³ The developer must to apply to the Director-General of DEC to obtain a Section 90 certificate or a Section 87(1) permit, before any impact to the site/object is affected. This process usually takes at least six-eight weeks.

⁴ The fate of all artefacts remains within the statutory control of the NSW DEC. A care and control permit may be issued to local Aboriginal groups or, with Aboriginal community consent, to other parties, for educational or display purposes.

deposits in section that may erode onto existing access tracks. A full list of mitigative measures is detailed in Section 6.1 and Table 23 with relation to specific sites.

In terms of the management options that have been utilised for the current project, these are best summarised into five groups:

1. Sites that are avoided within the current transmission line design and require no further investigation or mitigation;
2. Sites that are avoided within the current transmission line design but are close enough to require fencing off to ensure no inadvertent impacts;
3. Sites that will require application to DEC for a Section 87(1) permit to collect or relocate artefacts;
4. Sites that will require application to DEC for a Section 87(1) permit to monitor earthworks;
5. Sites that will require application to DEC for a Section 87(1) permit to test excavate.

Further identified as a result of the current project were several archaeologically sensitive areas in proposed tower locations and creek crossings. These were often close to recorded sites that were not directly impacted by the works. Nonetheless, it was assessed that there was potential for artefacts to occur at these locations, most likely in disturbed deposits. Consequently, monitoring is recommended at these locations under a Section 87(1) permit. A list of these tower locations and creek crossings is provided in Table 24 in Section 6.1.

4.5.5 Relevant Legislation

Base line principles for the conservation of heritage places and relics can be found in the Australia ICOMOS Burra Charter⁵, which recognises that there are places worth keeping because they can enrich our lives on many levels. The significance of such places may be embodied in fabric (physical material), environmental setting, contents, use or its meaning to people, and should be assessed through methodical data collection. Since its adoption in 1979, the Burra Charter (1999 revision) has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The Burra Charter generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a State level.

⁵ The Burra Charter defines the basic principles and procedures to be followed in the conservation of all kinds of places such as monuments, buildings, Aboriginal sites, roads, archaeological sites, whole districts or even regions. It was first adopted in 1979, based on the Australian ICOMOS (International Council on Monuments and Sites) review (1977) of the 1966 Venice Charter (Australian ICOMOS Inc. 1998).

A number of Acts of parliament provide for the protection of Aboriginal heritage at various levels of government⁶. The three most important statutes in New South Wales are:

- The Environmental Planning and Assessment Act (EP & A Act) 1979
- The National Parks and Wildlife Act 1974
- The Heritage Act 1977

The Environmental Planning and Assessment Act 1979 requires that environmental impacts, including cultural heritage, are considered at a land-use planning and decision making level.

Under Part 5 of this Act Aboriginal heritage is protected in three different ways:

1. Through planning instruments such as Regional Environmental Plans (REP's) and Local Environmental Plans (LEP's). Such plans outline permissible land use as well as identifying potential constraints. S111 of the EP & A Act delineates that determining authorities must examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.
2. S228 of the EP&A Regulation (2000) lists impacts to the environmental resource, including cultural heritage, which must be considered before development approval is granted.
3. All State Government agencies acting as determining authorities on environmental issues must consider a range of community and cultural factors, including Aboriginal heritage, in their decision-making process.

The National Parks and Wildlife Act 1974 (as amended; particularly sections 83-91A) provides statutory protection for all Aboriginal relics and places, regardless of significance, land tenure or whether they have been previously recorded in the DEC AHIMS. Areas may be gazetted as Aboriginal 'places' when the Minister is satisfied that sufficient evidence exists to demonstrate that the area is or was of special significance to Aboriginal people.

Under this Act it is an offence to knowingly damage, deface or cause or permit the destruction of an Aboriginal relic or place without the prior written consent of the Director-General of the NSW DEC. Prosecution for such offences may include the imposition of financial penalties and/or imprisonment. Reporting the discovery of previously unknown Aboriginal sites to the DEC within a reasonable time of discovery is also obligatory.

The Heritage Act 1977 (as amended) protects the State's natural and cultural heritage and contains measures to protect archaeological remains. Generally, Aboriginal sites are protected by the NP&W Act, but if certain sites are deemed to have great significance, they can be further protected by a heritage order, issued by the Minister, on advice of the HC.

⁶ NSW Heritage Office 1998: Living with Aboriginal Culture, p. 3

5. NON-INDIGENOUS HERITAGE

5.1 Overview History of Wellington, Gulgong and Wollar

Wellington

The Wellington Valley was once occupied by the Wiradjuri people. The first official European visitors were the early explorers Oxley, Evans and Cunningham. On August 19 1817, the survey party arrived in the Wellington Valley and stated that *'at half past eight o'clock we pursued our course down Glenfinlass. A mile and a half brought us into the valley which we had seen on our first descending into the glen: imagination cannot fancy anything more beautifully picturesque than the scene burst upon us'* (Whitehead 2003: 323 citing Oxley 1820).

John Oxley named the Wellington Valley, after the Duke of Wellington who had defeated Napoleon at Waterloo two years previously. After descending Mt Arthur he encountered the Bell River and named it after Major Bell of the 48th Regiment and within a mile came across its confluence with the Macquarie River. As opposed to its contrast with the muddy, marshy Lachlan, he wrote of *'bright transparent water dashing over gravelly bottom..[with a]..brilliant equal to the most polished mirror'* (Whitehead 2003: 323 citing Oxley 1820).

According to the NSW Heritage Office and DUAP (1996: 90) in 1823, inspired by Oxley's report on the area's agricultural potential, Governor Brisbane sent Lieutenant Percy Simpson to establish a camp with convicts and soldiers. The settlement was created as a new, remote convict stock station *'far from the undue interference of settlers and all the comforts of civilised existence'*. Originally it was situated about 3 km south of the present townsite on the high ground above the Bell River (on the eastern side of the Mitchell Highway and now marked with National Parks and Wildlife signs) and was, for a short time, the only settlement beyond Bathurst. Under the supervision of John Maxwell, the superintendent of government stock from 1823 to 1831, wheat and maize was successfully grown and stock raised, however, the settlement was abandoned in 1831, becoming a government stock station (NSW Heritage Office and DUAP (1996:90) and Wellington Tourist Information Web page 2005). In 1832, the locality became headquarters of an Aboriginal mission. Several weather-worn headstones are all that remain of this site, 3 km south (the earliest dating from 1825).

The property known as 'Gobolion' (still in existence and c. 2 km east of the Wellington switching station) was established in 1824, 5 km north of present-day Wellington. Charles Sturt stayed overnight at 'Gobolion' during one of his journeys.

According to the Wellington Tourist Information Web page (2005), in 1831, J. B. Montefiore was granted 5120 acres on the northern bank of the Macquarie River. In 1840 he subdivided the western section of the estate and a private village known as Montefiores was established. A historic property 'Macquarie Farm' occurs within close proximity to Montefiores and is c.1. 8 kms from the Wellington switching station.

In 1839 a plan for the township of Wellington was drawn up, but objections from Rev. Watson, concerning the impact it would have on the Aboriginal mission, caused the village to be established at Neurea (1 km south of the study site). This village never developed, although some stores and inns, a school and stockyard were set up. The old streets can still be seen behind the post office (Whitehead 2003: 328). The township was, however, soon relocated to the current site of Wellington.

The mission at the former convict settlement closed down in 1842 and Wellington was finally gazetted in 1846, growing from a population of 29 in 1851 to 1340 in 1881. Cobb & Co established a service through the town in 1865. Wellington acquired a reputation as 'the slowest town in the western district'. The first courthouse and the first bridge over the Macquarie were both built in 1871. Wellington became a municipality in 1879 and the railway arrived the following year (Wellington Tourist Information Web page 2005).

Gold mining was conducted in 1875 – 1914 near Stuart Town and at Bodangora, to the north-east of Wellington, in the late 19th century.

Gulgong

'Guntawang' cattle run in was established 1822, 8 km south-west of the present town site by the sons of William Cox, a major land holder from Mudgee. Conflict with the local Wiradjuri groups, however, soon caused the withdrawal of these early settlers (Sydney Morning Herald Travel Web page 2005). The homestead is still occupied and registered as a Commonwealth and State heritage item.

The Rouse brothers took cattle to the property in 1825 and the area eventually became the village of Guntawang. The Gulgong goldfield was gazetted in 1866 but initial finds were negligible. One of Rouse's shepherds, Tom Saunders, uncovered a large find on the future town site (at Red Hill) on April 14, 1870, thereby sparking off a major goldrush. According to the NSW Heritage Office and DUAP (1996: 92) there was spectacular growth in Gulgong noting that in 1872 the mines around Gulgong produced twice as much gold as the Meroo field produced in half a century. When the town was gazetted in 1872 there were reputedly 20,000 people in the area.

Gulgong became a municipality in 1876 although the gold had already begun to dwindle. By 1881 the population was 1,212 and the boom years were over. From that point, wheat and wool production, boosted by the arrival of the railway in 1909, sustained the town.

Wollar

European concepts of the Goulburn River and Munghorn areas were framed by their perceptions of the landscape as being rugged, remote and unproductive. As a result the area remained largely unoccupied and undisturbed in the nineteenth century with the exception of some limited grazing, logging and mining exploration.

According to DEC (2003) the Goulburn River was first explored in 1822 from Mudgee. Lieutenant William Lawson named the river after Henry Goulburn, then the Colonial Secretary. Surveyors followed in the mid 1820s, the first of whom was Henry Dangar, who was later to take up land in the vicinity of what is now known as Mt. Dangar at the eastern end of Goulburn River National Park.

During the 1830s small pastoral holdings were occupied along the flats of the major rivers Robinson (2005). The settlement patterns were largely determined by transport routes and tended to avoid the inaccessible and agriculturally unproductive areas that now make up the majority of the reserves. The Goulburn River itself and associated topography appear to have been a delineating feature for exploration and settlement.

Exploration for shale oil is also believed to have occurred in the Poggy, Munghorn and Kellys Gap areas, however little evidence of these activities remains.

5.2 Regional and Local Context – Previous Studies

Assessment of the general non-Indigenous heritage characteristics of the current transmission line easement was undertaken in 2002 by ERM, during route options assessment. Results of this study indicated homesteads and farms were the most likely types of sites that may be encountered. Other heritage items or relics that could be classified under the NSW Heritage Act included sections of railway lines including the Sandy Hollow to Gulgong Railway, Gulgong-Maryvale Railway and the Wallerawang and Gwabegar Railway. ERM (2003) noted that infrastructure associated with the railway such as bridges, access tracks, sheds and signals are also protected under the *NSW Heritage Act, 1977* if they are over fifty years in age.

The Uamby Homestead and Cemetery was mentioned as an important heritage site (through community consultation by ERM) and Ulan Coal Mine due to its long history in the development of the locality (over 70 years). As noted in the potted histories above, other areas of potential sensitivity may include early coal mining workings and infrastructure associated with early settlement.

ERM (2003) concluded that approximately 4.6% of the northern corridor's identified heritage sites (farming, mining, infrastructure) are ruins and their nature and their extent was at that time unclear.

A search of the State Heritage Office Inventory (search date 26.5.05) revealed two statutory listed items in the Mid-Western Regional Council area and three in Wellington Council's boundaries located within close proximity (2 km) to the proposed Wollar to Wellington 330kV electricity easement. These items were:

- Gulgong railway bridge over Wialdra Creek;
- Yamble Homestead and Outbuildings;
- Macquarie Farm, Wellington;
- Gobolion Homestead, Wellington; and
- Keston "Bella Vista" homestead, Wellington.

Gulgong Railway Bridge lies c. 1 km south of the easement and crosses Wialdra Creek. It is listed as playing a role in developing local, regional and national economies, through its role in the movement of people and goods and as an example of engineering within the public railway system.

Detailed information of Yamble homestead and out buildings was scant within the heritage database other than the buildings have been listed on the local councils LEP. This homestead lies c. 1.5 km south of the easement adjoining the Cudgegong River where it intersects Yamble Bridge. According to the EPBC Website (2005) the Yamble homestead was built in

1865 by Reginald Lowe, brother-in-law of Sarah Lowe, who took up land there in 1835. It is a rare example of a country house with much of its original joinery and interior intact. It is still occupied by the descendants of Sarah Lowe. The homestead, designed by R Lowe and built c. 1865, is a rare countrified Gothic house of brick including thirteen rooms, a kitchen wing and cellar, little altered and featuring its original colour scheme. The verandah surrounds three sides supported by twelve cast iron pilasters while at the rear it rests on square timber posts. The double gable roof is decorated with timber barge boards and is of corrugated iron. The associated woolshed is a massive, crude timber construction.

Macquarie Farm originally dates to the 1840's, and still boasts its original roof of siler pine shingles, providing an excellent example of a slab and pegged construction homestead. It is located c. 1.5 km west of the Wellington Switching Station.

Gobolion homestead lies c. 2 km east of the Wellington Switching Station and is historically important due to its early construction date (1824) and its connection with persons of historical significance and local dignitaries. It is aesthetically important due to its unusual design, being built of local clay bricks and incorporating a central courtyard. For most of its long history, Gobolion, has been an important social venue for the Wellington community; from when it was the home of John Gardiner known for his hospitality and community spirit, to its present use as a successful horse stud.

Keston "Bella Vista" homestead is significant due to its aesthetic qualities as an example of Victorian Italianate style and is located c.1 km northwest of the Wellington Switching Station. The building was constructed by Nancarrow, a prominent figure in the development of the town & district of Wellington.

None of these items will be impacted by the proposed development.

A search of the *Environmental Protection Biodiversity Act* – Protected Matters Report (search date 26.5.05) within the Mid-Western Regional and Wellington Council tenure revealed two items of Commonwealth heritage within the Wellington Council boundaries (within c. 2 km from the impact corridor):

- Nanima Homestead, Wellington; and
- Yamble Homestead and Outbuildings.

Nanima homestead is on the Mudgee Road, 1.6 km north of Wellington. The EPBC Website (2005) states that it is one of the most interesting and intact Edwardian homesteads in NSW, prominently situated on a hill overlooking the town of Wellington. The interior is distinguished by the amount of original decoration and the large, top lit, central living hall. The house is still in possession of the Barton family who originally built it. The building complex also contains a detached stable coach house and two good underground tanks.

Yamble homestead and out buildings is described above.

None of these items will be impacted by the proposed development.

5.3 Survey Results - European Heritage

The pedestrian field survey of the Wollar - Wellington 330kV Electricity Transmission line site found evidence of twelve (12) non-Indigenous potential heritage features. Details were recorded for each and they are listed below. All GPS readings were taken in AGD (WSG 84). Site locations are detailed in Figures 38 a - c.

Shale Oil Mine Wollar 1:25k 774808E 6418794N (shaft), 774937E 6418651N (former infrastructure)

Located c.100 m to the east of Tower 25A. This site consists of two main features (a) mine shaft and (b) former infrastructure area. Several smaller features exist within the general locality including a cut hard wood stock pile which is near the entrance to the mine. Closer to the infrastructure area at least one small pit was located within close proximity to a slurry heap where the oil was presumably extracted. The mine shaft appears to be in good condition; however, a portion of the roof at the entrance has collapsed (Plates 55 - 60). According to Robinson (2005), an amateur historian, the land the mine is on was owned by Mr Elijah Maskal at the time of the original development.

The mine was established by the Imperial Oil Shale Co. in the 1930's. Mrs Robinson noted that newspaper clippings from the 11th of September 1930 state that exploratory work had been done and the value (of what?) tested. Mr Camourx a representative of the Imperial Oil Shale Co. noted that 1000 gallons of crude oil was projected to be taken from the mine and that nine people were currently employed on the venture. In October the same year a Mrs Pam Mankq (the wife of a rival exploratory company's manager) had applied for an exploration licence on 320 acres of land in which the mine is located and permission to enter the land. This application resulted in a dispute requiring legal action to resolve. Although other details are scarce at that time it was noted that the existing mine had £4,000 worth of buildings, produced 200 tonnes of shale (oil) per day and had cost up to that point £15,000. The Imperial Oil Shale Co. appears to have won the case.

The Mudgee Mail, a local newspaper, reported on the 1st of September 1932 that the Imperial Oil Shale Company had spent £23,000 on machines at the site and required the same amount of money to continue.

A Mr Chatterton, from Western Mining (linked to the imperial Oil Shale Company) was reported to visit the site on then 9th of February 1933 to discuss the mine however by sometime during that year all work on the site had ceased.

Small scraps of newspaper clippings contemporary with the mine (dated 1930) were found on a support beam within the shaft. Due to its condition no useful information was revealed other than the year in which it was published and the partial results of what appeared to be court proceedings (no direct link between any of the abovementioned accounts was evident).

Figure 38 a: Non -Indigenous site locations – Goolma 8733-II & III 1: 50K map sheet

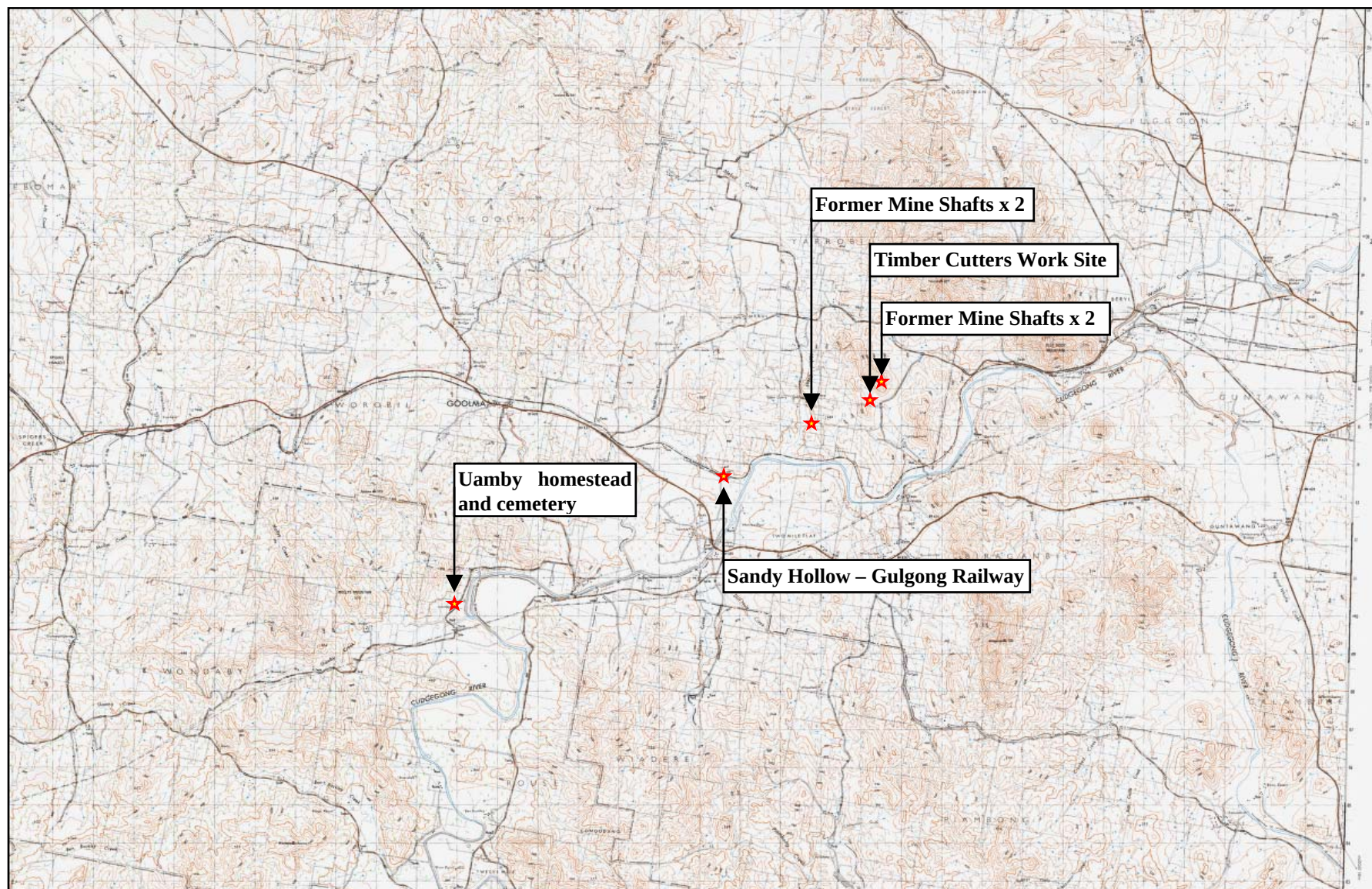


Figure 38 b: Non Indigenous Heritage site locations - Gulgong 8833-3-N 1: 25K map sheet

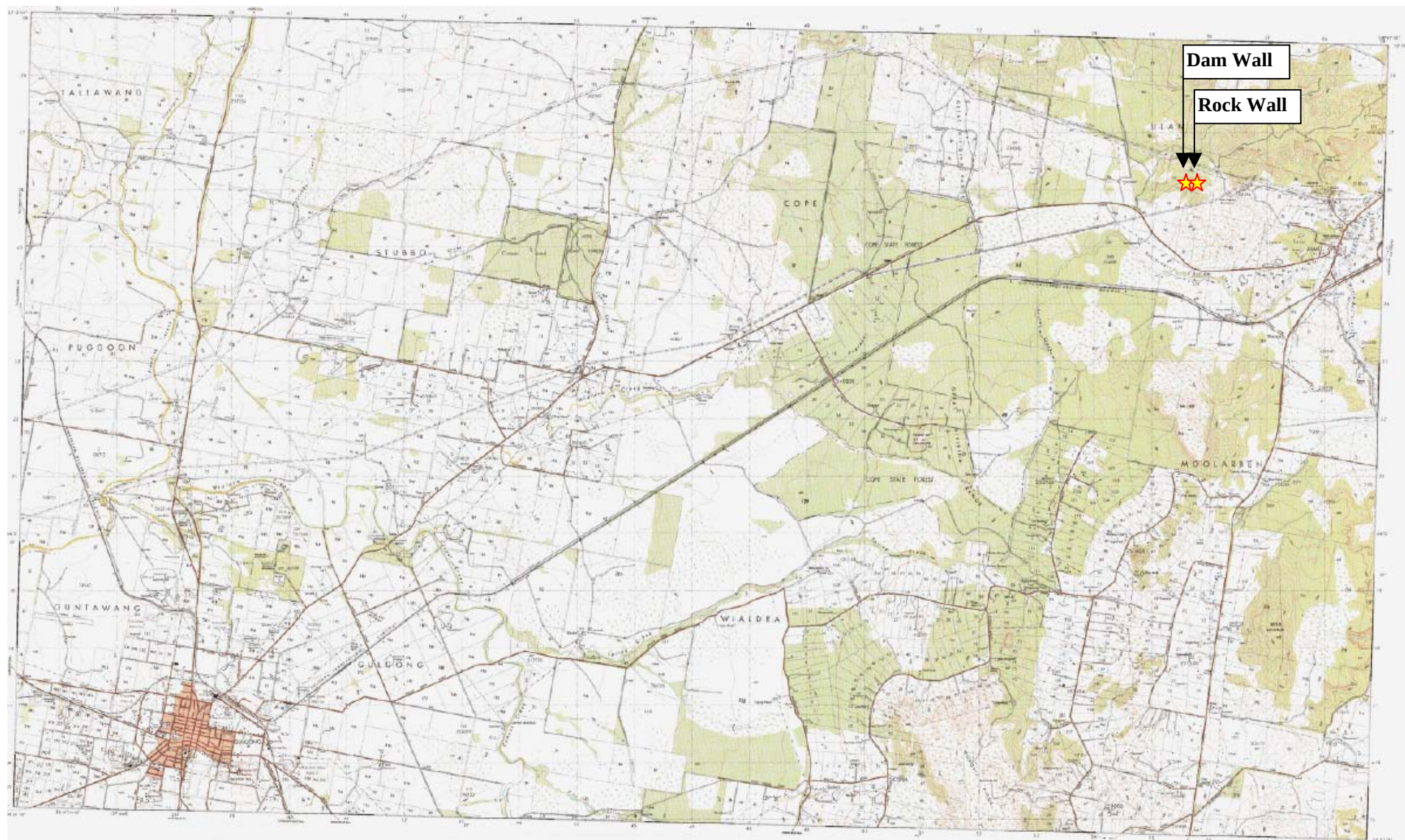
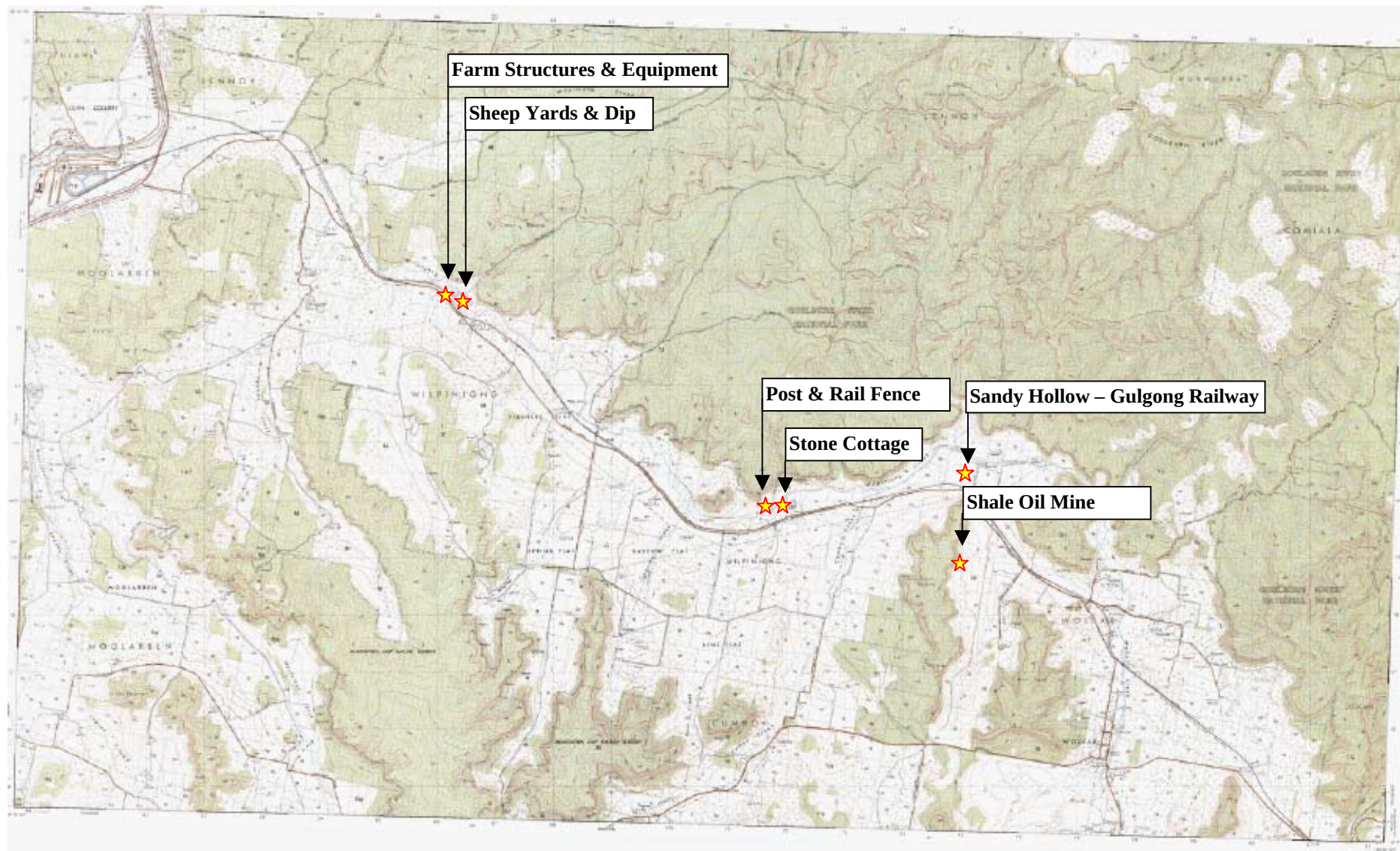


Figure 38 c: Non - Indigenous site locations – Wollar 8833-2-N 1: 25K map sheet



Stone Cottage**Wollar 1:25k****772023E 6419866N**

Located just outside the northern impact corridor adjacent to proposed tower 35. This sandstone cottage was built in 1912 by E Marskell (Plates 61 & 62). The building was unoccupied and in fairly good condition and comprised of a number of large blocks of flat sandstone with rounded adzed cypress pine roof beams. This cottage was demolished the day after the photographs were taken. No artefacts were found in the area of the historic feature.

Remnant post and rail fence**Wollar 1:25k****771272E 6419754N**

Located between towers 36a and 37a. This remnant fence of undressed timber is in derelict condition (Plate 63), all but four (two groups of two) posts are fallen and no trace of the rails was found. The fence and the fallen remains of its other posts are on the immediate bank / break of slope defining the flat alluvium and the Wilpinjong Creek. No other European artefacts were found in the area of the historic feature.

Remnant sheep yards and dip**Wollar 1:25k****766669E 6423245N**

Located between towers 52 and 53 c. 100 m outside the southern extent of the impact corridor. This remnant sheep yard and former dip are in derelict condition, portions of the undressed timber fence have fallen and weight bearing is likely to cause the structure to collapse (Plates 64 & 65). The structure is adjoining the bank / break of slope defining the gentle slope and the Wilpinjong Creek into which the former dip drained. Other European artefacts were found in the area and included old dip containers and bottles.

Remnant farm structures and equipment**Wollar 1:25k****766367E 6423589N**

Located between towers 53 and 54 within the alignment corridor on the bank of the Wilpinjong Creek. This former cottage site (30 x 30 m) and remnant fences, water tower, out building infrastructure with machinery and well (1.5 x 1.5 m) are in deteriorating condition (Plates 66 - 69). No physical traces of the homestead are visible however all of the above-mentioned relicts are still standing and or present. The fence surrounding the former homestead site is of undressed timber and chicken wire, the well is made from slab cut hardwood with deteriorating cover of wooden slats on top, the outhouse (former machinery shed c. 4 x 3 m) remains only as five standing and one fallen rough cut posts with two intact bearers. A former piece of farm machinery is housed within the structure. Additionally within 200 m is an agricultural seed sowing device in relatively good condition. Occasional bottles dating from the 1950's to 1970's were found in the area of the historic feature.

Unknown origin dam wall**Gulgong 1:25k****755602E 6426074N**

Located between towers 87 & 88. It is difficult to determine its exact location in relation to the impact corridor due to extremely rugged terrain and thick scrub that hampered all visibility of survey posts; however this structure is most likely out of the impact corridor. A 7 x 4 x 0.5m granite wall was found within a large ephemeral drainage line (Plate 70). The area behind the wall appeared to be naturally elevated at that point and was currently filled with sand and silt. Numerous granite / sandstone boulders were piled in a manner so to create a wall between a natural rock features however, even when new the structure would have not

held water due its permeability and large gaps between the rocks. A thick stand of blackberry immediately below the wall obscured all ground visibility. A logical possibility was that some early mining activity may have resulted in the creation of this structure and as noted above the only suitable location for a shaft was within the blackberry patch. Note: blackberries grow in disturbed soils. No other European artefacts were found in the area of the historic feature.

Unknown origin rock wall / shelter Gulgong 1:25k 755831E 6425939N

Located at the tower 87 survey post. A 5 x 2 x 1 m granite / sandstone shelter of natural boulders with a small 1.5 x 1 x 0.5 wall in a former natural inter-boulder gap was found within a locally occurring rock formation (Plate 71). Numerous small granite / sandstone rocks were piled in a manner so to create a wall between a small gap in the natural rock feature. The structure was very rudimentary and no indication of age other than a thin layer of lichens growing on the uppermost surface. An old wooden fence post occurs within close proximity and the alignment of the wall is the same as the former fence. Note: Lichens are a natural feature on the locally occurring boulders and are often the first colonists of newly exposed rocky areas (Raven *et al* 1992:224) therefore, despite the very harsh local environmental conditions only a thin layer of lichens occur and it is unlikely that this structure is of an age to be a European heritage item (more than 50 years old). A single timber fence post was found in the area of the feature.

Former timber cutters work site Goolma 1:50k 723376E 6415642N

Located between towers 176 and 175 c. 100 m south east of the alignment corridor. This former timber cutters work site appears to be less than 50 years of age as a hand held chainsaw was used to dress the hardwood into slabs. Off cuts and the supporting logs on the ground are all that is left of this site (Plate 72). This area is not consistent with the definition of a relict under the relevant guidelines.

Former mine shafts (x2) Goolma 1:50k 723740E 6415950N

Located between towers 174 and 175 c. 100 m north east of tower 175. These former mine shafts are mostly filled leaving only a c. 1.5 m depression in the ground and tailings near the entrance (2 x 2 m). It is unknown when the shafts were originally sunk. No other European artefacts were found in the area of the historic feature (Plate 73).

Former mine shafts (x2) Goolma 1:50k 721790E 6415017N

Located c. 50 m north of tower 180. These former mine shafts are mostly filled leaving only a c. 1.5 m depression in the ground and tailings near the entrance (2 x 2 m). It is unknown when the shafts were originally sunk. No other European artefacts were found in the area of the historic feature.

Sandy Hollow to Gulgong Railway Goolma 1:50k 720000 - 719000E to 6414000 - 6413700N

Located between Towers 185 & 186. In 1918 a route for a railway line between Maryvale and Sandy Hollow was surveyed. Construction started in 1941, stopped towards the end of World War II and then resumed in 1936, only to be wound up again in 1950. Finally, in 1977, White Industries opened a coal mine at Ulan and the railway was completed to Ulan in 1982 to

transport coal to the Port of Newcastle (Muswellbrook Shire Council 2005). The portion of railway at this location was never completed

Not assessed, access denied – on Mr. Needhams property.

Sandy Hollow to Gulgong Railway***Wollar 1: 25k******775192E 6420154N***

The preferred easement alignment will also cross a portion of the rail track constructed to service Ulan mine between towers 28 and 28.1. This railway line is currently in operation and no impacts to this area will occur as a result of the proposed work.

Uamby homestead and cemetery Goolma 1:50k

Located c. 1 km south of towers 198 – 201. ERM (2003) identified this heritage item as having local significance. This location was not assessed as it was well outside the impact corridor.

These items are not entered in any heritage register and those occurring within the impact corridor have minor local historic significance (refer to Section 5.5).

5.4 Significance Assessment – General Principles

In determining the appropriate process for significance assessment, it must be determined whether the historic period remains should be classified as ‘archaeological’.

The assessment of heritage significance is a process of examining the various factors and values which bear upon a place, building or structure and determining what level of significance, if any, the item may have with respect to an established set of heritage criteria. Broadly speaking, these criteria are based on the four values set out in the Australia ICOMOS Burra Charter and are the methodology accepted by heritage authorities and professional consultants. These are:

- Historic significance;
- Aesthetic significance;
- Scientific significance; and
- Social significance

The Heritage Council of NSW has defined a set of heritage significance criteria against which the heritage significance of an item may be judged. The use of standardised criteria helps achieve consistency in the assessment process and provides a basis for comparative assessment between types or classes of items.

The Heritage Council significance criteria are as follows:

- **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.

In many cases items or places will be significant under only one or two of these criteria. Structures or items that do not function in their original context are much less able to demonstrate the qualities for which they were originally designed and this thereby reduces their heritage significance.

5.5 Significance Assessment of Non-Indigenous Heritage Items within 200 m of the impact corridor.

The following summary statement is based on assessment against the significance criteria of the Heritage Council of NSW, as outlined in Section 5.4.

The Shale Oil Mine ruins are considered to be important at a local level and not important in the broader context of NSW’s historical development. There are no known associations with significant people, or groups of people, only to the development of the local area for mining and farming. The items do not have any particular aesthetic, technical or scientific

characteristics which make them important to NSW or the local area. The items are unlikely to yield any further information about the cultural or historical development of NSW that is not already known. The items, however, may hold some value for the local community, representing an aspect of the historical development of the area for settlement through early mining technologies and the shaft itself provides an intact example of mining techniques and infrastructure.

Stone Cottage. This stone cottage has subsequently been demolished by White Industries to develop Wilpinjong Coal after initial photographing. Although close to the Wollar to Wellington 330kV transmission line impact corridor its management and assessment prior to its destruction is the sole responsibility of the land owner and as such its historical assessment will not be undertaken within the framework of the Proponent's heritage report.

The following items:

- remnant post and rail fence,
- sheep yards and dip;
- farm structures and equipment
- unknown origin dam wall
- unknown origin rock wall / shelter
- former mine shafts

are considered to be of limited significance at a local level and not significant in the broader context of NSW's historical development. There are no known associations with significant people, or groups of people, only to the development of the local area for farming. The items do not have any particular aesthetic, technical or scientific characteristics which make them important to NSW or the local area. The items are unlikely to yield any further information about the cultural or historical development of NSW that is not already known. The items are unlikely to hold some value for the local community.

As opposed to the above, the Sandy Hollow to Gulgong Railway is considered to be of moderate-high significance at a local level and of limited significance in the broader context of NSW's historical development. It has an association with significant people, or groups of people of the local area for mining with its association with Ulan Coal but having no importance to the development for the area within the limits of the study corridor thereafter. The railway holds some value for the local community, particularly railway enthusiasts.

The cultural landscape of the non-Indigenous relics will not be altered by the proposed Wollar to Wellington 330kV transmission line construction. The items are considered to be of possible limited local significance, but are only representative of other such ruins and items in the region and NSW.

5.6 Likely Impacts of the Proposed Works to Non-Indigenous Heritage

The proposed works (Section 1.2) will involve the construction of 330kV towers, access roads and power transmission lines. None of these proposed works will have any impact on the non-Indigenous heritage noted during the survey. For a summary of these impacts see Table 22.

Table 22: Summary of Likely Impacts to Recorded Non-Indigenous Sites.

SITE NAME	LOCATION	POSSIBLE IMPACTS
Shale Oil Mine and Remnant Infrastructure	100 m west of Tower 25a	No direct impacts are associated with the current proposal. Potential impacts are associated with encroachment from contracting staff and vehicles to investigate the feature.
Stone Cottage	50 m north of Tower 35	No direct impact from the current proposal. The building was subsequently demolished by the property owner after initial photography.
Remnant Post and Rail Fence	Within the impact corridor between Towers 36a and 37a.	No direct impact from the current proposal. Potential impacts are associated with inadvertent impacts from contracting staff and vehicles working between the tower sites.
Remnant Sheep Yards and Former Dip	c. 80 m south of the impact corridor between Towers 52 - 53	No direct impact from the current proposal. Potential impacts are associated with inadvertent impacts from contracting staff and vehicles working between the tower sites.
Remnant Farm Structures and Equipment	90 % Within the impact corridor between Towers 53 – 54. 1 piece of farm machinery c. 150 south of the impact corridor along the access track.	No direct impact from the current proposal. Potential impacts are associated with inadvertent impacts from contracting staff and vehicles working between the tower sites.
Unknown Origin Dam Wall	c. 100 south of the impact corridor between Towers 87 - 88	No direct impact from the current proposal. Very unlikely potential impacts are associated with inadvertent impacts from contracting staff between the tower sites due to steep and rugged topography.
Unknown Origin Rock Shelter	Within impact corridor at the location for Tower 87	This feature may be possibly destroyed by the tower placement. It must be noted that this feature is unlikely to be a relict as defined by the Act.
Former Mine Shafts	Outside of impact corridor between Towers 1. 174 – 175 and 2. Tower 180	No direct impact from the current proposal. Very unlikely potential impacts are associated with inadvertent impacts from contracting staff.
Sandy Hollow – Gulgong Railway Line	Within impact corridor between Towers 185 – 186.	No direct impact from the current proposal. Very unlikely potential impacts are associated with inadvertent impacts from contracting staff.
Uamby Homestead and Cemetery	Outside of impact corridor (c. 1.5 km) near towers 198 - 201	No direct impacts are associated with the current proposal. Potential impacts are associated with encroachment from contracting staff and vehicles to investigate the feature.

5.7 Relevant Legislation

The Heritage Act 1977 (as amended) protects the State's natural and cultural heritage and contains measures to protect archaeological remains. More specifically, the Heritage Act provides protection for European/historic relics and sites. Under Section 139, a relic is defined as "those buildings, works, relics or places of historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance for the State".

A relic is further defined by the Act as "...any deposit, object or material evidence –

- which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and
- which is 50 or more years old."

Legislative Requirements

1. The State Heritage Register was established and is maintained by the NSW Heritage Office to protect items assessed as being of state heritage significance. Once on the register, these items are afforded statutory protection under the NSW Heritage Act. Impacts to items listed on the State Heritage Register will, in general, require approval from the NSW Heritage Office, unless that work falls within the 'Standard Exemptions' from approval. These exemptions relate to routine maintenance and other minor works, which will not adversely affect the heritage significance of a listed item.

The historic ruins are not listed on the State Heritage Register, nor are they the subject of an Interim Heritage Order as of July 2004.

2. The relics provisions of the Heritage Act (noted above) requires an excavation permit from the Heritage Council for works which disturb relics below ground.

The relics provisions of the Heritage Act do not apply as the historic ruins will not be disturbed by the proposed Wollar – Wellington 330kV Transmission line.

3. Under local environmental legislation, Local Shire Councils typically have Local Environmental Plans, Heritage Studies, Development Control Plans and other local planning instruments to assist with the planning and maintenance of local environmental resources, including heritage items.

The historic items are not listed on the Local Council LEP or on any other registers. They may be considered for inclusion.

4. If any heritage item is to be impacted by the proposed works (which are likely to include demolition), then a Statement of Heritage Impact (SoHI) should be prepared.

5.8 Mitigation and Management Measures Relating to Non-Indigenous Heritage

Appropriate management of heritage items is primarily determined on the basis of their assessed significance, as delineated in Section 5.5, as well as the likely impacts of the proposed development – in this case, the construction of Towers and access tracks in the area of historic ruins (or relics).

The Wollar - Wellington 330kV Transmission line and access roads will not affect the historic items found in the site area. However, where the construction works are to be in close proximity to the ruins or items, a temporary fence may be constructed for the duration of the construction to avoid any disturbance (see Table 22).

Specific recommendations are as follows (see also Section 6.2).

Unknown Origin Stone Shelter / Wall

As noted in 5.3 and 5.5 this feature is unexplainable within the confines of the field assessment. Although it does not appear to be of an age to classify as a relic under the relevant legislation, management of this site should be precautionary so that due diligence takes precedence. To ensure avoidance of this site, it should be fenced with highly visible curtilage and the contractors should be inducted so that any disturbance to the structure. If destruction is unavoidable then it should be recorded with detailed photographs, measurements and drawings so that any potential heritage value can be documented.

Post and rail and other early agricultural fencing.

Rural or agricultural fences have generally tended to be undressed timber post and wire, with early post and rail fences remaining in some areas. Early rural timber and wire fences, post and rail fences, log and chock fences are rare and should be retained and conserved.

6. RECOMMENDATIONS

6.1 Indigenous Heritage

Under Section 91 of the NP & W Act (1974 as amended) it is mandatory that all Aboriginal sites recorded under any auspices be registered with the NSW DEC Aboriginal Heritage Information and Management System (AHIMS). As a professional in the field of cultural heritage management it is the responsibility of OzArk CHM P/L to ensure this process is undertaken.

To this end it is noted that twenty-eight (28) Indigenous sites were recorded as a result of the current study - nineteen (19) open sites, nine with PAD; seven (7) isolated finds and two (2) Potential Archaeological Deposits, all of which have been registered on the DEC AHIMS.

The following recommendations are made on the basis of:

- Legal requirements under the terms of the National Parks and Wildlife Act of 1974 (as amended) whereby it is illegal to damage, deface or destroy an Aboriginal relic/object without the prior written consent of the Director, NPWS;
- The findings of the current investigations undertaken within the study area; and,
- The interests of the Gallanngbang Aboriginal Corporation, Warrabinga Native Title Claimants Corporation, Murong Gialinga ATSIC, Mudgee Local Aboriginal Lands Council and other Aboriginal community members.

Of the 28 recorded Indigenous sites along the proposed Wellington – Wollar transmission line easement, eleven (11) will be impacted by the proposed works, while a further six (6) require mitigative measures to ensure they are not impacted. The categorising of these 17 sites into groups according to recommended management simplifies the presentation of the devised management strategies and mitigative measures.

Group 1 – Sites to be fenced off (6): WC-OS12 with PAD; WC-OS13 with PAD; WC-OS15 with PAD; WC-OS16 with PAD; MC-OS19; WW-IF7.

Group 2 – Sites requiring a Section 87(1) permit for collection or relocation (2): WC-IF1; WC-IF5.

Group 3 – Sites requiring a Section 87(1) permit for monitoring (3): UC-OS1 with PAD; UC-OS3; SC-OS10.

Group 4 – Sites requiring a Section 87(1) permit for test excavation (6): GC-OS5 with PAD; CR-OS4; BSR-OS8; WC-OS17 with PAD; WC-PAD 1 and WC-PAD 2.

Site specific management recommendations and mitigative measures are detailed in Table 23, located at the end of Section 6.1. The information contained within this table provides the Proponent with precise details regarding potential impacts and site avoidance, and notes

where they may be potential for impacts to be reduced. Although this Table alludes to potential for the revision of impacts at certain locations, this report has been devised on known impacts at the time of writing. If in the future the Proponent is able to reduce impacts at any location, then required management may be revised.

The general recommendations according to the site groups outlined above are presented below.

1. **Group 1 – Sites to be fenced off (6):** Sites of this group should be identified in the field prior to any construction impacts occurring. An appropriate curtilage should be delineated around these sites using a highly visual physical barrier (i.e. 1 m high orange roadwork fencing). This will ensure all sites can be easily identified and protected from inadvertent machinery impacts. Members of the construction team, including sub-contractors, machine operators and truck drivers should undergo site induction concerning cultural heritage issues, prior to working on the site. This would preferably be undertaken by an individual who has a good working knowledge of Indigenous sites and of the legislation protecting them. This induction should inform workers/contractors of the location of nearby sites, and of their legislative protection under Section 90 of the NSW National Parks and Wildlife Act 1974. These inductions should be recorded in a register, with all those present signing their complicity with these guidelines.
2. **Group 2 – Sites requiring a Section 87(1) permit for collection or relocation (2):** The two sites of this group will require application by the Proponent to the NSW DEC for a Section 87(1) permit to collect and relocate these isolated finds prior to any development impacts occurring.
3. **Group 3 – Sites requiring a Section 87(1) permit for monitoring (3):** The sites of this group will require application by the Proponent to the NSW DEC for a Section 87(1) permit to monitor earthworks at these locations. Monitoring should be undertaken by an archaeologist or suitably qualified Aboriginal community members. The fate of any artefacts recovered will be determined by the Aboriginal community as to whether they wish the artefacts to be reburied in a recorded location or retained through application to the NSW DEC for a Care and Control permit.
4. **Group 4 – Sites requiring a Section 87(1) permit for test excavation (6):** Sites of this group are characterised by having, at minimum, low-moderate potential for intact, sub-surface deposits. Sites of this group to be impacted by the current proposal will require application by the Proponent to the NSW DEC for a Section 87(1) permit to undertake test excavation at these sites. The results of test excavation will allow an accurate characterisation of the archaeological resource (i.e. nature, extent and integrity of sub-surface deposits) subsequently enabling the formulation of appropriate management strategies. It is important to note that test excavation at these locations will only be required within the area(s) that are to be impacted as a result of the proposed development. This, in many cases, will mean test pitting in very limited areas.
5. It is recommended that TransGrid apply for a whole of development Section 87(1) / 90 permit at the project outset, to cover all monitoring, test excavation and partial site destructions. This will streamline the permit application process, saving time and the unnecessary duplication of written material.

6. Only one site of group 4 warrants further mitigative measures, being site CR-OF4. Here fencing will be required along Uamby Road, as well as along the access tracks to Tower 198 and around the construction zone for this tower. It is further recommended that this site be recorded in detail prior to the Proponent undertaking some site preservation measures such as stabilising erosion areas with soil and subsequently planting grasses to inhibit further erosion.
7. Beyond the identification of Indigenous sites, the current study also identified archaeological sensitivity at several tower locations and creek crossings, often close to recorded sites. Due to the potential for artefacts, in all likelihood from disturbed deposits, it is recommended that the Proponent seek a Section 87(1) permit to monitor works at these locations as detailed below and listed on Table 24.
 - a. Tower sites 30, 32, 35, 41, 46, 51, 80, 128, 134 and 155;
 - b. Creek crossings for access roads at Wilpinjong Creek – tower 50 and Slapdash Creek – tower 134.
8. Once access issues are resolved, survey should be undertaken at the 24 tower locations that were inaccessible during the current study (Towers: 59-63; 181-190 and 234-242). Predictive modelling has indicated that of these 24 locations, 13 are in areas of low archaeological sensitivity, two are in areas of low-moderate sensitivity, a further two in areas of moderate archaeological sensitivity while the final seven are situated in areas of moderate to high archaeological sensitivity;
9. Should any previously unidentified ‘relics’ or other Aboriginal sites (such as burials) be uncovered during the course of construction, work in that area should cease and the DEC Western Regional Archaeologist (Dubbo Office), the Gallanngbang Aboriginal Corporation, Warrabinga Native Title Claimants Corporation, Murong Gialinga ATSIC and Mudgee Local Aboriginal Lands Council be contacted to discuss how to proceed.
10. One copy of this report should be sent to:
 - Joyce Williams
Chair
Gallanngbang Aboriginal Corporation
PO Box 463 Wellington NSW 2820;
 - Lance Syme
Liaison Officer
Warrabinga Native Title Claimants Corporation
PO Box 440 Picton NSW 2571;
 - David Maynard
Sites Officer
Murong Gialinga ATSIC
PO Box 1098, Mudgee, 2850;
 - Larry Flick
Chair
Mudgee Local Aboriginal Lands Council
Unit 3/2 Lovejoy St Mudgee 2850; and

Bob Sutherland
WAHU Department of Environment and Conservation (DEC)
North-West Regional Office
48-52 Wingewarra St; PO Box 2111, Dubbo, NSW, 2830

Table 23: Impacts and mitigative measures for recorded archaeological sites within the study area.

Site Number	Management Recommendations
UC-OS1 with PAD	UC-OS1 will be impacted by the construction of an access track across Uamby Creek. During construction the site will have to be monitored under Section 87(1). Excavation to the northwest of the creek crossing should be kept to a minimum and geotextile should be used to contain the northwest bank during construction.
UC-OS2	UC-OS2 will not be impacted as a new access track has been chosen so as to avoid this site.
UC-OS3	UC-OS3 is near a creek crossing of Uamby Creek that needs excavation to reduce the grade of the bank. Excavation, with monitoring under a Section 87(1), can take place from the creek up to a point 10 metres beyond the farm gate on the north bank (as erosion has disturbed the archaeological deposits in this area). If excavation north of this point is necessary, a test excavation will be necessary to determine the nature and extent of UC-OS3, although at present proposed impacts only require monitoring.
CR-OS4 with PAD	CR-OS4 is a culturally and archaeologically sensitive site. Although TransGrid attempted to shift tower 198 which impacts this site this has proven impossible. Consequently, test excavation of this site will be required. To mitigate against further inadvertent disturbance to this site fencing will be required along Uamby Road, as well as along the access tracks to Tower 198 and around the construction zone for this tower. It is further recommended that this site be recorded in detail prior to the Proponent undertaking some site preservation measures such as stabilising erosion areas with soil and subsequently planting grasses to inhibit further erosion.
GC-OS5 with PAD	GC-OS5 will require test excavation if the position of tower 191 can not be moved. TransGrid investigated the option to replace tower 191 with two towers to span the site. Although TransGrid attempted to span site GC-OS5, with two towers this has proven not possible. Consequently Tower 191 has been shifted 45m to the west to avoid the main site area. None the less GC-OS5 will be impacted and consequently test excavation of the impact area will be required.
GC-OS6	GC-OS6 will not be impacted by the proposed works if all vehicles follow the existing agricultural fence lines and do not cut across the paddock.
WC-IF1	WC-IF1 will be collected under a Section 87(1) and earthworks on nearby tower 155 will be monitored. The landform containing WC IF 1 is a floodplain and therefore archaeological deposits may have been disturbed by flood action. Intact sub-surface deposits unlikely.
CT-OS7	Although originally impacted by tower 91, CT-OS7 will now be avoided as TransGrid have been able to shift the location of this tower.
BSR-OS8	BSR-OS8 lies within the impact zone of tower 112. Although tower 112 was moved eight meters to the east it will still impact BSR-OS8. As a result test excavation within the impact area will be necessary. Further, when timber is felled across the drainage line all timber should be left in place and not dragged across the area of BSR-OS8.
SDC-OS9 with PAD	SDC-OS9 lies to the west of the easement corridor and will not be impacted by the proposed works or access roads.
SC-OS10	SC-OS10 will be impacted as it is on the access track that will be used during construction of tower 128. For the duration of this construction phase conveyor belting should be laid on the access track from the farm gate back down to the vicinity of where erosion has removed A horizon level soils (where the track turns to start the creek crossing). As excavation for the access road will occur more than 6 m upslope from the present north bank, monitoring is recommended under Section 87(1).
WC-OS11	WC-OS11 will no longer be impacted as a different creek crossing is to be used.
WC-OS12 with PAD	WC-OS12 lies 20 m north of tower 30 and will not be impacted by the proposed works. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected

Site Number	Management Recommendations
with PAD	15 m north of tower 30 (before the stock tracks) during the construction phase of the electricity towers.
WC-IF2	WC-IF2 lies within the easement corridor but will not be impacted by the proposed works or access tracks.
WC-IF3	WC-IF3 lies within the easement corridor but will not be impacted by the proposed works or access tracks.
WC-OS13 with PAD	WC-OS13 lies 30 metres south of tower 41 and will not be impacted by the proposed works. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected along the eastern boundary of the easement during the construction phase of the electricity towers.
WC-OS14	WC-OS14 lies to south of the easement corridor and will not be impacted by the proposed works.
WC-IF4	WC-IF4 lies 21 metres south of the centre line of the easement corridor and will not be impacted by the proposed works.
WC-OS15 with PAD	WC-OS15 lies to the north of the easement corridor and will not be impacted by the proposed works. As WC-OS15 is concentrated around the present gate, a new gate should be placed in the fence within the proposed easement. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected along the northern boundary of the easement during the construction phase of the electricity towers.
WC-OS16 with PAD	WC-OS16 lies 26 metres south of the centre line of the easement corridor and will not be impacted by the proposed works. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected along the southern boundary of the easement during the construction phase of the electricity towers.
WC-IF5	WC-IF5 lies to the north of the easement corridor and could be impacted by the proposed works as it lies on a track that could be used as access during construction. Under a Section 87(1), move WC-IF5 to the site WC-OS16.
SHC-IF6	SHC-IF6 lies 100 m to the east of the easement corridor and will not be impacted by the proposed works. There is no new creek crossing for vehicles planned in the vicinity of SHC-IF6
WC-OS17 with PAD	WC-OS17 will be directly impacted by the building of tower 53. Consequently test excavation will be required prior to the construction of the tower.
WC-OS18	WC-OS18 lies outside of the easement corridor and will not be impacted by the proposed works. There is no new creek crossing for vehicles planned in the vicinity of WC-OS18
MC-OS19	MC-OS19 lies to the north of the easement corridor and will not be impacted by the proposed works. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected along the northern boundary of the easement during the construction phase of the electricity towers. There is also potential for further artefacts to be located along the banks of Moolarben Creek and this area should be avoided.
WW-IF7	WW IF 7 lies outside of the easement corridor and will not be impacted by the proposed works. To avoid inadvertent damage by vehicle traffic, a temporary onion skin fence should be erected 20 metres west of tower 9 during the construction phase of the electricity tower.
WC-PAD1	WC-PAD1 will be directly impacted by the construction of tower 36 and 37. Consequently, test excavation will be necessary prior to impacts.
WC-PAD2	WC-PAD2 will be directly impacted by the construction of tower 38. Consequently, test excavation will be necessary prior to impacts.

Table 24: Tower sites and creek crossings within the study area that have Indigenous Heritage recommendations attached to them (other than those covered in Table 23)

Tower Number or Creek Crossing	Management Recommendation	Reason for Recommendation
9	A temporary onion skin fence should be erected 20 metres west of tower 9	WW-IF7 lies 30 m west of tower 9.
30	Section 87(1) Monitor excavation of tower foundations.	Moderately sensitive landform. Proximity to Wilpinjong Creek and WC-OS12 with PAD
32	Section 87(1) Monitor excavation of tower foundations.	Moderately sensitive landform. Proximity to Wilpinjong Creek and WC-IF2
35	Section 87(1) Monitor excavation of tower foundations.	Moderately sensitive landform. Proximity to Wilpinjong Creek and previously recorded sites (Navin Officer WCP 193 and 151: open artefact scatters)
36	Section 87(1) Test excavation within impact footprint of tower.	WC-PAD1 . Moderately sensitive landform. Proximity to Wilpinjong Creek Depth of deposit Proximity to Navin Officer WCP 174: open artefact scatter with >500 artefacts and, on other side of creek WCP 134 (artefact scatter)
37	Section 87(1) Test excavation within impact footprint of tower.	WC-PAD1 . Moderately sensitive landform. Proximity to Wilpinjong Creek Depth of deposit Proximity to Navin Officer WCP 174: open artefact scatter with >500 artefacts and, on other side of creek WCP 134 (artefact scatter)
38	Section 87(1) Test excavation within impact footprint of tower.	WC-PAD2 . Moderately sensitive landform. Proximity to Wilpinjong Creek Depth of deposit Proximity to Navin Officer WCP 134 (artefact scatter)
41	Section 87(1) Monitor excavation of tower foundations.	Proximity to WC-OS13
46	Section 87(1) Monitor excavation of tower foundations.	Moderately sensitive landform. Proximity to Wilpinjong Creek and WC-OS15 with PAD
Wilpinjong Creek crossing	Section 87(1) monitor. Wilpinjong Creek crossing west of tower 50. No construction 40 m east of proposed crossing	Unrecorded site present on low knoll 80 m east of creek crossing.
51	Section 87(1) Monitor excavation of tower foundations.	Proximity to Wilpinjong Creek and WC-OS16 with PAD and WC-IF5
53	Section 87(1) Test excavation within	Right on site WC-OS17 with PAD

Tower Number or Creek Crossing	Management Recommendation	Reason for Recommendation
	impact footprint of tower.	
80	Section 87(1) Monitor excavation of tower foundations.	Moderately sensitive landform. Proximity to MC-OS19 and Moolarben Creek
112	Section 87 Test excavation within impact footprint of tower.	Impacts to BSR-OS8 .
128	Section 87(1) Monitor excavation of tower foundations.	Proximity to SC-OS10 .
134	Section 87(1) Monitor excavation of tower foundations.	Proximity to SDC-OS9
Slapdash Creek Crossing	Monitor creek crossing construction under a Section 87(1).	Slapdash Creek Crossing. SDC-OS9 with PAD in vicinity, moderately sensitive landform
155	Section 87(1) Monitor excavation of tower foundations.	Proximity to WC-IF1
191	Section 87(1) Test excavation within impact footprint of tower.	Right on site GC-OS5 with PAD Archaeologically sensitive landform Depth of deposit
198	Section 87(1) Test excavation of tower foundations.	Right on site CR-OS4 with PAD Archaeologically sensitive landform Depth of deposit

6.2 Non-Indigenous Heritage

Table 22 summarises the likely impacts and mitigative measures for the non-Indigenous heritage items recorded during the survey. Specifically, TransGrid should ensure that:

- 1) specific recommendations in Section 5.8 are referred to;
- 2) if any heritage item detailed in this report are to be impacted by the proposed works (which are likely to include demolition), then a Statement of Heritage Impact (SoHI) should be prepared;
- 3) all Tower and access road construction work avoid the historic ruins and items and that temporary fences are erected to protect these items during construction;
- 4) continued use and maintenance of the Wollar – Wellington 330kV Transmission line easement and access roads avoid the historic ruins and items; and
- 5) work should stop if any unidentified archaeological finds or evidence is uncovered during construction or maintenance of the Wollar – Wellington 330kV Transmission line.

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APPENDIX 1 – PLATES



Plate 1:

UC-OS1 with PAD. View Nth. The red circle indicates the general location of the site on the eastern bank of Uamby Creek. Artefacts were observed eroding out of the cutting in the embankment.



Plate 2:

A sample of artefacts from US-OS1 with PAD.



Plate 3:

UC-OS2. View W. Artefacts were observed within the exposure associated with the gate. A tributary of Uamby Creek is immediately after the gates.



Plate 4:

A sample of artefacts from US-OS2.



Plate 5:

UC-OS3 with PAD. View SE. The exposed soil indicates the general location of the artefacts observed on the western bank of the tributary to Uamby Creek.



Plate 6:

A sample of artefacts from US-OS3 with PAD.



Plate 7:

View S over CR-OS1 with PAD from an adjoining hill top. The red circle gives a rough indication of the potential extent of the site. Several quartz reefs were located in the general vicinity of the black arrow. The white arrow marks the position of Uamby Creek Road.



Plate 8:

View from the Cudgegong River looking west over CR-OS 4 with PAD (up the valley). The vehicles indicate the position of Uamby Creek Rd



Plate 9:

An example of the complexity of surface artefacts in CR-OS 4 with PAD. A fine grained silcrete core (top) and a backed point / Bondi point (below)



Plate 10:

An example of a typical exposure associated with CR-OS4 with PAD. Note: they resemble salt pans.



Plate 11:

A closer view of the exposure showing an in *in-situ* napping feature at CR-OS 4 with PAD (circled).



Plate 12:

Close up of artefacts associated with the above-mentioned feature.



Plate 13:

GC-OS5 with PAD, view North.



Plate 14:

Close up of artefacts associated with GC-OS5 with PAD and a ground edge hand axe (below)





Plate 15:

GC-OS6 view North.



Plate 16:

Close up of artefacts associated with GC-OS6.



Plate 17:

Tower site 155 where WC-IF1 was located. View SW.



Plate 18:

WC- IF1.



Plate 19:

Open site Caaptaar CT-OS7. View northwest. Flags show the position of some of the artefacts.

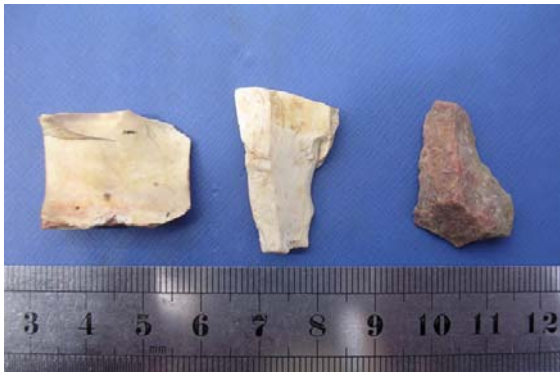


Plate 20:

Open site Caaptaar CT-OS7. Artefacts.



Plate 21:

Open site Blue Springs Road BSR-OS8. View north. Surveyor is walking at the very southern edge of the site.



Plate 22:

Open site Blue Springs Road BSR-OS8.
Artefacts.



Plate 23:

Open site SDC-OS9 with PAD. The site appears behind the clump of trees on the elevated land (where the tip of the red arrow touches the elevated land). Photo taken from the southern bank Slapdash Creek looking north- north west.



Plate 24:

Artefacts associated with SDC-OS9 with
PAD.



Plate 25:

Open site Stubbo Creek SC-OS9. View north. Surveyors stand on the location of the site.



Plate 26:

Open site Stubbo Creek SC-OS9. Artefacts.



Plate 27:

Open site Wollar Creek WC-OS11. View southeast. The site is concentrated to the right, and in front of, the farm gate.



Plate 28:

Open site Wollar Creek WC-OS11.
Artefacts.



Plate 29:

Open site Wilpinjong Creek WC-OS12
with PAD. View northwest. Surveyors
stand on the location of the site.
Wilpinjong Creek can be seen in the
background.



Plate 30:

Open site Wilpinjong Creek WC-OS12
with PAD. Artefacts.



Plate 31:

Isolated find Wilpinjong Creek WC-IF2. View northeast. Surveyor marks the location of the find. Wilpinjong Creek can be seen in the background.



Plate 32:

Isolated find Wilpinjong Creek WC-IF2. Artefact.



Plate 33:

Isolated find Wilpinjong Creek WC-IF3. View southwest. Surveyor with folder marks the location of the find. Wilpinjong Creek can be seen to the right.



Plate 34:

Isolated find Wilpinjong Creek WC-IF3. Artefact.



Plate 35:

Open site Wilpinjong Creek WC-OS13 with PAD. View southeast. Surveyor with folder marks the location of the site. Grindstone fragment was found near the surveyor in the background.



Plate 36:

Open site Wilpinjong Creek WC-OS13 with PAD. Artefacts.



Plate 37:

Open site Wilpinjong Creek WC-OS14. View north. Surveyors mark the location of the site. Wilpinjong Creek (and its marsh zone) can be seen in the background.



Plate 38:

Open site Wilpinjong Creek WC-OS14. Artefacts.



Plate 39:

Isolated find, Wilpinjong Creek WC-IF4. View north. Notebook marks the location of the find. Wilpinjong Creek can be seen in the far-background.



Plate 40:

Isolated find, Wilpinjong Creek WC-IF4. Artefact.



Plate 41:

Open site Wilpinjong Creek WC-OS15 with PAD. View east. Surveyors in mid-distance mark the western extent of the site that extends east through the farm gate visible in the background. Wilpinjong Creek is to the left in this view.



Plate 42:

Open site at Wilpinjong Creek WC-OS15 with PAD. Artefacts.



Plate 43:

Open site at Wilpinjong Creek WC-OS16 with PAD. View northeast. Surveyor marks the centre of the site. Wilpinjong Creek can be seen in the background.



Plate 44:

Open site along Wilpinjong Creek WC-OS16 with PAD. Artefacts.



Plate 45:

Isolated find along Wilpinjong Creek WC-IF5. View northwest. Surveyors in mid-distance mark the location of the find. Wilpinjong Creek is to the right in this view.



Plate 46:

Isolated Find Wilpinjong Creek WC-IF5. Artefact.



Plate 47:

Isolated find along Sportsmans Hollow Creek SHC-IF6. View southwest. Surveyor in mid-distance marks the location of the find.



Plate 48:

Isolated Find along Sportsmans Hollow Creek SHC-IF6. Artefact.



Plate 49:

Open Site Wilpinjong Creek WC-OS17 with PAD. View east. Red pegs in the mid-distance mark the location of tower 53 and WC OS 17.



Plate 50:

Open Site Wilpinjong Creek WC-OS17 with PAD. Artefacts.



Plate 51:

Open site Wilpinjong Creek WC-OS18. View east. The site is along the top of the bank. Wilpinjong Creek is situated to the right in this view.



Plate 52:

Open site at Wilpinjong Creek WC-OS18.
Artefact.



Plate 53:

Open site at Moolarben Creek MC-OS19.
Flags show the location of artefacts. Tower
80 will be situated around where the figure
stands in the background.



Plate 54:

Isolated Find Wollar-Wellington (WW) IF
7. Artefact.



Plate 55:

View of shale oil mine infrastructure area
from Tower 25A (circled in red).View -
west. Note the black patch on the left of
the picture left from residue high carbon
content slag.



Plate 56:

The entrance to the shale oil mine. View to east.



Plate 57:

A close-up of the partially collapsed mine entrance – from the inside. View east.



Plate 58:

The interior of the mine and a remnant miners bench (below)





Plate 59:

Cut sleeper near the mines entrance



Plate 60:

Large concrete footing and parts of old boilers were pushed into a hole and mark the presence of this site.



Plate 61:

Sandstone Cottage near Tower 35 (now demolished)

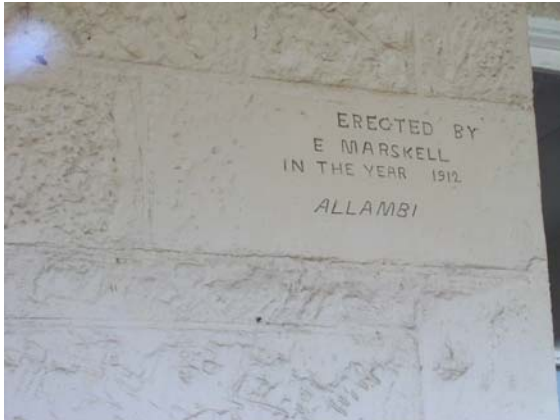


Plate 62:

Inscription on the building



Plate 63:

Remnant post and rail fencing in between towers 36A and 37A



Plate 64:

Remnant dip and sheep yards.



Plate 65:

Detail of the sheep yard fencing.



Plate 66:

Standing water tower found in association with a former cottage site. The area is surrounded by a remnant house yard fence and the well is located within 5 m south west of the water tank (in a drainage line).



Plate 67:

The well is in reasonable conditions however it poses a hazard to workers.



Plate 68:

Remaining infrastructure of a farm machinery shed. Note the implement in the background



Plate 69:

An agricultural relict located next to the access track to tower 53.



Plate 70:

This rudimentary dam wall of locally occurring stone is located between towers 87 – 88. The height is delineated in red, length in yellow and width in green.



Plate 71:

The rock shelter / wall (?) is located at tower 87 (survey peg defined with an arrow). No explanation can be given as to its origins. The man made part of the structure is delineated within the red circle the other portions (where people are sitting and standing) are naturally occurring. .



Plate 72:

This former wood cutters site showed marks similar to those made by a hand held chain saw. Chainsaws have not been commercially and widely available for 50 years therefore this area is not a relict as defined by the relevant guidelines.



Plate 73:

A former mine shaft or exploratory pit. As noted in the potted history early mining has occurred through the region. Four former mine shafts were located during the survey, two near towers 174 – 175 (pictured) and the others near tower 180.

**APPENDIX 2: ABORIGINAL COMMUNITY
CORRESPONDENCE**

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**APPENDIX 3 – ABORIGINAL COMMUNITY
CONSULTATION REGISTER**

Date	Group Contacted	Name	Details
1.10.04	Murong ATSIC	David Maynard	Called to seek advice on where the Mudgee and Wellington LALC boundaries were (in relation to the survey. Dave wasn't in so I left a message asking him to call me back. I raised the issue of community representation with the MLALC and his group.
1.12.04	Gallangabang Traditional Owners	Joyce Williams - Chair of traditional owners	Called and sent an expression of interest and discussed the opportunity and invitation to participate in the W-W survey. I said that we will get all of the expressions of interest together (from interested parties) and offer a fee as daily rate for participation and stated that I will need to know if the group decides to accept or decline it. We discussed that I need to hear back from Rose Chown before offering 2 positions but if we didn't hear from her and failing any other nominations from the community the direct descendants were more than welcome to have both. I sent a letter with all of the details and a site map on the 7th of December formalizing the offer, with a cut off date as the 24th of December 2004.
1.12.04	Wiradjuri Wellington Aboriginal Town Common Aboriginal Corporation, PO Box 458, Wellington 2820	Rose Chown	Rang throughout the day - no one answered and there was no opportunity to leave a message.
1.12.04	Murong ATSIC	David Maynard	Called to discuss the project. We agreed that I would send an expression of interest to MG ATSIC for the project with an invitation to participate. I discussed the number of positions available. David referred to an agreement with TransGrid that 2 people each from the MLALC and MG ATSIC would be participating. I said that I was not aware of this and would check our brief. I discussed the new DEC requirements and the possibility of other groups wanting to participate and we would apply selection criteria for how many positions are on offer through the contract. Dave referred to a previous agreement in which TransGrid was to provide information to his group that never showed - he said that potentially participation won't occur from his group or the MLALC until the information from TransGrid arrived. I asked him to put in all in the response to our expression of interest and I will forward it to the appropriate person. I then wrote a letter to David on the 7th of Dec requesting him to take any issues up with TransGrid (as we are not involved with any of this) I stated that DEC requires a certain process to be undertaken that seeks representation from the wider Ab community.

Date	Group Contacted	Name	Details
1.12.04	Mudgee LALC	Christine Maynard	Called and left a message with my contact details. I stated what the project was, when it was and asked her to contact me so we could discuss the expression of interest. They called back a day later. We discussed the job (with Karen) issues arose between an agreement with TransGrid - I stated firmly that they should talk with them we have no involvement with these discussions. I sent a letter on the 7th of the 12th informing them of the survey with an offer of participation and all relevant details.
7.12.04	Wiradjuri Wellington Aboriginal Town Common Aboriginal Corporation, PO Box 458, Wellington 2820	Rose Chown	Tried to call thought the day, no answer or opportunity to leave a message. Wrote a letter seeking an expression of interest to participate in lieu of further phone contact. I gave 24th of Dec as the cut off date for a response.
8.12 .04	International Environmental Consultants	Robert Byrnes	Sent an e-mail to Robert with the text for ads to go into the Wellington Times and the Mudgee Guardian re seeking expressions of interest to participate in a heritage survey. Ads to go in on a Wed and Saturday for 2 weeks. Closing dates for submissions were Wellington 24th Dec 2004 - Mudgee 11th January 2005.
4.1.05	Gallangbang Traditional Owners	Joyce Williams - Chair of traditional owners	Called to say the survey dates have been postponed (I called on the 23rd December to state that I had received a letter of interest to participate.) Joyce wasn't home but her grandchild took my number and details. Joyce called back later in the day and we confirmed an interest to participate.
11.1.05	MGATSIC	David Maynard	Faxed and expression of interest - a hard copy came in the mail a few days later.
18.1.05	Warrabinga	Lance Symes	Called Kylie on Lance's behalf, she formerly expressed an interest on his behalf to be involved in the process. I said that I would sent an email to determine what level and get some other details in writing as required in the new DEC protocols. Sent the e-mail after the phone call.

18.1.05	MGATSIC		David Maynard	Received a fax from David re expression of interest to participate dated 11.1.05. I tried to call re: some of the minor details associated with the new DEC consultation guidelines but the phone at home rang out and there was no opportunity to leave a message. Tried again later in the day without success.
19.1.05	MGATSIC		David Maynard	Tried to call early in the morning - no luck. No opportunity to leave a message. Got hold of David at lunchtime. I formerly recognised his expression of interest, we discussed the project, he noted that he knew of several sites along the route and had previously informed TransGrid of them so that the route could be modified and talked with DEC during this occasion. I discussed that we would talk further once the closing date had come to work out number of positions and how it would work out with positions and number of people. We briefly discussed the other groups that had expressed interest as I was unfamiliar with Warrabinga and David had recently worked with them.
19.1.05	Mudgee LALC		Larry Flick - Chair	Called Larry in response to a letter from the MLALC stating an expression of interest for the W - W survey. He stated that Karen Coffee (Coordinator and person who sent the letter) will be unavailable for an undetermined period so we agreed that OzArk would liaise through him. I asked him to send us a copy of his w/c insurances or certificates of currency so that we could include them in the survey, I provided our phone and fax numbers. I stated that the closing dates for expressions of interest was the 21st of Jan and after this time I would be able to start working out number of positions available for each of the interested parties.
19.1.05	Gallangabang Owners	Traditional	Joyce Williams - Chair of traditional owners	Sent a letter formerly recognizing the expression of interest and raised other salient points.
19.1.05	Warrabinga		Lance Symes	Lance called to discuss the W-W survey. I asked to what extent he was interested - he stated that he wasn't sure as yet, I sent him a map of the survey area so that Warrabinga could look at the route to indicate any areas of cultural interest and subsequently desire to participate in field work. We discussed cultural sensitivities in the ID of special places and ways to achieve an outcome that will formerly ID them (as per DEC legislation) but not disclose details to others - we agreed to keep an open communication line in any issue associated with the project. We discussed the competitive selection process and agreed that an open line of communication was best to achieve an outcome that would suit all. Lance stated that Warrabinga was interested in the Mudgee LALC area as delineated on the map (shown to him by MGATSIC on another occasion). I mentioned that relevant insurances etc would be needed if the organisation wanted to participate in the survey.

APPENDIX 4

**DETAIL OF LAND USE HISTORY, LEVELS OF DISTURBANCE,
VEGETATION AND SITES FOR EACH PROPOSED TOWER**

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
Creek Crossing	777802E 6409014N 410m	7%	Agric weeds	N	25%	Site recorded, WC-OS11, on nth bank at gates retouched flakes	Whether or not access track is to go through this site.	The access track will not go ahead in this location and hence the site will not be impacted.
1a	777482E 6410028N 403m	1%	Grass/Cleared	No	20-100%	Low		
2a	777213E 6410183N 421m	0%	Grass/Cleared/Ridge Top	No	30%	Low		
3a	776878E 6410335N 416m	1%	Grass/Cleared/Ploughed	No	50%	Low		
4a	776450E 6410533N 433m	2%	Grass/Cleared/Valley Terrace	No	20%	Low		
5a	775860E 6410804N 419m	4%	Grass/Cleared/Valley Side	No	20%	Low		
Drainage line Crossing	775675E 6410877N 430m	3%	Cleared/Grazed	Y	35%	Low		
6 (angle)	775496E 6410962N 433m	0%	Grass/Cleared/Ridge Top	No	40%	Low		
7	775546E 6411363N 438m	2%	Grass/Cleared/Valley Side	No	10%	Low		
8	775581E 6411769N 437m	2%	Grass/Cleared/Valley Side	No	10%	Low		
9	775649E 6412148N 435m	0%	Grass/Cleared	No	70%	Low	WW-IF7. 30m west of Tower 9: Quartzite Flake 775615E 6412143N 441m	No impact from proposed works. Temporary fence to include erosion zone.
10	775690E 6412521N 430m	2%	Grass/Cleared/Valley Side	No	50%	Low		
11	775572E 6412852N 413m	1%	Grass/Cleared	No	10%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
12	775405E 6413254N 417m	1%	Grass/Cleared/Valley Side	No	20%	Low		
13	775413E 6413248N 442m	1%	Grass/Cleared/Valley Terrace	No	40%	Low		
14	775077E 6414089N 435m	1%	Grass/Cleared/lightly treed	No	40%	Low		
15	774859E 6414645N 557m	1%	Grass/Cleared/Ridge Top	No	10%	Low		
16	774677E 6415076N 468m	0%	Grass/Cleared/Plateau	No	40%	Low		
17	774466E 6415608N 462m	0%	Grass/Cleared	No	20%	Low		
18	774571E 6415876N 451m	0%	Grass/Cleared/Valley Top	Yes	0%	Low		
19	774711E 6416257N 458m	5%	Grass/Cleared/Valley Side	Yes	10%	Low		
20	774860E 6416645N 451m	0%	Grass/Cleared/Valley Terrace	No	0%	Low		
21	775009E 6417018N 419m	0%	Grass/Cleared/Valley Terrace	No	20%	Low		
22	775124E 6417325N 429m	5%	Grass/Cleared/Valley Side	Yes	40%	Low		
22.1	775068E 6417667N 421m	5%	Grass/Cleared/Valley Side	Yes	40%	Low		
23a	775016E 6418069N 420m	4%	Grass/Cleared/Valley Side	No	10%	Low		
24a	774973E 6418323N 413m	3%	Grass/Cleared/Valley Side	No	50%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
25a	775010E 6418697N 413m	0%	Grass/Cleared/Valley Terrace	No	10%	Low		
Shale Oil / Slate Mine	shaft = 774808 6418645N 407m footings 774851E 6418775N 405m	5%	Cleared/Grazed	Y	15%	Low		
26a	775012E 6419204N 418m	1%	Grass/Cleared/Valley Terrace	No	40%	Low		
27a	775154E 6419578N 391m	10%	Grass/Cleared/Valley Side	Yes	40%	Low		
28	775212E 6419915N 372m	4%	Grass/Cleared/Valley Side	No	10%	Low		
28.1	775192E 6420154N 366m	0%	Grass/Cleared/Floodplain	No	0%	Low		
28.2	774935E 6420385N 369m	0%	Grass/Cleared/Alluvial Terrace >750m from Wilpinjong Creek	No	30%	Low		
29	774518E 6420305N 367m	0%	Grass/Cleared/Alluvial Terrace >300m from Wilpinjong Creek	No	60%	Low		
30	774065E 6420225N 367m	0%	Grass/Cleared/Alluvial Terrace >70m from Wilpinjong Creek	No	10%	Low/Moderate	WC-OS12 is 20m north of Tower 30 -774081E 6420248N 367m. 2 Flakes on terrace 50m from water. Although site will be avoided, there is potential for artefacts in the proposed construction area	Monitor construction of tower under a s87(1) permit. Fence off site WC-OS12 15m north of Tower 30 to avoid direct impacts.
31	773633E 6420151N 362m	0%	Grass/Cleared/Floodplain >100m from Wilpinjong Creek	No	0%	Low/Moderate	Close to water but on floodplain so intact sites unlikely.	

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
32	773194E 6420077N 363m	0%	Grass/Cleared/Floodplain >100m from Wilpinjong Creek	No	10%	Low/Moderate	Close to water but on floodplain so intact sites unlikely. However, WC-IF2 773082 6420044 368m, a Silcrete Flake was recorded between Towers 32 and 33, 100m from creek.	Monitor s87(1) this tower location due to the potential for artefacts from disturbed, floodplain contexts.
33	772803E 6420007N 371m	0%	Grass/Cleared/Floodplain >100m from Wilpinjong Creek	No	5%	Low		
34	772400E 6419930N 374m	0%	Grass/Cleared/Floodplain >240m from Wilpinjong Creek	No	0%	Low		
35	772023E 6419866N 378m	0%	Grass/Cleared/Floodplain >100m from Wilpinjong Creek	No	0%	Low/Moderate	Close to water. Proximity of to 2 sites recorded by Navin Officer (WCP 193 and 151).	Monitor s87(1) due to proximity to previously recorded sites.
European Heritage	out of impact corridor						Homestead built 1912 c. 8m north of corridor - vacant -about to be demolished	
Indig Heritage site	out of impact corridor		Cleared / Grazed	N	5%	Moderate-High	Several isolated artefacts were recorded outside of the study corridor - they are believed to be part of an extension to sites recorded recently by Navin Officer P/L. Advise client to peg out tracks etc and not venture beyond them.	

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
Creek Crossing to 36a	771627E 6419797N		Riparian Corridor	N		Moderate-High	A site recorded by Navin Officer occurs on the southern bank of the creek. Top soil is eroded here. Plan by client are to rock armour crossing to prevent further erosion which will aid in site protection. Need to liaise with mine & TransGrid to determine management of track.	
36a	771627E 6419797N 373m	0%	Grass/Cleared/Floodplain/ North bank of Wilpinjong Creek	No	10%	Low/Moderate	Will impact site WC PAD 1: 15m from creek, close proximity to site WCP 174 recorded by Navin Officer.	Test excavation of site WC-PAD1 will be required to assess site significance.
European Heritage	771272 6419754N	0%	Grazed	N/A	5%		Post and Rail Fence - wont be impacted by proposal.	
Creek Crossing	771151E 6419721N	0%	Riparian Corridor	N	0%	Moderate-High	Banks of the creek have deep sandy soils. Need further info from geomorphic to make final assessment.	
37a	771196E 6419721N 377m	0%	Grass/Cleared/Floodplain/ North bank of Wilpinjong Creek	No	0%	Low/Moderate	Will impact site WC PAD 1: 15m from creek, close proximity to site WCP 174 recorded by Navin Officer. Also 120m east of Tower 37a was WC-IF3 771371 6419748 377m. Volcanic retouched scrapper.	Test excavation of site WC-PAD1 will be required to assess site significance.
38	770833E 6419666N 380m	0%	Grass/Cleared/Floodplain/ South bank of Wilpinjong Creek	No	5%	Low/Moderate	Will impact site WC-PAD2: Proximity to Water (50m) and to Navin Officer site WCP 174	Test excavation of site WC-PAD2 will be required to assess site significance.

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
39	770497E 6419704N 382m	0%	Grass/Cleared/Floodplain/ South bank of Wilpinjong Creek. Former swamp.	No	10%	Low		
40	770260E 6419957N 361m	0%	Grass/Cleared/Floodplain/ South bank of Wilpinjong Creek. Former swamp.	No	10%	Low		
41	769987E 6420251N 376m	0%	Grass/Cleared/Floodplain/ South bank of Wilpinjong Creek. Former swamp.	No	10%	Low	Proximity (30m) to WC- OS13 with PAD	Monitor under a section s87(1) permit. No direct impact to WC-OS13 from proposed works, although site should be fenced off to ensure its protection.
42	769746E 6420529N 387m	0%	Grass/Cleared. Knoll in Valley	Yes	50%	Low		
43	769416E 6420769N 385m	0%	Grass/Cleared/Ploughed Terrace 400 m from creek	No	0%	Low	Proximity to site WC- OS14 which is between towers 42 and 43	No impact from proposed works to WC- OS14.
44	769083E 6420979N 383m	0%	Cleared / Grazed. Floodplain	No	20%	Low	Proximity to site WCOS14 which is between towers 42 and 43	No impact from proposed works to WC- OS14. Site should be fenced off
45	768778E 6421197N 395m	0%	Cleared / Grazed. Floodplain	No	20%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
46	763490E 6421390N 388m	0%	Cleared / Grazed. Floodplain	No	50%	Moderate	Proximity of water and WC-OS15 with PAD which lies between towers 45 and 46	Due to proximity to WC-OS15, works at Tower 46 should be monitored under a Section s87(1) permit. No direct impact to WC-OS15. New gate and a temporary fence along north boundary of easement during construction to protect WC-OS15.
47	768281E 6421634N 393m	0%	Cleared / Grazed. Floodplain	No	10%	Low		
48	768045E 6422003N 399m	0%	Cleared / Grazed. Floodplain	No	20%	Low		
49	767793E 6422363N 399m	1%	Cleared / Grazed. Terrace 250 metres from creek	No	20%	Low		
50	767571E 6422636N 399m	2%	Cleared / Grazed. Slope above floodplain	No	20%	Low		
Creek Crossing at Wilpinjong Creek		0%	Creek	No		Moderate	Number of sites means creek line is very sensitive	Monitor under a section 87(1) permit due to sensitivity of creek..
51	767244E 6422905N 398m	1%	Cleared / Grazed. Slope above creek	No	30%	Moderate	Proximity of WC-OS16 with PAD and WC-IF5, both of which lie between towers 50 and 51	Monitor under a section s87(1) permit. No impact to WC-OS16 with PAD from proposed works. Temporary fence to protect site during construction. Move WC IF5 to WC-OS 16.

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
52	766871E 6423174N 412m	0%	Cleared / Grazed. Slope above floodplain	No	50%	Low		
53	766479E 6423495N 405m	0%	Cleared / Grazed. Knoll top above floodplain	No	50%	Moderate	WC-OS17 with PAD is directly within the impact zone of tower 53	Test excavate this site to determine significance.
54	766129E 6423772N 408m	3%	Cleared / Grazed. Slope to creek 80m away	No	40%			
55	765866E 6424050N 409m	2%	Cleared / Grazed. Slope to creek 100m away	No	60%	Low	WC-OS18 between towers 55 and 56	Creek crossing west of tower 55: There is to be no construction 40 m east of proposed crossing due to an unrecorded site on knoll above erosion/creek gully. Fence access track in this area to ensure no inadvertent impacts.
56	765571E 6424379N 426m	1%	Cleared / Grazed. Break in slope	No	80%	Low		
57	765319E 6424602N 450m	0%	Lightly treed/Ironbark Ridge top Sandy soil	No	80%	Low		
58	765335E 6424605N 481m	2%	Lightly treed/Ironbark slope	Yes	60%	Low		
59	Access Denied							
60	Access Denied							
61	Access Denied							
62	Access Denied							
63	Access Denied							
64	764204E 6426575N 445m	2%	Heath regrowth Slope	No	50%	Low		
65	763797E 6426666N 448m	2%	Heath regrowth Slope	No	20%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
66	763507E 6426726N 444m	1%	Cleared, grazed	No	5%	Low		
67	763296E 6426392N 437m	1%	Heath regrowth Slope	No	10%	Low		
68	762925E 6426338N 440m	0%	Heath regrowth	No	50%	Low		
69	762572E 6426274N 440m	0%	Heath regrowth	No	10%	Low		
70	762258E 6426268N 439m	2%	Cleared / Grazed	No	30%	Low		
71	761993E 6426176N 434m	0%	Grass/Cleared/Ploughed	No	75%	Low		
72	761582E 6426061N 434m	0%	Ploughed/Planted	No	10%	Low		
72.1	761225E 6425875N 428m	0%	Ploughed/Grass	No	20%	Low		
73	760970E 6425735N 432m	2%	Heath regrowth Slope	No	20%	Low		
74	760649E 6425558N 405m	0%	Cleared / Grazed	No	35%	Low		
75	760268E 6425375N 421m	0%	Heavily disturbed by erosion, dam building and imported fill	No	40%	Low		
76	759861E 6425147N 427m	0%	Cleared / Grazed Bulldozed	No	50%	Low		
77	759502E 6424958N 432m	1%	Cleared / Grazed Road verge	No	40%	Low		
78	759140E 6424770N 438m	1%	Cleared / Grazed Erosion	No	90%	Low		
79	758813E 6424592N 432m	0%	Cleared, grazed Knoll top	No	40%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
80	758290E 6424320N 429m	0%	Cleared / Grazed. Floodplain	No	40%	Moderate	MC-OS19 in vicinity of tower 80. Possibility of artefacts from site or elsewhere in the disturbed floodplain deposits.	Monitor under a section s87(1) permit. No direct impact to MC-OS19 from proposed works, although site should be fenced off to ensure its protection.
81	757984E 6424155 N 433 m	5%	Native forest – regrowth. E. dealbata / Cypress	No	35%	Low		
82	757719E 6424371 N 432 m	0%	Grey box (<i>E. microcarpa</i>) open forest	No	25%	Moderate	SHC-IF6 recorded 100 m from the impact corridor.	Site easily avoided by this tower construction.
83	757719E 6424371N 449 m	5%	Highly disturbed – former gravel pit	No	55%	Low		
84	756948E 6425018N 507 m	5%	Native forest – regrowth. E. dealbata / Cypress	Yes – coarse sand stone	20%	Low		
85	756510E 6425379N 523 m	5%	Native forest – regrowth. E. dealbata / Cypress	Yes – coarse sand stone	20%	Low		
86	756544E 6425439N 561 m	5%	Native forest – regrowth. E. dealbata / Cypress	Yes – coarse sand stone	20%	Low		
87	755856E 6425918N 538 m	5%	Native forest – regrowth. E. dealbata / Cypress	Yes – coarse sand stone	20%	Low	European stone wall / shelter recorded. Unlikely to be of age to be a relic but recorded for due diligence. European dam wall recorded.	If destroyed undertake detailed measurements and drawings. Will not be impacted by the development.
88	755386E 6426309N 517 m	5%	Native forest – regrowth. E. dealbata / Cypress	Yes – coarse sand stone	20%	Low		
89	755112E 6426537N 503 m	0%	Native forest – regrowth. E. dealbata / Cypress / E. melliodora, A. floribunda	No	20%	Low		
90	754708E 6426743N 371m	1%	Open woodland/Cyprus	No	10%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
91	754377E 6426767N 477m	0%	Grass/Cleared/Eroded	No	40-60%	Moderate	TransGrid have determined that this tower can be moved to avoid site CT-OS7, Open Site parallel to creek. Moderate number of artefacts	Tower 91 has been relocated 40m to the north-west (to other side of creek) to avoid site. No further management necessary
92	753978E 6426923N 482m	0%	Grass/Cleared/<200m to water	No	10%	Low		
93	753607E 6427059N 482m	0%	Grass/Cleared	No	5%	Low		
94	753187E 6427133N 498m	0%	Grass/Cleared	No	15%	Low		
95	752783E 6427320N 507m	0%	Grass/Cleared	No	10%	Low		
96	752397E 6427469N 521m	0%	Grass/Cleared	No	0%	Low		
97	751938E 6427608N 535m	1%	Grass/Cleared/Lightly Treed	Yes	60%	Low		
98	751664E 6427778N 549m	1%	Grass/Cleared	No	30%	Low		
99	751360E 6427866N 556m	1%	Grass/Cleared	No	40%	Low		
100	751110E 6428029N 559m	0%	Grass/Cleared	Yes	10%	Low		
101	750703E 6428272N 563m	1%	Grass/Cleared	Yes	50%	Low		
102	750293E 6428331N 563m	1%	Grass/Cleared	Yes	10%	Low		
103	749790E 6428429N 533m	0%	Ironbark Forest	No	0%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
104	749400E 6428333N 546m	0%	Grass/Cleared	No	5%	Low		
105	748923E 6428228N 530m	0%	Ploughed/Planted	No	80%	Low		
106	748425E 6428112N 553m	1%	Grass/Cleared	No	0%	Low		
107	747971E 6428035N 569m	0%	Grass/Cleared/Knoll Top	Yes	20%	Low		
108	747633E 6427947N 585m	5%	Grass/Cleared/Eroded	No	50%	Low		
109	747094E 6427821N 567m	0%	Grass/Cleared	No	0%	Low		
110	747708E 6427732N 539m	0%	Grass/Cleared	No	0%	Low		
111	746456E 6427795N 528m	0%	Grass/Cleared	No	0%	Low		
112	746098E 6427869N 523m	0%	Grass/Cleared/Ploughed >50m from temp. creek	No	70%	Moderate	BSR-OS8 on east bank of creek. Numerous artefacts recorded. TransGrid have determined that tower can only be moved c.8m which does not avoid entire site.	As tower cannot be shifted, test excavation of site BSR-OS8 will be required to determine significance of site.
113	745774E 6427857N 520m	0%	Open Woodland Grey Box	No	50%	Low		
114	745489E 6427850N 528m	1%	Grass/Cleared	No	40%	Low		
115	745189E 6427726N 530m	0%	Grass/Cleared	No	10%	Low		
116	744833E 6427578N 529m	1%	Grass/Cleared	No	0%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
117	744450E 6427420N 524m	2%	Grass/Cleared	No	0%	Low		
118	744037E 6427249N 508m	0%	Grass/Cleared	No	10%	Low		
119	743618E 6427076N 498m	0%	Grass/Cleared	No	10%	Low		
120	743207E 6426906N 502m	0%	Grass/Cleared	No	40%	Low		
121	742808E 6426739N 506m	0%	Grass/Cleared	No	10%	Low		
122	742434E 6426586N 511m	0%	Grass/Cleared/Ridge Top	Yes	10%	Low		
123	742040E 6426423N 499m	1%	Grass/Cleared	No	20%	Low		
124	741641E 6426259N 490m	2%	Grass/Cleared	No	10%	Low		
125	741265E 6426103N 477m	0%	Grass/Cleared/Gully	No	50%	Low		
126	740913E 6425956N 469m	0%	Grass/Cleared	No	10%	Low		
127	740518E 6425791N 459m	1%	Cleared/Ploughed	No	100%	Low		
	740156E 6425791N 448m	10%	RB Apple, RR Gum on banks cleared land either side	N	25%	Site recorded, SC-OS10 (w-w) on western side of Stubbo Creek, along access track.	West side of creek lies SC-OS10, an Open Site with two artefacts - on Access Rd to Tower 128. 740096E 6425780N 450m. Protection of site required.	Conveyer belt to cover site SC-OS10 for access for heavy vehicles from gates to track. Protection of will be conveyer belt matting.

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
128	740083E 6425614N 451m	0%	Grass/Cleared >50m to Stubbo Creek	No	50%	Low/Moderate	Due to proximity of SC-OS10, need to determine if artefacts from this site have been ploughed to location of tower 128. Actual site will not be impacted	Monitor s87(1) tower in case of artefacts from site SC-OS10.
129	739716E 6425461N 448m	0%	Grass/Cleared <300m to Stubbo Creek	No	70%	Low		
130	739325E 6425298N 445m	0%	Cleared/Ploughed	No	100%	Low		
131	738919E 6425131N 443m	0%	Cleared/Ploughed/Cropped	No	10%	Low		
132	738518E 6424965N 440m	0%	Grass/Cleared	No	20%	Low		
133	738359E 6424592N 433m	0%	Cleared/Ploughed	No	50%	Low		
134	737964E 6424346N 426m	0%	Grass/Cleared/Ploughed/ Floodplain	No	0%	Low/Moderate	SDC-OS9 with PAD at 431m 737875E 6424275N approx 150m west of Tower 134. Some potential for artefacts from this site within construction area.	Monitor under a s87(1) permit the construction of tower 134 in case of artefacts from site SDC-OS9. Site not to be impacted.
Creek Crossing Slapdash Creek	737887E 6424345N	1 -10%	Floodplain	N		Low	Although SDC-OS9 with PAD is outside the impact corridor on an elevated terrace, the cutting for the access track will impact the landform upon which the site is located.	As the Slapdash Creek access track will impact the landform of SDC-OS9 with PAD, although not the site itself, monitoring under a section 87(1) permit will be required in case artefacts are present.
135	737604E 6424115N 429m	0%	Grass/Cleared	No	100%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
136	737218E 6423863N 436m	3%	Grass/Cleared/Ploughed	No	20%	Low		
137	736878E 6423642N 423m	2%	Grass/Cleared	No	5%	Low		
138	736494E 6423401N 444m	1%	Grass/Cleared	No	0%	Low		
139	736150E 6423175N 426m	1%	Grass/Cleared	No	0%	Low		
140	735779E 6422938N 442m	0%	Grass/Cleared	No	0%	Low		
141	735396E 6422699N 451m	0%	Grass/Cleared	No	0%	Low		
142	735028E 6422463N 451m	0%	Grass/Cleared	No	0%	Low		
143	734643E 6422205N 426m	1%	Grass/Cleared	No	0%	Low		
144	734340E 6421988N 404m	0%	Grass/Cleared/Ploughed	No	40%	Low		
145	733951E 6421769N 448m	0%	Grass/Cleared/Ploughed	No	50%	Low		
146	733584E 6421520N 415m	0%	Grass/Cleared/Ploughed	No	70%	Low		
147	733193E 6421283N 449m	1%	Grass/Cleared/Ploughed	No	5%	Low		
148	732819E 6421051N 449m	0%	Grass/Cleared/Ploughed	No	100%	Low		
149	732429E 6420792N 441m	0%	Grass/Cleared	No	50%	Low		
150	732109E 64205493N 420m	0%	Cleared, ploughed					

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
151a	731933E 6420354N 414m	1%	Slight terrace c. 250m from Creek, cleared ploughed	N	40%	Low-Moderate		
152a	731698E 6420041 412m	1%	small spur adjoining floodplain	N	35%	Low-Moderate		
153a	731453E 6419718N 411m	0%	Floodplain, cleared, ploughed	N	5%	Low		
154	731200E 6419379N 409m	0%	Floodplain, cleared, ploughed	N	5%	Low		
155	730960E 6419061N	0%	Floodplain, cleared, ploughed	N	15%	Site Recorded – WC-IF1	WC-IF1 will be impacted by tower 155.	Monitor earthworks & pick up & collect under a s.87(1)
156a	730482E 6419063N 418m	0%	Cropped paddock - adjoining floodplain	N	80%	Low		
157	730035E 6419079N 427m	3%	slight hill -exposed, grazed, cleared	Y	30%	Low		
158	729531E 6419084N 406m	0%	ploughed paddock	N	100%	Low		
159a	729099E 6419098N 419m	0%	ploughed paddock	N	100%	Low		
160	728497E 6419119N 474m	3%	Flat area next to a big drop	Y	25%	Low		
161	728269E 6419094N 503m	8%	Exposed very rocky hillside	Y	35%	Low		
162	728017E 6419123N 445m	3%	Exposed very rocky hillside	Y	35%	Low		
163	727531E 641938N 466m	8%	Exposed hillside over looking Goodiman Ck (50m away)	N	35%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
164	727180E 6419149N 435m	0%	Flat area in a regrowth area after timber cutting c. 20 yrs ago. Not grazed now but was c. 10 yrs ago	N	40%	Low		
165	727005E 6418857N 430m	3%	100m sth of Goodiman Ck, cleared, grazed.	N	40%	Low		
166	726718E 6418383N 440m	2%	Hilltop overlooking flats, cleared, grazed	Y - sandstone	20%	Low		
Road work 2 track	726391E 6417624N & 726501E 6417255N	20%	Existing track		100%	Low	Nil	
167	726497E 6417990N 428m	15%	Open flat country, cleared, grazed, previously ploughed	Y	15%	Low		
168	726310E 6417649N 430m	2%	Very rocky ridge over looking Goodiman Ck, cleared grazed.	Y	25%	Low		
169	725885E 6417327N 384	5%	Slight hill, cleared grazed	N	40%	Low		
170	725598E 6417119N 417m	3%	Cleared, grazed	N	40%	Low		
Creek Crossing	725272E 6416737N	2%	former yellow box R-b Apple woodland Cleared/Ploughed/Cropped . 1 Yellow box to be removed.	N	15%	Yes, potential artefacts found outside of study area on elevated terrace.	Minimise impact beyond area of need. Avoid elevated terrace.	Fence access track to ensure no impacts beyond.
171	725224E 6416831N 410m	0%	former yellow box R-b Apple woodland Cleared/Ploughed/Cropped within 50 m Goodiman Ck	Y - quartz	20%	Low- Moderate		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
172	724803N 6416530N 456m	3%	Saddle between 2 hills, partially cleared, grazed, very rocky	Y	25%	Low		
173	724409E 6416292N 457m	3%	Natural bench on a hills, partially cleared, grazed, very rocky	Y	25%	Low		
174	724040E 6416961N 432m	0%	Formerly cleared - now in regrowth of scrubs	Y	30%	Low		
175	723709E 6415867N 449m	2%	Woodland/Cyprus Pine/Gum	No	40%	Low		
176	723537E 6415763N 450m	5%	Woodland/Cyprus Pine/Gum	Yes	50%	Low	European Timber Cutting site	No direct impact. Fence access track from 176 to 177 to ensure no inadvertent impacts.
177	723018E 6415502N 506m	3%	Top of a very steep exposed hill	Yes	15%	Low		
178	722385E 6415238N 430m	5%	Toe slope of small hill	Yes -shale, chert, quartz	25%	Low		
179	722131E 6415124N 420m	5%	Half way up a hill in white box community	No	20%	Low		
180	721790E 6414967N	3%	Top of a very steep exposed hill overlooking Mebul Ck	Yes	15%	Low	European Mine shaft(s) present	
181	Access Denied							
182	Access Denied							
183	Access Denied							
184	Access Denied							
185	Access Denied							
186	Access Denied							
187	Access Denied							
188	Access Denied							

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
189	Access Denied							
190	Access Denied							
191	716819E 6412701N 395m	0%	Cleared/Ploughed/Cropped close the a big creek	N	95%	Site recorded - GC-OS5 with PAD	Large site. Although TransGrid attempted to replace #191 with 2 towers 150m e & w of tower 191, this has been determined as not feasible. It was feasible however to shift tower 191 45m west avoiding the main site area. None the less GC-OS5 will be impacted and consequently test excavation of the impact area will be required.	As complete avoidance of site GC-OS5 with PAD was not feasible, limited test excavation in the area of proposed impact is recommended to assess its significance.
Creek Crossing (Goolma Ck)	717211E 6412758N 383m	1%	Rough-barked Apple, Silver Wattle, River bottle brush, carex, phragmites. !RBA need to be lopped for safety.	N		GC-OS6 recorded in ploughed field between the proposed access track and the agricultural fence.	Need to avoid site by rerouting access track around existing fence line.	Avoid site by re-routing access track.
192	716430E 6412529N 393m	0%	Cleared grazed ploughed	Y -lots of quartz	95%	Low		
193	716004E 6412337N 414m	3%	Timbered hill top / side	Y - quartz	15%	Low		
194	715424E 6412068N 434m	5%	very rocky hill top	Y - quartz reef	25%	Artefacts seen below this hill on ploughed paddock - not impacted by development.		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
195	714793E 6411780N 450m	8%	exposed hill side cleared grazed.					
196	714544E 6411661N 480m	2%	exposed hill -good look out over creek, cleared grazed.	N	25%	Low		
197	713902E 6411376N 393m	2%	Yellow / grey box open woodland. Grazed	N	15%	No artefacts in proposed impact corridor.		
198	713391E 6411139N	2%	former Y.Box open woodland. Now cleared grazed	Y -High Q Quartz reefs	15%	Extensive site recorded CR-OS4. Extended across entire valley floor almost to tower 199.	Alternate tower location proposed (713355E 6411131N 412m) which is c. 40m to the west. Subsequent modelling by TransGrid determined this tower shift to be impossible; hence this site will be impacted.	The impact area for tower 198 will require test excavation to determine significance. To mitigate against further inadvertent disturbance to this site fencing will be required along Uamby Road, as well as along the access tracks to Tower 198 and around the construction zone for this tower. It is further recommended that this site be recorded in detail prior to the Proponent undertaking some site preservation measures such as stabilising erosion areas with soil and subsequently planting grasses to inhibit further erosion.
199	712887E 6410916N 425m	3%	Y.Box / grey box open woodland grazed	Y quartz	20%	No artefacts in proposed impact corridor.		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
200	712568E 6410770N 437m	3%	Small spur on a hill, grazed	Y quartz	20%	Low		
201	712069E 6410541N 477m	1%	Hill top, grazed	Y quartz	15%	Low		
202	711355E 6410442N 428m	10%	Hillside, timbered grazed.	Y quartz and others	20%			
203	711221E 6410148N 404m	1%	flat bit on toe slope	Y	20%	Low		
204	710958E 6409938N	2%	small hill overlooking small d line	Y	15%	Low		
205	710727E 6409923N 415m	5%	small bench on small hill	Y	15%	Low		
206	710437E 6409910N 423m	3%	Sharp ridge on hill	Y - quartz reef	15%	Low		
207	710081E 6409857N 405m	3%	Hill slope	Y quartz	15%	Low-Moderate (nr UC-OS3 w-w)		
Creek Crossing	710373E 6408520N	1%	former Yellow Box woodland, cleared ploughed	N		Site recorded UC-OS1 with PAD	Need to protect site from access track upgrade.	Monitor earthworks under a section 87(1) permit and protect eastern eroding bank, put fencing either side of the track, rock armour the ground with a fabric on the ground to separate the imported fill
Creek Crossing	710270E 6409577N	2%	former Yellow Box woodland, cleared ploughed	N		Site recorded UC-OS2	This crossing is not likely to be used in the project.	Avoid use of this crossing.
Creek Crossing	710011E 6409482N	1%	Box woodland on red ridge soils	N		Alternate crossing to UC-OS2 (w-w) No heritage potential here.		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
Creek Crossing	709935E 6409813N	2%	former Yellow Box woodland, cleared ploughed	N		Site recorded UC-OS3.	Access track will require the removal of part of the bank of the Creek upon which UC-OS3 is located. Some potential for artefacts.	Monitoring of earthworks under a Section 87(1) permit will be required during excavation for access track.
208	709763E 649860N	10%	Steep Hill top white box, dealbata and Kurrajong	N	25%	Low		
209	709185E 640942N 463m	15%	Steep Hill slope white box, dealbata and Kurrajong	N	15%	Low		
210	768944E 6409818N 474m	15%	Steep Hill slope white box, dealbata and Kurrajong	N	15%	Low		
211	708222E 6409575 501m	3%	Steep Hill top white box, dealbata and Kurrajong	N	15%	Low		
212	707739E 6409429N 551m	3%	Cleared / Grazed	N	10%	Low		
213	707363E 6409313N 543m	2%	Cleared / Grazed	N	10%	Low		
214	707022E 6409226N 536m	5%	Cleared / Grazed	N	10%	Low		
215	706617E 6409052N 592m	3%	Cleared / Grazed	Y - granite	15%	Low		
216	706167E 6408961N 645m	3%	Cleared / Grazed	Y-granite	15%	Low		
217a	705987E 6408831 607m	15%	Cleared / Grazed	Y-granite	10%	Low		
218	705329E 6408633N 527m	8%	In amongst 3 RBS's on the side of a hill	Y-granite	10%	Low		
Creek Crossing	705324E 6408577N 508m	5%	Partially Cleared / Grazed	Y	25%	Low		
219	704847E 6408520N	5%	Partially Cleared / Grazed	Y sand stone	1%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
220	704480E 6408420N 545m	5%	Partially Cleared / Grazed very small hill next to drainage line	Y sandstone	15%	Low		
221	704003E 6408266N 566m	5%	Cleared / Grazed	Y shale	10%	Low		
222	703756E 6408192N	5%	Cleared / Grazed	Y shale	15%	Low		
223a	703504E 6408114N	5%	Cleared / Grazed, small thin ridge	Y quartz	10%	Low		
224	703094E 6407983N 571m	0%	Lightly treed/Grass/Ridge top	No	5%	Low		
225	702688E 6407853N 605m	2%	Lightly treed/not cleared	Yes/Large	5%	Low		
226	702268E 6407712N 588m	1%	Grass/Cleared	Yes	5%	Low		
227	701713E 6407581N 611m	0%	Grass/Cleared/lightly treed	Yes/Large	10%	Low		
228	701338E 6407453N 602m	2%	Grass/Cleared	Yes	0%	Low		
229	700869E 6407314N 595m	2%	Grass/Cleared	No	5%	Low		
230	700478E 6407172N 613m	1%	Grass/Cleared	No	50%	Low		
231	700065E 6407044N 595m	0%	Grass/Cleared	No	0%	Low		
232	699617E 6406908N 583m	1%	Grass/Cleared	No	0%	Low		
233	699271E 6406806N 590m	0%	Grass/Cleared	No	0%	Low		
234	Access Denied							
235	Access Denied							

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
236	Access Denied							
237	Access Denied							
238	Access Denied							
239	Access Denied							
240	Access Denied							
241	Access Denied							
242	Access Denied							
243	695951E 6404963N 516m	0%	Cleared / Grazed 250 -300 m to Mitchells Creek	N	5%	Low		
244a	695551E 6404783N 503m	0%	Cleared / Grazed 150m to Mitchells Creek	N	5%	Low		
245	695178E 6404584N 491m	0%	Cleared / Grazed	N	10%	Low		
246	694818E 6404412N 499m	1%	Grass/Cleared	No	0%	Low		
247	694415E 6404232N 491m	1%	Cleared/Ploughed/Cropped	No	30%	Low		
248	694042E 6404006N 507m	2%	Cleared/Ploughed/Cropped	No	40%	Low		
249	No reading taken	2%	Grass/Cleared/40m to Drainage	No	30%	Low-Moderate		
250	693234E 6403609N 519m	1%	Grass/Cleared	No	0%	Low		
251	692833E 6403397N 522m	1%	Grass/Cleared	No	70%	Low		
252	No peg due to crop	1%	Cleared/Ploughed	No	50%	Low		
253	692066E 6403022N 534m	3%	Grass/Cleared	No	20%	Low		
254	691695E 6402830N 548m	0%	Grass/Cleared/Knoll top	Yes	40%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
255	691280E 6402623N 513m	1%	Grass/Cleared	Yes	10%	Low		
256	690863E 6402410N 484m	2%	Grass/Cleared	No	50%	Low		
257	690316E 6402120N 497m	5%	Grass/Cleared	Yes	5%	Low		
258	689833E 6401889N 496m	0%	Cleared / Grazed	No	5%	Low		
259	689505E 6401722N 499m	3%	Cleared / Grazed on a slight hill slope next to a contour bank	Yes	25%	Low		
260	688955E 6401444N 552m	10%	at the head of a steep gully	Yes	10%	Low		
261	688744E 6401337N 557m	10%	On a steep hill, cleared grazed	Yes	15%	Low		
262	688644E 6400769N 538m	5%	Hill top, grazed, cleared impacted by a water pipe	No	25%	Low		
263	688521E 6400137N 168m	5%	Cleared / Grazed	No	5%	Low		
264	688419E 6399420N 518m	2%	Grass/Cleared	No	10%	Low		
265	688411E 6399449N 498m	3%	Grass/Cleared	Yes	20%	Low		
266	688361E 6399143N 513m	12%	Grass/Cleared	Yes	20%	Low		
267	687757E 6398924N	3%	Grass/Cleared	Yes	20-30%	Low		
268	687555E 6398903N 492m	12%	Grass/Cleared	Yes	20%	Low		
269	687198E 6398840N 431m	12%	Grass/Cleared/60m to Drainage	Yes	40%	Low		

Tower Number	GPS (AGD) Co-ordinates	% slope	Vegetation Type & Land Use	Rock Outcropping?	% Visibility	Heritage Potential	Management Issues	Management Rec's
270	686657E 6398764N 410m	10%	Grass/Cleared/70m to Drainage	No	20%	Low		
271	686252E 6398702N 460m	0%	Grass/Cleared/Ridge top	No	10%	Low		
272	686043E 6398979N 460m	10%	Grass/Cleared/100m to Drainage	No	40%	Low		
273	685806E 6399298N 396m	4%	Grass/Cleared	No	10%	Low		
274	685419E 6399260N 374m	0%	Grass/Cleared	No	10%	Low		
275	685069E 6399211N 373m	0%	Grass/Cleared	No	0%	Low		

APPENDIX 5

SITE TYPE DEFINITIONS

Open camp sites

Often called stone artefact scatters, these sites (for the purposes of the DEC AHIMS database) were in the past defined by the presence of two or more stone artefacts located within 50 m of one another. Current guidelines, however, delineate no hard and fast determinations on requisite artefact numbers, more loosely describing these campsites as places exhibiting evidence of past human activity. This can be, and is most frequently, in the form of stone artefacts, but may also include other evidence such as hearths or midden material. Such sites provide evidence for the range of activities that may have been undertaken at a particular place, including the production of stone tools and the preparation of food including the butchering of animals or grinding of seeds. However, the distinction between a single, isolated artefact versus a place where numerous artefacts have been recorded together provides a necessary division in terms of the possible information that a site can reveal about past activities. Further information recorded about open sites includes assessments of the sites' integrity (how intact the site is) and subsequently whether sub-surface deposits are thought to be present.

Isolated Finds

An artefact, usually of stone, but possibly of other materials, that is located but has no relationship to other identifiable archaeological features.

Scarred Trees

This site type results from the deliberate removal of bark (and sometimes wood) from trees, for the purpose of obtaining raw material for the manufacture of various items of material culture – i.e. shields, coolamons, shelters, canoes, and cradles. They may also result from foraging and hunting - for instance, toe holes cut in trees to allow access to upper branches and hollows, and axe marks around natural hollows for the extraction of small tree-living fauna (such as possums or birds) or honey.

The identification and interpretation of a scar as being Aboriginal in origin can often be difficult, as bark can be removed from trees by a variety of means e.g. animal and bird foraging, the natural breaking off of tree limbs, lightning strikes to the tree, the result of machinery damage to trunks and the removal of bark by Europeans to define land boundaries. To assist archaeologists in the accurate identification of Aboriginal scarred trees, the DEC Western region provides a set of criteria against which each scar must be assessed.

These diagnostic criteria are as follows:

1. *The scar must not touch the ground* - (scars resulting from fire, fungal attack or lightning nearly always reach the ground). Such a termination does not necessarily preclude an Aboriginal origin. Ethno-historic accounts of canoe manufacture occasionally demonstrate scarring to ground level. If the scar does run to the ground, the sides must be relatively parallel (i.e. not triangular). It must be noted that discussion with Native Title from other areas suggests that scars may indeed extend to the ground, especially when the bark is planned for use in a shelter. This information is derived from oral histories recorded in Dubbo and observations from further afield;

2. *The ends of the scar should be squared off or evenly tapered* - Different shapes at the top and bottom (e.g. pointed at top, squared at bottom; round at top, flaring at bottom) are suggestive of natural processes (e.g. branch loss);
3. *The sides of the scar should be parallel or symmetrical* - Few natural scars are likely to have these properties, with the possible exception of fire scars which may be symmetrical but are usually wider at their base. Modern surveyors' marks are typically triangular, and often adzed. These also (regardless of shape) usually have a number carved in the wood, within the scar;
4. *The length of the scar must be on the same axis as the tree and not oblique or slanting across the tree or the branch* - Scars which are natural in origin tend to have irregular outlines, sometimes have irregular regrowth and may occur against the axis of the tree.
5. *The tree should be reasonably old – i.e. over 100 years* - The tree upon which the scar is found should be old enough (i.e. of sufficient age) to have been used by Aboriginal people in (at least) a semi-traditional manner. This means the tree should be at least approximately 100 years old. The age of the scar should also be reflected in the thickness of the regrowth. Young scars (e.g. some natural scars caused by branches falling or birds or horses gnawing, have characteristically thin regrowth);
6. *There must be no obvious natural or other artificial cause* such as a branch rip, lightening strike, cockatoo chewed bark or healed bark tears from machinery damage or car impact – Any signs that the scar may not be Aboriginal should be carefully assessed; and,
7. *The tree must not be an introduced species* – For obvious reasons, the tree upon which the scar is found should be endemic to the region, i.e. this excludes historic (exotic) plantings.

Also helpful in scarred tree identification, but not within the DEC criteria are the following points:

8. *Axe or adze marks* - A scar with cut marks on the original wood is likely to be anthropogenic in nature (i.e. as a result of human actions). The location and shape/size may lend support to the scar's origin. For example stone axe marks would indicate an Aboriginal origin, while steel axe marks post-date the arrival of Europeans. These of course could still have been made by an Aboriginal person in the post-contact era; and,
9. *The presence of epicormal growth* – Many scars of Aboriginal origin tend to have an epicormal shoot originating at the base of the scar. This is a new branch shooting from the point of damage and is part of the trees self preservation mechanism.

As noted in the DEC criteria, any tree that does not fit these rules cannot be accepted as likely to be of Aboriginal origin. This may mean that a few authentic scars are omitted from the Aboriginal Sites register, but it is the only means to establish consistency in identification.

However, even when applied, the above criteria cannot always provide a definitive classification, and a natural origin for the scar cannot be ruled out. For this reason interpretations of Aboriginal origin are qualified by the recorder's degree of certainty. The following categories are used:

- **DEFINITE ABORIGINAL SCAR**

This is a scar which conforms to all of the criteria stated above and/or has in addition a feature or characteristic that provides definitive identification, such as diagnostic axe or adze marks, or a historical identification. All conceivably natural causes of the scar can be reliably discounted.

- **ABORIGINAL SCAR**

This is a scar which conforms to most of the criteria, and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be completely ruled out.

- **POSSIBLE ABORIGINAL SCAR**

This is a scar which conforms to most of the criteria but where an Aboriginal origin would appear unlikely⁸.

For the purposes of the current study, on the advice of Allan Hutchins (DEC Western Region), only scars of the first two categories have been recorded as sites to be entered into the DEC ASR. As a general rule, the "Aboriginal scar" and "Probable Aboriginal scar" categories have been collapsed into one, called "Aboriginal scar".

Natural Mythological or Cultural / Ceremonial sites

Natural mythological sites can be any natural feature and like a cultural / spiritual are not detectable without the traditional knowledge of specific areas. Lindsey Moran from the BLALC is a keeper of such knowledge and was present in an effort to establish the presence of any such site type.