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Hume Highway Upgrade

Woomargama bypass

Environmental Assessment

Technical Paper 2 – Aboriginal Heritage

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Please note that some text and figures have been removed from the Aboriginal Cultural Heritage Assessment Report for reasons of confidentiality and/or privacy.



**HUME HIGHWAY TOWN BYPASS: WOOMARGAMA
ABORIGINAL CULTURAL HERITAGE
Cultural Heritage Assessment Report**

Prepared for Parsons Brinckerhoff on behalf of
the Roads and Traffic Authority of NSW (RTA)

Final Report
September 2009

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1 Introduction

1.1 Project Description

As part of the Hume Highway upgrade works to provide dual carriageway between Sydney and Melbourne, the Roads and Traffic Authority of New South Wales (RTA) proposes to construct a bypass of the town of Woomargama, NSW. The general location of the study area and proposed Woomargama bypass corridor is shown in Figure 1. The project would include the following key components:

- Approximately nine kilometres of dual carriageway.
- An at-grade intersection with the existing Hume Highway approximately 6.5 kilometres north of Woomargama village.
- Bridges over Sandy Creek.
- Six deep cuttings.
- Twin bridges over Mountain Creek.
- An at-grade intersection with the existing Hume Highway approximately two kilometres south of Woomargama village.
- An upgrade to the at-grade intersection at Fairbairn Road.

The project would be undulating and form an elongated curved alignment. It would lie to the west of Woomargama village at a maximum distance of approximately three kilometres from the existing Hume Highway.

At its northern extent, the project would tie-in to the existing Hume Highway. The project would continue south and gradually veer away, in a slight westerly direction, from the existing highway. At approximately 500 metres from the start of the project a new at-grade intersection would be constructed. This intersection would tie-in the project with the existing highway about 6.5 kilometres north of Woomargama village and would provide access to Woomargama village from the north.

The project would include bridges over at Sandy Creek. The project would continue in a westerly direction gradually ascending and traversing through the saddles of Mount McKenzie and would require three deep cuts on the ascent.

The project would then gradually descend in a southerly direction and pass through two further cuts. Still descending the project would travel adjacent to a drainage line.

Twin bridges would be constructed to enable the crossing of Mountain Creek and its floodplain. The project would continue travelling in a south-westerly direction.

A new at-grade intersection would be constructed approximately 900 metres south of Mountain Creek. This intersection would tie-in with the existing Hume Highway approximately two kilometres south of Woomargama village. This would provide access to the village from the south.

A final deep cut would then be required for the project. The project would include an upgrade of the intersection at Fairbairn Road. It would then tie-in to the new section of Hume Highway dual carriageway scheduled to be completed in December 2009.

The overall corridor width of the alignment would vary between 90 and approximately 100 metres, depending on environmental and design requirements.

The construction site boundary would include the bypass alignment and the following ancillary facilities and temporary works required for construction.

- two site compounds – one at each end of the bypass;
- satellite compound sites – approximately six satellite compounds are proposed along the alignment (within the corridor);
- concrete batching plants – up to three batch plants may be required to provide concrete for project construction;
- temporary sedimentation basins – numerous proposed along the alignment (some may remain permanently);
- storage and stockpile areas – numerous proposed along the alignment;
- haul roads, creek crossings and access roads – a major haul road would run along the length of the bypass, several minor roads will also be required. Two creek crossings are required over Mountain Creek and four crossings will be required over Sandy Creek; and
- cross-overs for traffic switches - at northern and southern ends of proposed bypass.

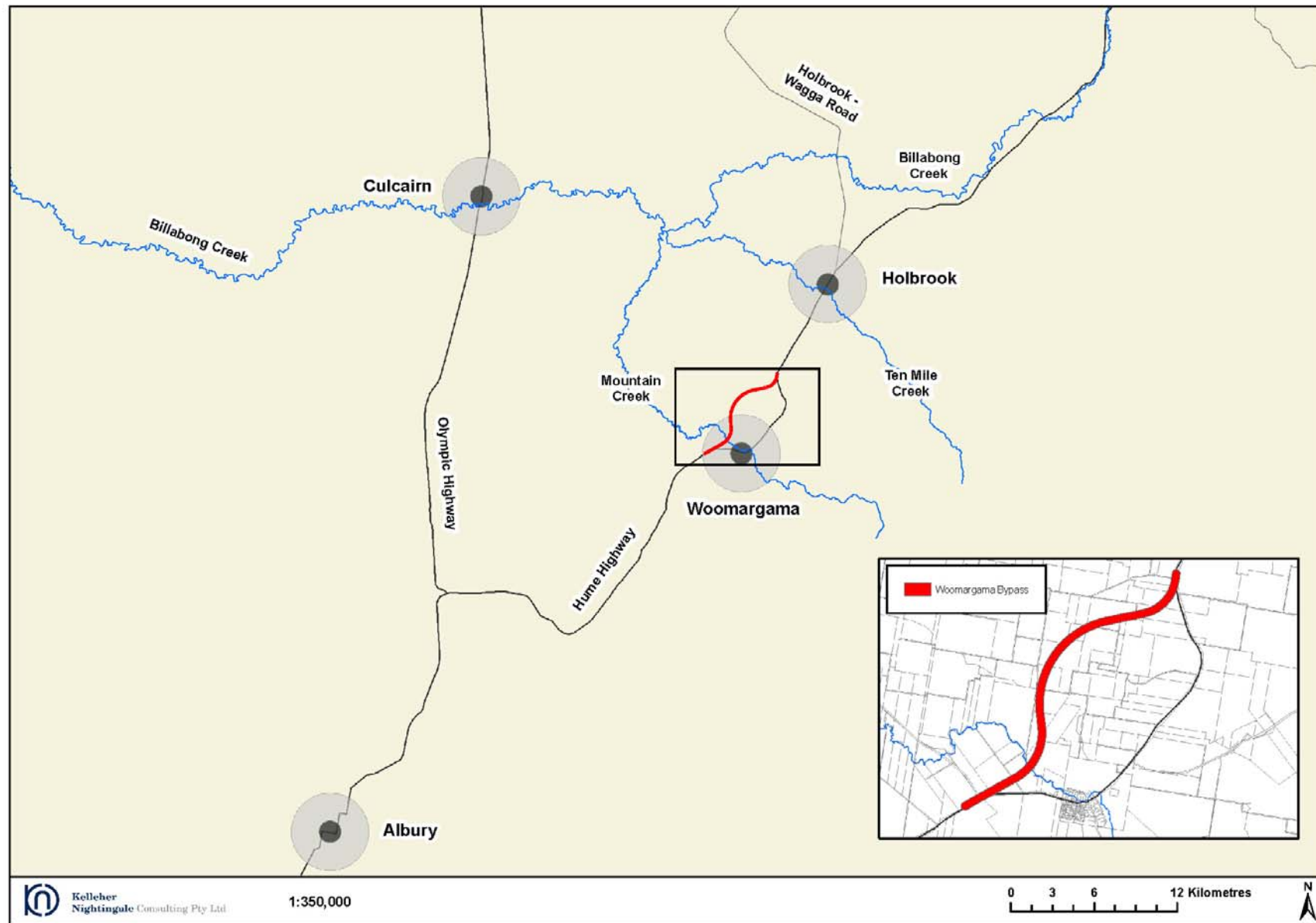


Figure 1. Study area location and bypass corridor

1.2 Scope of Environmental Assessment

An Environmental Assessment (EA) is being undertaken for the proposed bypass. Parsons Brinkerhoff (PB) has been appointed by the RTA to manage the EA process. Kelleher Nightingale Consulting Pty Ltd (KNC) has been engaged to undertake an Aboriginal cultural heritage assessment as part of the EA.

The bypass project is being assessed as a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). As such, the assessment is being undertaken in accordance with the draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC 2005) for Part 3A major projects and the RTA Procedure for Aboriginal Cultural Heritage Consultation and Investigation (RTA 2008).

As part of this process, a preliminary environmental assessment, including archaeological survey and cultural mapping of the Woomargama bypass corridor was undertaken. A number of cultural places, Aboriginal archaeological sites and areas of potential archaeological deposit (PAD) were identified during inspection of the bypass corridor. The assessment provided an understanding of the Aboriginal archaeological and cultural heritage sites and values of the proposed bypass.

The cultural and archaeological assessments have provided information to assess the potential impacts of the proposed bypass, refine the road alignment within the corridor to lessen potential impacts and identify appropriate mitigation measures where avoidance is not possible.

2 Study Objectives

The objectives of the integrated Aboriginal cultural heritage assessment were in accordance with the RTA Procedure for Aboriginal Cultural Heritage Consultation and Investigation.

The processes undertaken for the Preliminary Environmental Investigation and Environmental Assessment phases comply with the requirements of Stages 2, 3 and 4 of the procedure.

The results of the detailed consultation and assessment are integrated into this Cultural Heritage Assessment Report. The report comprises:

- a description of the location and scope of the proposed project, including ancillary works (section 1);
- description and map of the study area (section 1);
- details of Aboriginal stakeholder identification, consultation and participation in the cultural and archaeological assessments (section 3);
- description of the methodologies and results of the cultural and archaeological assessments (sections 4, 5 and 6);
- statement of significance, incorporating assessed cultural and archaeological values (section 7);
- an assessment of the potential impacts of the proposed bypass on identified cultural heritage values (section 8); and
- management and mitigation measures recommended for archaeological sites and cultural values identified through the assessment (section 9).

3 Aboriginal Stakeholder Consultation and Participation

The RTA is committed to effective consultation with Aboriginal communities regarding activities which may impact on Aboriginal cultural heritage. The RTA Procedure for Aboriginal Cultural Heritage Consultation and Investigation (RTA 2008) has been developed to provide a consistent means of effective consultation for RTA activities across NSW.

3.1 Stakeholder Identification and Consultation

The RTA has initiated Aboriginal stakeholder identification and consultation for the Woomargama bypass Environmental Assessment. The formal consultation process is being coordinated by PB, on behalf of the RTA, as project managers of the overall EA process.

The RTA advertised for Aboriginal stakeholders following the Department of Environment and Climate Change and Water (DECCW) Interim Community Consultation Requirements for Applicants (DEC 2004) and the RTA Procedure. Registered Aboriginal stakeholders have been consulted as part of the Aboriginal cultural heritage assessment. Registered stakeholders for the Woomargama bypass (based on the list as advised by PB) are listed in the table below.

Table 1. Registered Stakeholders

Group / Individual	Representative / Contact
Waagan Waagan Project Group	Robert Hampton
Albury and District Local Aboriginal Land Council	CEO
Wandoo Aboriginal Corporation	Muriel Hampton
Dean Bell	Individual
Colin Boyle	Individual
Douglas Connors	Individual
Kathy Williams	Individual
Jerrawa Freeman	Individual
Alice Williams	Individual
Lindsay Connolly	Individual
Shawn Williams	Individual
Beverly Herrington	Individual
Kevin Williams	Individual
Arinya Freeman	Individual
Donna Freeman	Individual
Muriel Williams	Individual
Vicky Parsley	Individual
Shirley Tidmarsh	Individual
Ronald Grovenor	Individual
Ramsay Freeman	Individual
Janice Considine	Individual
Margaret Williams	Individual
Neville Williams	Individual
Sharon Williams	Individual
Enid Clarke	Individual
Krystal Ingram	Individual
Norma Freeman	Individual
Keith Freeman	Individual
Margaret Berg	Individual
Calca Freeman	Individual
Enid Freeman	Individual
Jessica Berg	Individual
Shirley Marlowe	Individual
Wayne Williams	Individual

The formal consultation process has included:

- advertising for registered stakeholders in local and Indigenous media (refer Appendix A);
- notification of closing date for registration;
- Aboriginal Focus Group (AFG) meeting held at the Holbrook Community Technology Centre on Wednesday 20th February 2008, at which the results of the preliminary archaeological and Aboriginal cultural heritage assessments and methodology for Aboriginal cultural assessment were presented and discussed;
- AFG meeting held at the Holbrook Community Technology Centre on Thursday 27th August 2009, at which the results of the survey, methodology and Cultural Heritage Assessment Report (CHAR) were presented and discussed;
- ongoing compilation of registrants list, through continuing to register individuals and groups for consultation on the project; and
- ongoing consultation with the local Aboriginal community.

In addition, registered stakeholders have participated in the archaeological surface survey of the Woomargama bypass corridor. Aboriginal stakeholders were involved in each day of the survey program, which was carried out on 3rd, 4th, 10th, and 11th June 2009.

A copy of the draft CHAR was provided to Aboriginal stakeholders for review and comment. Over 21 days was provided to receive comments. No comments were received within the 21 day period. Verbal comments were received after the 21 day period. These comments and the RTA's response are documented in Appendix B.

3.2 Aboriginal Stakeholder Comments

Throughout the Aboriginal stakeholder consultation process and discussions on-site between stakeholders and archaeologists, it has been clearly identified that the study area has cultural heritage value to the local Aboriginal community. Some of the Aboriginal cultural heritage values expressed by stakeholders include:

- strong association with the land;
- responsibility to look after the land, including the heritage sites, plants and animals, creeks and the land itself;
- scarred trees;
- artefact sites and areas of potential;
- landscape features and areas of Aboriginal cultural value identified by knowledge holders around Woomargama;
- creek lines and elevated landforms;
- Indigenous plants and animals; and
- general concern for burials, as their locations are not always known and they can be found anywhere.

3.3 Aboriginal Knowledge Holder Identification

As part of the cultural assessment, registered Aboriginal stakeholders were invited to identify individuals they regarded as knowledge holders for the area. Identified knowledge holders would be invited to participate in the cultural assessment process. The methodology and results of the cultural assessment, as considered appropriate for incorporation into the CHAR, are outlined in the following section.

4 Aboriginal Cultural Assessment

4.1 Cultural Assessment Methodology

An assessment of the Aboriginal cultural heritage of the Woomargama bypass potential impact corridor has been undertaken as part of the overall assessment of Aboriginal heritage for the Environmental Assessment and a report has been prepared by Waters Consultancy (2009). The Aboriginal cultural assessment methodology was presented at the AFG in Holbrook on 20th February 2008.

The assessment identified locations of Aboriginal cultural value within the potential impact corridor as provided by the RTA.

The assessment involved consultation with Aboriginal knowledge holders as identified by the registered Aboriginal stakeholders for the Woomargama bypass project. Registered Aboriginal stakeholders were contacted directly by Waters Consultancy to discuss the current project, identify those individuals they regarded as knowledge holders for the area and to learn any additional relevant stakeholder concerns or issues. Stakeholders also identified knowledge holders during the Aboriginal Focus Group meeting.

As a result of this process, seven of the identified knowledge holders were spoken with to determine their willingness to participate in the assessment process through field surveys and interviews. Three knowledge holders were willing to be involved in the assessment through both interviews and field surveys. Of the remaining knowledge holders, one chose not to be involved and three were satisfied that the three who had indicated they would participate would provide sufficient information for the assessment.

As a result of the cultural assessment process, a total of five locations of specific Aboriginal cultural value were identified within the Woomargama Bypass potential impact corridor. [REDACTED]

4.2 Cultural Landscape

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4.3 Identified Cultural Places

[REDACTED]

[illegible]

5 Archaeological Assessment

The archaeological assessment for the Project was undertaken by KNC and comprised intensive survey and geomorphologic/landform assessment. This section outlines the results of the archaeological assessment. The information presented in this section offers an understanding of the archaeological resource potentially impacted by the Project and enables an informed archaeological impact assessment.

5.1 Archaeological Context

Archaeological surveys of the Woomargama area prior to the bypass program identified a range of archaeological features including scarred trees, isolated finds, artefact scatters and potential archaeological deposits (PAD) (Kelleher and Nightingale 2007a). In total six sites are listed for the immediate Woomargama area (5km radius from town) on the Aboriginal Heritage information Management System (AHIMS) prior to the current assessment. All six sites were identified during surveys for the Hume Highway Duplication Project and have been documented as part of the associated reporting process (see Kelleher and Nightingale 2007a; RTA 2007). These sites are listed in the table below. None of the previously identified sites will be impacted by the proposed bypass. All of the previously identified scarred trees are on the east side of the current Hume Highway.

Table 2. Previously recorded Aboriginal archaeological sites near Woomargama

Site Name	Site Type	AHIMS Number
M4	Isolated Find	56-4-0238
M5	Artefact Scatter	56-4-0239
M9	Scarred Tree	56-4-0243
M10	Scarred Tree	56-4-0244
M15	Scarred Tree	56-4-0249
M21 (formerly M-PAD-1)	Artefact Scatter	56 -4-0250

Among the identified archaeological sites, quartz is the most common raw material for flaked stone artefacts, with chert, silcrete and quartzite also being recorded. Artefact scatter sites are mostly located in well-drained, elevated areas associated with water courses, such as terraces above rivers or creek lines. Scarred trees occur across the landscape where old growth native woodland or trees remain, but are also most likely located near water.

One of the identified archaeological sites, M21 (originally identified as PAD), was excavated as part of the overall Hume Highway duplication (Kelleher and Nightingale 2007c). The site is located on a terrace at the crossing of Four Mile Creek (a tributary to Mountain Creek). Excavation results suggest a moderate to high level of Aboriginal occupation with over 100 artefacts per/m² with a total of c.14000 artefacts recovered.

Radiocarbon dating shows significant occupation and antiquity for the site with dates ranging between 2500 to 5000 years before present. M21, and possibly many of the sites around Woomargama, are related to an extensively used transitory route from the Billabong Catchment to the Mullengandra Catchment. The various creek systems (e.g. Four Mile, Mountain Creek, Sandy Creek) offer good camping/occupation locations along this transitory route for past Aboriginal people. Based on the excavation results from M21 we can expect a range of occupation areas along the proposed Woomargama bypass corridor, especially where it relates to the creek systems. Perhaps some of these sites will display a long and significant chronology as well as high densities of artefacts.

Survivability of artefacts is also expected to be high along the proposed bypass corridor as the geomorphologic assessment identified mainly intact deposit. The creek systems around Woomargama not surprisingly tend to be high energy systems resulting from high relative gradients where even in times of flood the water was directed through relatively narrow channels. The archaeological implication is that much of the cultural deposits along the edges of the creek systems have survived. Moreover, in locations where erosion was a less significant factor, such as across the slightly raised and level landforms (terrace-like formations), we can expect the survival of significant intact deposit (as resulted at M21).

5.2 Archaeological Survey

PB commissioned KNC to undertake an archaeological survey of the Woomargama bypass corridor. The survey around Woomargama was carried out on the 3rd, 4th, 10th and 11th June 2009. These surveys utilised the results of previous Hume Highway assessments (Kelleher and Nightingale 2007a, b, c) to assist the investigation process.

The methodology of the survey followed a standard approach and was consistent with the survey methodology employed for the Tarcutta and Holbrook bypasses and the Hume Highway Duplication Project. Two teams of archaeologists and Aboriginal community members undertook a pedestrian survey of the bypass corridor. 100% of the bypass corridor was assessed as well as areas identified as potential ancillary sites (e.g. site compounds, batch plants, haul roads).

Each team consisted of around 4-5 people. Digital and print maps showing the proposal and standard topographic maps were used for reference. Handheld GPS were used to register grid references. Areas of exposed ground such as tracks or eroded surfaces which provided good visibility formed the focus of the pedestrian survey (although all areas were assessed). Generally surface visibility was poor with a resulting low level of effective coverage.

Effective survey coverage along the Woomargama bypass survey area was low averaging c. 3-4%. This is predominately due to relatively high levels of grass or other vegetation covering the survey corridor. Ploughed fields offered good surface visibility, but their disturbed nature hindered artefact identification. Where surface visibility was high it was usually related to erosional or one off disturbance events (e.g. trenching, dam construction). Because of the poor surface visibility there is potential that Aboriginal archaeological sites if present were missed. The concept of PAD was thus used to identify places that are likely to be archaeologically significant. This significance is based on a series of assessments relating to: results of previous archaeological investigations, geology, soil type, erosion potential, stream order, proximity to water and land use.

As a result of the survey, a total of 25 Aboriginal archaeological sites and four PAD areas were identified within the proposed bypass corridor. (Each site is discussed in section 5.3). One previously identified site (M15) is included in the total as it is near the southern project boundary (the remaining previously identified sites (M4, M5, M9, M10, M21) are not included in the total as they are well outside of the proposed project boundary).

25 archaeological sites and four PAD have been identified within or near the Project boundary: 23 artefact scatters, one isolated find, one scarred tree and four PAD.

Table 3. All identified Aboriginal archaeological sites in the Woomargama bypass corridor

Site Name	Site Type	AHIMS Number
W1	Artefact Scatter	TBA
W2	Isolated Find	TBA
W3	Artefact Scatter	TBA
W4	Artefact Scatter	TBA
W5	Artefact Scatter	TBA
W6	Artefact Scatter	TBA
W7	Artefact Scatter	TBA
W8	Artefact Scatter	TBA
W9	Artefact Scatter	TBA
W10	Artefact Scatter	TBA
W11	Artefact Scatter	TBA
W12	Artefact Scatter	TBA
W13	Artefact Scatter	TBA
W14	Artefact Scatter	TBA
W15	Artefact Scatter	TBA
W16	Artefact Scatter	TBA
W17	Artefact Scatter	TBA
W18	Artefact Scatter	TBA
W19	Artefact Scatter	TBA
W20	Artefact Scatter	TBA
W21	Artefact Scatter	TBA
W22	Artefact Scatter	TBA
W23	Artefact Scatter	TBA
W24	Artefact Scatter	TBA
W-PAD-1	PAD	

Site Name	Site Type	AHIMS Number
W-PAD-2	PAD	
W-PAD-3	PAD	
W-PAD-4	PAD	
M15	Scarred Tree	56-4-0249

Artefact scatters were generally identified where surface visibility was high; such as where large surfaces have eroded along the margins of slopes or in disturbed area (e.g. along tracks, drainage lines, agricultural works). The highest density scatter was W6 where erosion prone soils combined with elevated level ground near a creek to exhibit over 100 artefacts. Quartz was the dominant raw material representing 97% of all artefacts. Quartz was found in all parts of the study area, but preference for flaked pieces was given to 'higher quality' minerals which exhibited few internal fractures and a crystalline structure (in other words people were being selective in the precise minerals being chosen for flaking). Consistent with previous studies, around 10%-15% of all artefacts displayed some level of retouching suggesting more selective knapping (and perhaps some curatorial action) was taking place as opposed to the more common 'use and discard' often associated with quartz artefacts (Kelleher 2003). Notably, several artefacts of chert and quartzite were also found within sites near Sandy Creek, especially W4, indicating that high quality materials did occur with the study area.

Figures 2, 3 and 4 show the locations of archaeological sites and cultural features within the study area.

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Figure 2. Aboriginal cultural places, Aboriginal sites and PAD (north portion)

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Figure 3. Aboriginal cultural places, Aboriginal sites and PAD (middle portion)

Figure deleted from public document.

Figure 4. Aboriginal cultural places, Aboriginal sites and PAD (south portion)

5.3 Archaeological Sites

W1

Site W1 consisted of a scatter of seven artefacts across a broad, gently sloping lower slope context bordering the eastern margin of an ephemeral 1st order tributary of Sandy Creek. Sandy Creek was located approximately 170 m west of site W1. The site was located on the western side of the Hume Highway and approximately 5.7 km north of Woomargama. The artefacts were identified on an exposure along the western side of a fence line. The Hume Highway easement and a large RTA stockpile were located on the eastern side of the fence. The exposure measured up to 3.5 m wide and was present along the majority of the fence line within site W1 – approximately 400 m. To the west of the exposure was a cleared, grassed pastoral paddock with 0% surface visibility. Artefacts include seven quartz flakes and flake fragments. The soils of the site are a mixture of degrading granites and young alluvial deposit all exhibiting good artefact retention.



Plate 1. W1 scatter along fence line.

W2

Site W2 consisted of a single artefact identified eroding out of the creek bank at the convergence of Sandy Creek and a 1st order tributary. The creek lines were well incised at this location, with the creek banks approximately 4m high. Surface visibility across the area was less than 5%, with the main areas of visibility limited to vertical to very steep exposures on the creek bank. Site W2 incorporated the location of the artefact on the creek bank and the flat area to the south, covering an area of 100m north-south and 60m east-west. Vegetation across site W2 primarily consisted of dense exotic grasses, with occasional yellow box to across the southern portion of the site. An optic fibre cable marker pole (# H 65W) and manhole were located towards the centre of site W2. The site is located on grey sodosols (low slope deposit) that has been incised by the creek.

The artefact was a quartzite flake measuring 28mm x 27mm x 7mm. Attributes included a plain platform, three dorsal scars, feather termination.



Plate 2. W2 quartzite flake artefact found in the deposit along Sandy Creek.

W3

Site W3 consisted of an artefact scatter on a broad, gently sloping lower slope context bordering the eastern margin of Sandy Creek. The lower slope landform was dissected to the east by an ephemeral 1st order tributary, creating a small rise. The site was located across two adjoining paddocks – the southern paddock was ploughed with 10 – 30% surface visibility, whilst the northern paddock was pastoral with dense grass and less than 5% surface visibility. Site W3 measured 340m north-south and 115m east-west. Two artefacts were identified. Remnant vegetation included isolated river red gums. Geomorphology of the site is similar to W1. Archaeologically the site is of high value due to its location on a raised terrace-slope and proximity to Sandy Creek.

W4

Site W4 consisted of a scatter of stone artefacts across a creek bank and creek flat context on the eastern margin of Sandy Creek. Sandy Creek was quite deeply incised at this location, with creek banks between 4 – 5m high. The artefacts were identified across a series of surface exposures towards the centre of site W4 associated with cattle tracks, erosion scours and a vehicle track and ford crossing of Sandy Creek. The site extended to incorporate the comparable landform within an area 35 – 40m along approximately 350m of the eastern margin of Sandy Creek where surface visibility was much lower (less than 20%). The site displays some young alluvium which probably is the reason for the more extensive range of identified raw materials. W4 is related to a complex of high value archaeological sites (e.g. W6, W7) following Sandy Creek.



Plate 3. W4 recording a range of artefacts at the crossing along Sandy Creek.



Plate 4. W5 main artefact scatter looking east with W1, W-PAD-1 and W4 in the distance.

W5

Site W5 consisted of a scatter of artefacts across a gently sloping spur crest overlooking Sandy Creek. The spur was a well defined landform with moderate to steep side slopes that ran east from a local highpoint. Vegetation across the site consisted of dense grass cover and a hedge row that ran along the fence line on the eastern upper to mid slopes of the spur. Site W5 covered an area of 660m east-west and 190m north south. Two artefacts were recorded near the western granite outcrops, one artefact was identified on a cattle track exposure near the spur, whilst the remaining artefacts were identified on a large 20m x 20m cattle trampling exposure around a gate at the western end of the hedge row. Frequent natural fractured quartz was also observed across the gate surface exposure. The site may reflect opportunistic knapping. Surface visibility across these exposures was between 50 – 80%, whilst surface exposure across the remainder of W5 was less than 10%. One recorded artefact at site W5 was a quartz bipolar core / retouched flake measuring 24mm x 24mm x 9mm.

W6

Site W6 consisted of an extensive scatter of over 100 stone artefacts across the mid slopes and spur lines associated with a local high point. The site extended north from the homestead to Sandy Creek and a 2nd order tributary. The site covered an area of approximately 500m north-south and 180m east-west. Site W6 predominantly consisted of a grassed pastoral paddock, with the exception being an existing property access road and various farm buildings within the southern portion of the site. Besides various trees and shrubs surrounding the homestead, vegetation within the site was largely cleared with occasional eucalypts across the paddock and bordering Sandy Creek. Surface visibility across site W6 was less than 15%, with localised disturbance in some parts – including the homestead, access road and a shallow, excavated hole in the middle of the paddock. At least 100 artefacts were counted across the surface of site W6 of which eighteen artefacts were recorded. Eight of these artefacts were recorded across the spur crest bordering Sandy Creek in the eastern portion of the site, two were recorded on a smaller spur crest immediately northwest of the homestead and a further ten artefacts were identified on a sheet eroded exposure at a gate 330m west of the homestead.

The site has only limited impacts from erosion and represents good soil integrity. The fan slopes of degrading granite underline good artefact retention (similar to Yellow Creek and Kyeamba Creek) and the proximity to alluvial deposits in the nearby creek underscore the prevalent resources near the site.



Plate 5. W6 looking north across the terrace towards Sandy Creek.

W7

This site is located at the confluence of Sandy Creek and a 2nd order tributary. The soils of the site reflect the surrounding geology with granite fans mixing with young to recent alluvial soils. The site covers an area of around 100m x 150m. Archaeologically W7 is part of a complex of sites along the creek including W4, W5, W6 and W8. The site exhibits good overall integrity however there are pockets of notable disturbance. Quartz artefacts were recorded in several exposures across the site, but predominately along the creek and drainage channel.

W8

Site W8 consisted of a scatter of artefacts across a broad, gently sloping lower slope and creek bank context. The site bordered the southern margin of a 2nd order tributary of Sandy Creek. To the north of the tributary was the moderate to steep slopes of a spur (W5) leading east to Sandy Creek. Site soils were similar to W7, although lesser alluvium. Surface visibility across site W8 was limited to a vehicle/cattle track exposure along a fence line and exposures along the creek bank. The remainder of the area was covered by dense grass with surface visibility less than 5%. Surface visibility along the 1m wide vehicle/cattle track ranged between 50 – 80%. One artefact was identified at the base of the creek bank and three artefacts were identified along the vehicle/cattle track.



Plate 6. Sandy Creek archaeological sites.

W9

W9 is an artefact scatter located above a 1st order tributary of Sandy Creek. The site extends for approximately 600m along a slightly raised surface between two drainage channels. The site is part of a complex of sites along the creek system (e.g. W10, W8, W7, W6). Surface exposure is limited to cattle tracks and eroded edges along the tributary. Quartz artefacts were recorded at two locations; one west near the current farm track and one along a bend in the drainage channel. Exposures highlighted older grey sodosols at the edges of the colluvial fan.

W10

Site W10 covered a narrow, gently sloping spur bordered by two 1st order tributaries of Sandy Creek. To the west and east of the 1st order tributaries bordering site W10 were sites W11 and W9 respectively. Each of these three sites was located in a similar landform context – spurs located in lower slope contexts with site margins defined by incised 1st order tributaries of Sandy Creek. Site W10 covered an area of approximately 500m north-south and 100m east-west. Vegetation across the site consisted of occasional trees along the creek lines, including apple box and willow trees. Surface exposures were limited to occasional cattle tracks, an exposure beneath an apple box tree, where four artefacts were identified, and occasional exposure along

the creek banks. Surface visibility across the remainder of site W10 was less than 5%. The exposure beneath the apple box tree measured 7m x 4m.



Plate 7. Archaeological sites W9, W10 and W11 along incised 1st order tributary to Sandy Creek.

W11

Site W11 covered a narrow, gently sloping spur bordered by two 1st order tributaries of Sandy Creek. The site was located 15m west of site W10 – the two sites separated by a 1st order drainage channel. To the northwest of site W11 was a flat, swampy area covered in sedges backing on to a dam fed by another 1st order drainage channel. Surface visibility across site W11 was limited to occasional vehicle track exposures and an exposure along the southern margin of the dam. Surface visibility across the spur crest was 20 – 50%, whilst surface viability across the exposure bordering the dam was 50%. The site measured approximately 260m southwest-northeast and 140m southeast-northwest. One artefact was identified on the spur crest, one next to a gate bordering the southeast corner of the dam, and three were identified along the southern margin of the dam.

W12

This site was situated on an arm of a relatively flat end of slope extending off a prominent granite hill top (W14). Three small finely backed quartz artefacts were recorded in this location, including one geometric microlith. The site offers a view down the valley towards Sandy Creek and is located along a track heading up to a western gap in the surrounding hills. A collection of backed artefacts found in an open context is somewhat rare for the Woomargama area. The site is situated at the interface of granite and sandy deposit. Granite deposit often moves in sheet erosion which could explain the surviving artefacts.

W13

W13 is the 'little brother' site of W12 and is located on a minor sheet eroded rise. Three quartz artefacts of poor quality quartz were recorded during field survey. The site has been impacted by a drainage channel and sheet erosion.

W14

This site was located within the saddle of a granite hill overlooking Sandy Creek to the east and Native Dog Creek to the west. The saddle offers excellent vistas and is relatively sheltered from the prevailing winds. A collection of crystalline quartz artefacts was recorded at W14. [REDACTED]

W15

Site W15 was located in a lower slope context bordering the southern margin of a 1st order drainage channel for Native Dog Creek. A vehicle track cuts through middle of the site. On the northern side of the track was a cleared, grassed area with a small fenced off area containing an older water tank, power pole, a shed, various shrubs and a large yellow box bordering the drainage channel. To the south of the road was a ploughed paddock. Immediately bordering the southern margin of the road was a long, c.1m high spoil pile. The spoil appeared to have derived from a local context – most likely originating from earthworks along the vehicle track. Surface visibility across site W15 was predominantly along the vehicle track and associated spoil pile, where three artefacts were identified. Numerous fragments of naturally shattered quartz were also observed. Soils are colluvial and exhibit a high percentage of natural quartz/quartz crystal.



Plate 8. W14 and W15 looking east into a 1st order tributary system of Native Dog Creek.

W16

Site W16 was located across a lower colluvial slope/spur context overlooking a 2nd order tributary of Mountain Creek. The higher, eastern portion of the site consisted of the lower slopes of higher terrain immediately to the east (Mount McKenzie). A 1st order drainage channel and dam were located along the northern margin of the site. The lower, western portion of the site splits into two low-lying spurs divided by a 1st order drainage channel. The ephemeral 1st order drainage channel across the lower slope landform flowed west towards a 2nd order creek. The 2nd order creek flowed south along the western margin site W16 towards Mountain Creek. Areas of good surface visibility across site W16 were limited to cattle tracks where surface visibility was as high as 80%. Surface visibility across the remaining heavily grassed sections of the site was less than 5%. The site measured approximately 300m north-south and 400m east-west. Three artefacts were identified on a cattle track within 20m of the dam, and a further ten artefacts were identified on a cattle track across the spur crest in the south-western portion of the site.



Plate 9. W16 looking south across the spur crest.

W17

Site W17 was located in a colluvial lower slope/creek bank context bordering the eastern margin of a 2nd order tributary of Mountain Creek. The site consisted of a pastoral paddock with occasional yellow box trees. Site W17 measured approximately 40m north-south and 140m east-west. Surface visibility was mainly confined to cattle tracks across the site, with sheet wash enlarging sections of the cattle track that ran parallel with the 2nd order creek. Surface visibility in these contexts was up to 80%, whilst across the remainder of the site it was generally lower than 5%. Five artefacts were identified in an enlarged, 3m x 10m cattle track exposure. The archaeological value of the area has been limited by a series of high energy erosion events that have cut into the deposit.



Plate 10. Part of W17 showing a recorded artefact location amongst the many disturbed cuttings.

W18

W18 is a series of terrace-sequenced deposits on the northeast side of Mountain Creek. Three well defined sequences were recorded during the survey. Site W18 measured approximately 600m north-south and 230m east-west. The site was part of a large, pastoral paddock, with surface visibility limited to cattle and vehicle tracks. These exposures were concentrated around the large dam on the northern margin of the site where ten artefacts were identified and surface visibility was up to 80%. Surface visibility across the remainder of the site was generally less than 5%. The location has optimal access to resources from the creek and nearby drainage channel. The deposit appears to be just above the high intensity floodplain which suggests good artefact survivability. Similar terrace deposits have yielded high artefact frequencies and antiquity at the nearby M21.



Plate 11. W18 looking east across the terrace system.



Plate 12. Artefacts found eroding out of an agricultural bund at W19.

W19

Site W19 was located across a moderately raised portion of land (creek flat) bordering the western margin of Mountain Creek. The terrace landform was flat to gently undulating and raised approximately 2m above the creek flats (just outside of the primary floodplain). An artificial 10m wide drainage ditch on an east-west axis had been cut through the terrace to the creek bank. The grassy pastoral paddock was cleared of vegetation, whilst a stand of large eucalypts were clustered on the creek flats in the eastern portion of the site. The site measured approximately 100m east-west and 100m north-south. Surface visibility was generally low across the site, with the largest exposures located along the banks of the artificial drainage ditch. Across one of these exposures measuring approximately 1.5m wide and 15m long four artefacts were identified. The site is bounded by two very broad drainage channels extending from higher ground to the south. The site occupies the junction of colluvial-alluvium and displays good integrity.

W20

Site W20 was located across creek bank landforms overlooking Mountain Creek to the north and bordered to the east by a large dam fed by a 1st order creek (drainage channel). The site is situated at the interface of a colluvial-alluvial deposit. The site consisted mainly of a cleared, ploughed paddock, the only trees consisted of tree plantings within an electric fence enclosure bordering the western margin of the dam. The terrace landform was raised approximately 2m above the creek flats to the north. Surface visibility across the site was between 10 – 30%, with some surface exposure between the rows of sown crops and larger areas of surface exposure in areas of slight surface disturbance. Three artefacts were identified at site W20 – one identified next to the electric fence and two 20m to the west. W20 and W19 are separated by a shallow broad drainage channel.



Plate 13. Archaeological complex W20-W23 along Mountain Creek looking north from W24.

W21

Site W21 consisted of two artefacts identified on a dam wall overlooking Mountain Creek. The dam was fed by an ephemeral 1st order tributary of Mountain Creek. The dam wall was constructed between a raised terrace to the west (sites W19 and W20), and the northern termination of a spur to the east (site W23). The dam wall was raised approximately 2m above the creek flats bordering Mountain Creek. The artefacts are likely not in situ and have been disturbed during the construction of the dam.

W22

Site W22 consisted of two artefacts identified in an ephemeral drainage line washout. The drainage line was a 1st order tributary of Mountain Creek, which was located approximately 400m to the northeast. The washout was bordered to the east and west by spur lines, with the spur to the west steeper and higher (site W24) than the low-lying spur to the east (site W23). The surrounding area was cleared of vegetation apart from one large yellow box located approximately 35m southwest of the washout. The remaining area consisted of recently sewn crops. The washout was approximately 40m long, 8m wide and up to 70cm deep. The site is disturbed and the artefacts located in the washout are not in situ.



Plate 14. Sites W24 (hill top) and W22 showing the eroded drainage channel.

W23

Site W23 consisted of an artefact scatter located across a colluvial derived gentle rise emanating from hills south of the current Hume Highway. The spur sloped gently down to the north to Mountain Creek, and was bordered by two ephemeral 1st order tributaries. A homestead was located at the north-eastern termination of the spur, overlooking Mountain Creek. The vehicle access track for the homestead ran along the eastern margin of the spur, 40 m east of site W23. The site covered the higher, southern portion of the spur bordering the Hume Highway. The site was located across a recently sewn ploughed paddock. Surface visibility across most of the site was between 10 – 20%. Surface visibility was highest, up to 80%, along an exposure bordering the fence line across the southern boundary of the paddock. The exposure was likely to be associated with an underground utilities trench that ran beside the fence line, indicated by a call sign post on the northern side of the fence. A total of six artefacts were identified along the fence line surface exposure. The site mirrors the deposit at M21.

W24

Site W24 consisted of an extensive scatter of artefacts across the crest and slopes of a spur overlooking Mountain Creek. W24 is a large collection of quartz artefacts located on metasedimentary rock which merge with colluvial (metasediments) on the lower slope. The metasedimentary formation is known for sheet erosion and the recorded artefacts are likely in a relative original position (or moved enmass). Other similar locations have revealed high value archaeology (Tarcutta T6). W24 was located on the northern side of the Hume Highway, bordering the north-eastern side of the homestead access road. The site was located across a recently sewn ploughed paddock. The crest of the spur undulated slightly, with the southern portion of the site located on a highpoint. A line of large eucalypts was located along the southern side of the paddock boundary fence, stretching from the Hume Highway north to the homestead. Surface exposures were concentrated along the crest of the spur bordering a fence line along the southern boundary of the paddock, and across a contour bank located across the mid – lower slopes of the spur. Surface visibility along the fence line was up to 80%, whilst along the contour bank visibility was 50%. Surface visibility across the remainder of the site was between 0 – 10%. The site measured approximately 360m north-south and 250m east-west. Nine artefacts were identified along the fence line surface exposures, and fourteen were identified along the contour bank.



Plate 15. W23 located along fence line with site W24 on the hill top in the distance.



Plate 16. Selection of quartz artefacts from W24.

W-PAD-1

This area of potential is located on the northern slopes of granite hill overlooking Sandy Creek and is bounded to the north by a 1st order tributary to Sandy Creek. The area is predominately a cleared agricultural paddock. Several relatively level 'benches' similar to W5 were noted during field survey. The surrounding archaeological sites, elevation, soil structure, and proximity to Sandy Creek all mark this area as exhibiting high archaeological potential. In particular the interface of colluvial slope, podzolic soils and younger alluvium indicate good artefact survivability but more importantly underscore the 'junction point' aspect of the location. High archaeological significance is usually associated with such junction points.

W-PAD-2

This area of potential is located at the headwaters of Native Dog Creek. The PAD is a lower hillslope extending west from Mount McKenzie. Large trees cover a portion of the PAD and seem to have limited the colluvial movement of the high ground. The area was identified based on the geomorphology of the hillslope and proximity to the creek. A significant archaeological complex is located in the adjoining southern valley (drainage channel to Mountain Creek).

W-PAD-3

W-PAD-3 is spatially related to W18. The PAD represents the high colluvial ground associated with the alluvial site W18 and possibly functioned as a secondary occupation area (raised ground extending to the south). The site has some colluvial disturbance but otherwise exhibits good overall geomorphic integrity.

W-PAD-4

This area of potential is located in a saddle of a hill at the southern end of the alignment. The hill is a metasedimentary landform situated around 400m south of the Mountain Creek floodplain. The location offers a good connection between Mountain Creek and Mullengandra Creek systems. The sheet erosion associated with the hill's geomorphology is conducive for artefact survivability. Similar landforms at Yellow Creek have yielded significant chronology and archaeological information.

M15 (56-4-0249)

This scarred tree is located on the east side of the current Hume Highway outside but near the southern end of the bypass project boundary. The tree is a Blakely's Red Gum with an oval scar. The tree was identified during surveys for the Hume Highway Duplication Project (see Kelleher and Nightingale 2007a).



Plate 17. W-PAD-1 looking from the top of site W5 with W1, W3 and Sandy Creek in the distance.



Plate 18. W-PAD-2 looking south into the Native Dog Creek catchment.

6 Woomargama Archaeological Summary

Woomargama's archaeological story is about understanding force. Woomargama's archaeology is characterised by two competing forces: environmental forces and sociocultural forces. Moreover, the unique quality of Woomargama's archaeology is tied into its many physical opposites, the extremes between elevation, water scarcity and aesthetics. The main environmental thrust is the basic topography and how it naturally directs the movements through the land and how it pools past people's perception of place. In this regard people are responding in a logical manner to the environment in which they live, and by studying and understanding the interaction between landforms and people we in effect are able to study the archaeological past. Classic examples are the dense clustering of sites around important and logical resources such as the elevated ground found near creeks. People, however, are not mere pawns of the environment. True their choices are directed by their surroundings, but the interpretation of these surrounding are dependent on perceptions, that is, what people think about their cosmos influences their actions. Some sites around Woomargama, such as those located in inhospitable locations are clearly demonstrating a sociocultural response to the environment. Woomargama's archaeology follows this dualistic archaeological pattern with the location of sites showing both an environmental and sociocultural origin. Because of its physical setting, the investigation of Woomargama's archaeology is uniquely placed to investigate the inherent dualities of the archaeological record.

The archaeological survey of Woomargama identified 25 archaeological sites and four PAD within or very near to the project clearing area. The majority of sites are located in association with the major creeks of Sandy Creek and Mountain Creek. 11 sites are connected to Sandy Creek and seven sites connected to Mountain Creek. This close association between archaeology and high order creek systems shows, not surprisingly, how important water was to activity. The results of the survey underscore the fact that the better the resource the greater the archaeological frequency and density. Some of these sites such as W1, W3, W6 and W18 are areas of classic archaeological structure. These sites are the backbone of Woomargama's archaeology: each has evidence for significant use/reuse and each has the potential to exhibit long term deposition. W18 in particular is a colluvial fan/alluvial terrace soil matrix which shows exciting time depth.

The archaeological survey also identified sites in more marginal environmental context. Sites W5, W12, W14 and W24 represent places where perceptions of place are possibly outweighing the environmental benefits. In these locations we find a more select array of artefacts combining with aesthetic values. Investigations at these sites will offer insights into our cognitive modelling of the Aboriginal world. Similar investigations along the Table Top corridor have been exceedingly useful in demonstrating a cultural continuum, whereby we are able to archaeologically reconstruct the cultural interplay between sites and show with a strong degree of certainty how Aboriginal people used and perceived the land at Table Top. It will be possible to achieve a similar outcome for the archaeology of Woomargama.

Sites such as W15, W17 and W18 offer insights into the middle ground, they are the connectors. In many ways Woomargama itself is a large archaeological connector linking sites from the Billabong Creek System with Mullengandra/Table Top. The cultural information also seems to stress the connector idea. It is tempting to argue that Woomargama is simply a connector and leave the interpretation at that point, however the many dualities within the archaeology and landscape of Woomargama suggest such a simple interpretation may be missing much significant information.

Woomargama's dualistic archaeology is a somewhat rare event. The natural topography underscores the opposition in the environmental/sociocultural paradigm. When do social forces outweigh the requirements of the environment and vice versa? By understanding the specifics of Woomargama's archaeology we move towards a better understanding of archaeology itself. This increase in knowledge cannot help but bring the at times mysterious Aboriginal cosmos closer to our current perception of the world, or perhaps it may be more apropos for the reverse.

7 Significance Assessment

7.1 Significance Assessment Criteria

One of the important primary steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984, Pearson and Sullivan 1995:7). The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long-term outcomes for future generations as the nature of what is conserved and why, also changes over time.

Significance assessment can generally be described under three broad headings (Pearson and Sullivan 1995:7):

- value to groups such as Aboriginal communities;
- value to scientists and other information gatherers; and
- value to the general public in the context of regional, state and national heritage.

Professional guidelines for the assessment of significance (NPWS 1997) discuss two types of significance relevant to the assessment of Aboriginal sites: social significance and archaeological significance.

Cultural / Social Significance

This area of assessment concerns the value/s of a place, feature or site to a particular community group, in this case the local Aboriginal community. Aspects of social significance are relevant to sites, objects and landscapes that are important or have become important to the local Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites generally and their continued protection. Aboriginal cultural significance may include social, spiritual, historic and archaeological values.

In this document cultural significance is given a relative ranking of Very High, High, Medium or Low. This ranking has been developed in consultation with key knowledge holders. All listed places hold Aboriginal cultural heritage significance and the relative ranking is designed only to assist future planning.

Scientific / Archaeological Significance

For archaeologists, scientific significance refers to the potential of a site to contribute to current research questions. Alternately, a site may be an in situ repository of demonstrably important information, for example rare artefacts of unusually high antiquity.

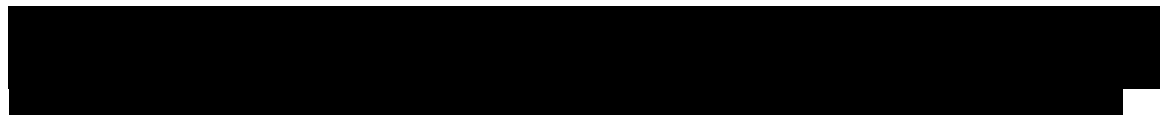
Scientific significance is assessed using criteria to evaluate the contents of a site, state of preservation, integrity of deposits, representativeness of the site type, rarity/uniqueness and potential to answer research questions on past human behaviour (NPWS 1997). DECCW guidelines recommended criteria for assessing archaeological significance include:

- Archaeological Research Potential - significance may be based on the potential of a site or landscape to explain past human behaviour and can incorporate the intactness, stratigraphic integrity or state of preservation of a site, the association of the site to other sites in the region (connectivity), or a datable chronology;
- Representativeness - all sites are representative of those in their class (site type/subtype) however the issue here relates to whether particular sites should be conserved to ensure a representative sample of the archaeological record is retained. Representativeness is based on an understanding of the regional archaeological context in terms of site variability in and around the study area, the resources already conserved and the relationship of sites across the landscape; and
- Rarity – which defines how distinctive a site may be, based on an understanding of what is unique in the archaeological record and consideration of key archaeological research questions (i.e. some sites are considered more important due to their ability to provide certain information). It may be assessed at local, regional, state and national levels.

High significance is usually attributed to sites which are so rare or unique that the loss of the site would affect our ability to understand an aspect of past Aboriginal use/occupation of an area. In some cases a site may be considered highly significant because it is now rare due to destruction of the archaeological record through development. Moderate/Medium significance is attributed to sites which provide information on an established research question. Low significance is attributed to sites which cannot contribute new information about past Aboriginal use/occupation of an area. This may be due to site disturbance or the nature of the site's contents.

7.2 Significance of Aboriginal Sites

On the basis of discussions with the knowledge holders, the identified cultural places around Woomargama have been assessed in terms of their cultural significance (Waters Consultancy 2009). All listed places hold Aboriginal cultural heritage significance. However, the cultural significance of the places was ranked through discussions with the relevant knowledge holder/s relative to the current proposal, to assist in future planning.



In addition to the assessment of identified cultural places, on-site discussions with Aboriginal stakeholders has revealed a strong attachment to the area and identified that all archaeological sites, whether an isolated artefact or a larger scatter of artefacts, scarred tree or area of archaeological potential, are highly significant to them. They are evidence of their forebears who lived in this land. They have been entrusted with their protection. Scarred trees appear to have a particular sensitivity. On the basis of this, all the recorded archaeological sites are considered to be of high cultural or social significance.

The scientific significance of the recorded Aboriginal archaeological sites ranges in significance from low to high, with the majority having been assessed as being of moderate to high significance. This assessment is based on a consideration of the research potential, connectivity (association with other sites), representativeness and rarity, in accordance with DECCW guidelines (NPWS 1997). The general level of moderate to high significance is predominantly driven by the fact that all the recorded sites are considered rare in a local and regional context. That is, these sites are rare, not necessarily on the basis of site type, but because there is very little known of the archaeology of the locality and region in which they occur. For a similar reason, they can generally be considered representative. Their research potential differs, as this has been affected by the condition of the site (i.e. the more disturbed a site context is, the less research potential it has).

The integration of the cultural and archaeological information has led to an assessment of the whole bypass area being of high Aboriginal cultural heritage significance.

The proposed bypass project offers an opportunity for a positive conservation outcome for Aboriginal heritage. Early consideration of Aboriginal cultural heritage, especially cultural information, has led to a design which takes into consideration identified cultural places and archaeological sites. Changes to the road design have been made to avoid some cultural sites, especially sensitive cultural areas, and to minimise (where possible) the impacts at other locations. Although it will not be possible to avoid all sites, the remaining features are significant. The value of these features is enhanced by their physical connections which can be interpreted as a landscape microcontinuum (e.g. creek banks – terrace – slopes – hilltops extending over a handful of kilometres). In many ways the area functioned as a 'highway' of past peoples connecting people with places along the creek systems. Information obtained through the proposed salvaging of artefacts at key locations along this continuum (highway) will greatly enhance our cultural and archaeological understanding of the area and allow for significant interpretation of past events within this Wiradjuri cultural zone.

8 Impact Assessment and Mitigation Strategies

All identified Aboriginal cultural places and archaeological sites recorded within or near the Woomargama bypass are being considered by the RTA in relation to the proposed road construction and associated activities. Where significant sites or places were identified, where possible the design has been modified to avoid or limit the impact to the identified cultural places and archaeological sites. For example, early input by knowledge holders greatly assisted route selection to limit the potential impact on significant cultural places (KNC 2008). Some level of impact is unfortunately unavoidable for such a large road project. Best practice is to try to limit most impacts and, where appropriate, mitigate impacts.

No cultural places would be impacted by the Woomargama bypass; however, despite the RTA's attempts to limit all impacts, a number of identified archaeological places would still be impacted by the Woomargama bypass. A conservation and mitigation strategy therefore is required and has been provided in Table 4. For cultural places, this is based on the impacts and recommendations documented in the cultural assessment report (Waters Consultancy 2009). For archaeological sites, this is based on consideration of both the surface survey and previous excavation results.

Although several archaeological sites would be impacted according to the concept design, in most cases the impacts amount to only a relatively small portion of the actual site or place. Overall, it can be argued that this represents a positive outcome for Aboriginal heritage. In this light, the Woomargama bypass is an opportunity for increasing our understanding, strengthening our interpretation and bettering our recognition of Aboriginal culture and heritage within an area where little previous documented information exists.

8.1 Impacts

No cultural places would be impacted by the Woomargama bypass. To ensure against inadvertent impacts the locations of these cultural places would be identified in the construction environmental management plan. Fencing may be required, where places are within the construction site boundary.

Of the 25 archaeological sites, 9 would not be impacted and 16 sites would be at least partially impacted by road works as shown in the concept design. Of the four PAD locations two are impacted and two are not impacted by road works as shown in the concept design. All sites (and portions of sites) not impacted would be identified in the construction environmental management plan to ensure the highest level of protection. Specific mitigation strategies for each site are outlined in Table 4.

Table 4 below provides the site reference number, site type, a brief description, significance, impact and mitigation strategies for each identified cultural place and archaeological site identified along the Woomargama bypass. For simplicity, impacts are colour coded according to the key below.

Key

Impact Assessment	Impact Colour Coding
No Impact	Green
Would be impacted	Pink

Table 4. Impacts and Mitigation for Woomargama Bypass

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
Identified Aboriginal Cultural Place					
Place 1	[REDACTED]	[REDACTED]	Very High	No impact	The knowledge holders request that barrier fencing be erected around the [REDACTED] element of this place. [REDACTED] No signage identifying the area as having Aboriginal cultural significance to be erected, signage stating 'Significant Environmental Area – No Entry Permitted' acceptable. Any future work in this area, deviation from the current concept design (as shown in this report), or potential impact [REDACTED] would require further consultation with the knowledge holders.
Place 2	[REDACTED]	[REDACTED]	Very High	No impact	Any future work in this area would require further consultation with knowledge holder. The knowledge holder considers that there is no acceptable level of impact on the place due to its very high level of cultural significance.
Place 3	[REDACTED]	[REDACTED]	High	No impact	Any future work in this area would require further consultation with knowledge holder. The knowledge holder considers that there is no acceptable level of impact on the place due to its high level of cultural significance.
Place 4	[REDACTED]	[REDACTED]	High	No impact	Any future work in this area would require further consultation with knowledge holder. The knowledge holder considers that there is no acceptable level of impact on the place due to its high level of cultural significance.
Place 5	[REDACTED]	[REDACTED]	High	No impact	Any future work in this area would require further consultation with knowledge holder. The knowledge holder considers that there is no acceptable level of impact on the place due to its high level of cultural significance.

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
Archaeological Sites					
W1	Artefact Scatter	This site is an artefact scatter located on a terrace-like feature associated with a drainage channel of Sandy Creek (an interface of degrading granite and alluvium). The eastern portion of the site has been impacted by the existing road corridor. The archaeological deposit contains quality archaeological material. [REDACTED]	Moderate to High	Would be impacted (partial)	Salvage excavation recommended.
W2	Isolated Find	This site is an isolated find located on the banks of Sandy Creek. The artefact was a quartzite flake measuring 28mm x 27mm x 7mm. Attributes included a plain platform, three dorsal scars, feather termination.	Moderate	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design a surface collection would be required and a salvage excavation would be necessary if more than 10% of the site is impacted.
W3	Artefact Scatter	This site is a significant scatter of artefacts located on a raised terrace-like landform east of Sandy Creek. The site is bounded by the creek and a drainage channel associated with W1. The deposit is rated at a high archaeological value due to its landscape setting and observed artefactual record.	High	Would be impacted	Salvage excavation recommended.
W4	Artefact Scatter	W4 is an artefact scatter which follows the eastern bank of Sandy Creek. This site exhibited the most diverse collection of lithic material recorded during the survey. The site is part of an important complex of sites including W6 and W7 which showcase an intensive Aboriginal occupation of Sandy Creek.	Moderate to High	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design a salvage excavation would be required if more than 5% of the site is impacted.
W5	Artefact Scatter	This site is a large collection of quartz artefact scatters following the contours of a high hill slope overlooking Sandy Creek and one of its tributaries. Artefacts are exposed along the flat 'bench-like' features of the slope and associated granite outcrop further up the slope. Quality of artefact raw material is mixed with more evidence for opportunistic knapping.	Moderate	Would be impacted (partial)	Salvage excavation recommended for the eastern portion of the site if avoidance not possible. The western portion of the site should not be impacted. If the western portion (upper slope near the granite outcrops) is impacted as the result of detailed design a second salvage excavation is recommended.
W6	Artefact Scatter	W6 is the largest site identified during the survey of Woomargama. The site consists of three significant scatters of quartz artefacts with over 100 artefacts recorded. The site is situated in prime position on elevated level ground overlooking Sandy Creek. The site has only limited impacts from erosion and represents good soil integrity. The fan slopes of degrading granite underline good artefact retention (similar to Kyeamba).	High	Would be impacted (partial)	Site would be partially impacted by the upgrade of an existing road. This is only a minor impact on the site's archaeological significance. Barrier fencing should be erected along the road (construction boundary) and the location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is further impacted as the result of detailed design a salvage excavation would be required.
W7	Artefact Scatter	This site is located at the confluence of Sandy Creek and a 2 nd order tributary. The site is part of a complex of sites along the creek including W4, W5, W6 and W8. The site exhibits good overall integrity however there are pockets of notable disturbance. Artefacts were recorded in several exposures across the site.	Moderate to High	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design a salvage excavation would be required if more than 5% of the site is impacted.

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
W8	Artefact Scatter	W8 is an artefact scatter located above a 2 nd order tributary of Sandy Creek. The site is part of a complex of sites along the creek system (e.g. W9, W7, W6, W4).	Moderate	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design a salvage excavation would be required if more than 10% of the site is impacted.
W9	Artefact Scatter	W9 is an artefact scatter located along a 1 st order tributary of Sandy Creek. The site extends for approximately 600m along a slightly raised surface between two drainage channels. The site is part of a complex of sites along the creek system (e.g. W10, W8, W7, W6).	Moderate	Would be impacted (partial)	Site would be partially impacted by the upgrade of an existing road. This is only a minor impact on the site's archaeological significance. Barrier fencing should be erected along the road (construction boundary) and the location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is further impacted as the result of detailed design a salvage excavation would be required.
W10	Artefact Scatter	W10 is an artefact scatter located above a 1 st order tributary of Sandy Creek. The site extends for approximately 500m along a slightly raised surface between two drainage channels. The site is part of a complex of sites along the creek system (e.g. W11, W9, W8, W7).	Moderate	Would be impacted (partial)	Site would be partially impacted by the upgrade of an existing road. This is only a minor impact on the site's archaeological significance. Barrier fencing should be erected along the road (construction boundary) and the location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is further impacted as the result of detailed design a salvage excavation would be required.
W11	Artefact Scatter	W11 is an artefact scatter situated on a raised land surface near an existing farm dam. Several artefacts were identified during field survey within exposures associated with the dam and landform margins. The site is bounded by a swampy western area and eastern channel (W10).	Moderate	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design a salvage excavation would be required if more than 10% of the site is impacted.
W12	Artefact Scatter	This site is situated on an arm of a relatively flat end of slope extending off a prominent elevated feature (W14). Three small finely backed quartz artefacts were recorded in this location, including one geometric microlith. The site offers a view down the valley towards Sandy Creek and is located along a track heading up to a western gap in the surrounding hills. A collection of backed artefacts found in an open context is somewhat rare for the Woomargama area. The site is situated at the interface of granite and sandy deposit.	Moderate to High	Would be impacted	Salvage excavation recommended for the site.
W13	Artefact Scatter	W13 is the 'little brother' site of W12. Three quartz artefacts of poor quality quartz were recorded during field survey. The site has been impacted by a drainage channel and sheet erosion.	Low-Moderate	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design artefacts should be salvaged by surface collection within the impact area with Aboriginal stakeholders.
W14	Artefact Scatter	This site is located within the saddle of a prominent granite hill overlooking Sandy Creek and Native Dog Creek. The saddle offers excellent vistas and is relatively sheltered from the prevailing winds. A collection of crystalline quartz artefacts was recorded at W14. [REDACTED]	High	Would be impacted	Salvage excavation recommended for the site if avoidance not possible.

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
W15	Artefact Scatter	This site is located within a small valley in the upper reaches of the Native Dog Creek catchment. Quartz artefacts were recorded in the deposit along an existing farm track opposite a drainage line. The valley offers a refuge from the ruggedness of the surrounding hills. The deposit appears to be at least marginally impacted by colluvial movements from the surrounding hillslopes.	Moderate	Would be impacted	Salvage excavation recommended for the site.
W16	Artefact Scatter	W16 is a collection of artefact scatters located in the upper reaches of 2 nd order drainage tributary for Mountain Creek. The complex is southwest of Mount McKenzie at the base of a series of low colluvial slopes. Quartz artefacts including several cores were recorded on level ground adjacent to the tributary.	Moderate to High	Would be impacted	Salvage excavation recommended for the site.
W17	Artefact Scatter	W17 is a collection of artefact scatters located in the upper reaches of a 2 nd order drainage tributary for Mountain Creek. The complex is southwest of Mount McKenzie at the base of a series of low colluvial slopes approximately 200m south of W16. Quartz artefacts including several cores were recorded on various eroded cuttings adjacent to the tributary. The geomorphology of W17 describes a less stable environment, being closer to the drainage channel, than the soils associated with W16. The archaeological value of W17 has been undermined by the extensive cutting of the ground by successive drainage events both in the main channel and from the surrounding hillsides.	Low to Moderate	Would be impacted	The site should be salvage by surface collection with Aboriginal stakeholders. No further archaeological mitigation is recommended.
W18	Artefact Scatter	A series of terrace-sequenced deposits on the northeast side of Mountain Creek form site W18. Quartz artefacts were recorded eroding out of the terraces. The location has optimal access to resources from the creek and nearby drainage channel. The deposit appears to be just above the high intensity floodplain which suggests good artefact survivability. Similar terrace deposits have yielded high artefact frequencies and antiquity at the nearby M21.	High	Would be impacted (partial)	Salvage excavation recommended for the site.
W19	Artefact Scatter	W19 is a moderately raised portion of land south of Mountain Creek just above the primary floodplain. Quartz artefacts were observed along a line of agricultural disturbance. The site is bounded by two very shallow and broad drainage channels extending from higher ground to the south. The site occupies the junction of colluvial-alluvium and displays good integrity.	Moderate to High	Would be impacted (partial)	The site would be partially impacted by the current design; however the most significant portion of the site is located outside of the construction site boundary. No mitigation is recommended based on the current level of impact. Barrier fencing should be erected along the construction boundary and the location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is further impacted as the result of detailed design a salvage excavation would be required.

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
W20	Artefact Scatter	W20 mirrors W19 as a raised area above the Mountain Creek floodplain at the interface of colluvial-alluvial deposit. Quartz artefacts were recorded at the site. W20 and W19 are separated by a shallow drainage channel.	Moderate to High	Would be impacted (partial)	The site would be partially impacted by the current design; however the most significant portion of the site is located outside of the construction site boundary. No mitigation is recommended based on the current level of impact. Barrier fencing should be erected along the construction boundary and the location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is further impacted as the result of detailed design a salvage excavation would be required.
W21	Artefact Scatter	This site is a small collection of quartz artefacts located in a disturbed context. The artefacts are likely not in situ and have been disturbed during the construction of an agricultural dam.	Low	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design artefacts should be salvaged by surface collection within the impact area with Aboriginal stakeholders.
W22	Artefact Scatter	This site is a small collection of quartz artefacts located in a disturbed context. The artefacts are located in a small drainage channel running from the south into an agricultural dam (W21).	Low	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design artefacts should be salvaged by surface collection within the impact area with Aboriginal stakeholders.
W23	Artefact Scatter	W23 is high quality collection of quartz artefacts located on a colluvial derived rise emanating from hills south of the current Hume Highway. The site is adjacent to a drainage channel and just outside of the Mountain Creek floodplain. The site mirrors the deposit at M21.	High	Would be impacted (partial)	Salvage excavation recommended for the directly impacted portion of the site where subsurface disturbance is required. The remainder of the site will be conserved by installing a geofabric protective layer. Surface artefacts will be collected prior to the installation of the geofabric layer. The protective layer would be removed post construction. Investigative excavation is recommended post construction to verify the effectiveness of conservation management.
W24	Artefact Scatter	W24 is a large collection of quartz artefacts located on metasedimentary rock which merge with colluvial (metasediments) on the lower slope. The metasedimentary formation is known for sheet erosion and the recorded artefacts may be in a relative original position (e.g. moved enmass). Other similar locations have revealed high value archaeology (Tarcutta T6).	High	Would be impacted (partial)	Salvage excavation recommended for the directly impacted portion of the site where subsurface disturbance is required. The remainder of the site will be conserved by installing a geofabric protective layer. Surface artefacts will be collected prior to the installation of the geofabric layer. The protective layer would be removed post construction. Investigative excavation is recommended post construction to verify the effectiveness of conservation management.
W-PAD-1	PAD	This area of potential is located on the northern slopes of a hill overlooking Sandy Creek and is bounded to the north by a 1 st order tributary to Sandy Creek. The area is predominately a cleared agricultural paddock. Several relatively level 'benches' similar to W5 were noted within the PAD during field survey. The surrounding archaeological sites, elevation, soil structure, and proximity to Sandy Creek all make this a area of high potential	PAD	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design an investigative excavation would be required. W-PAD-1 is associated with W5 and W3.

Site	Type	Description	Significance	Impact Assessment	Mitigation Strategy
W-PAD-2	PAD	This area of potential is located at the headwaters of Native Dog Creek. The PAD is a lower hillslope extending west from Mount McKenzie. Large trees cover a portion of the PAD and seem to have limited the colluvial movement off the high ground. The area was identified based on the geomorphology of the hillslope and proximity to the creek. A significant archaeological complex is located in the adjoining southern valley (drainage channel to Mountain Creek).	PAD	Would be impacted	Investigative excavation is recommended. If significant archaeological deposit is identified salvage excavation would be required prior to the commencement of construction activity at this location.
W-PAD-3	PAD	W-PAD-3 is spatially related to W18. The PAD represents the high colluvial ground associated with the alluvial W18 and possible functioned as a secondary occupation area (extending to the south). The site has some colluvial disturbance but otherwise exhibits good overall geomorphic integrity.	PAD	No impact	No action required. The location of the site would be identified in the construction heritage site map to ensure it is not inadvertently affected. If the site is to be impacted as the result of detailed design an investigative excavation would be required.
W-PAD-4	PAD	This area of potential is located within a saddle of a hill at the southern end of the alignment. The hill is a metasedimentary landform situated around 400m south of the Mountain Creek floodplain. The location offers a good connection between the Mountain Creek and Mullengandra Creek systems. The sheet erosion associated with the hill's geomorphology is conducive for artefact survivability.	PAD	Would be impacted	Investigative excavation is recommended. If significant archaeological deposit is identified salvage excavation would be required prior to the commencement of construction activity at this location.
56-4-0249	Scarred Tree	This scarred tree is located on the east side of the current Hume Highway outside but near the southern end of the bypass project boundary. The tree is a Blakely's Red Gum with an oval scar.	Scarred Tree	No Impact	No action required. The location of the tree would be identified in the construction heritage site map to ensure it is not inadvertently affected.

9 Management Outcomes

The following general management outcomes will be implemented in accordance with the management policy for the Project as outlined in section 9.7.

9.1 Conservation of cultural places and archaeological sites not being impacted by road construction or associated activities

The cultural places and archaeological sites in Table 5 would not be impacted by the Woomargama bypass project. Their location should be identified in the construction environmental management plan, construction heritage sites map and project inductions to ensure they are not inadvertently damaged as a result of construction works. Cultural places and archaeological sites within the construction site boundary should be fenced off and identified through signage as environmentally sensitive areas prior to the commencement of construction works to ensure that they are not inadvertently affected as a result of construction work. Fencing would be maintained throughout the duration of works. Where possible, cultural places and archaeological sites outside the construction site boundary should be identified as environmentally sensitive areas through signage erected on the construction site boundary fence,

The cultural places and archaeological sites in Table 5 would not be impacted by the Woomargama bypass project. However, if conserved archaeological sites fall within the final road reserve, landscaping activities (e.g. seeding by direct drilling, individual tree planting etc.) would likely take place within these sites. Landscaping is considered a neutral impact (on archaeological sites) as the benefits or reducing the erosion hazard will protect the archaeology in the long term.

Table 5. Aboriginal cultural places and archaeological sites not impacted by road construction

Cultural places and archaeological sites not impacted	
Cultural Places (requiring fencing)	Place 1
Cultural Places (no fencing required)	Place 2, Place 3, Place 4, Place 5
Archaeological Sites	W2, W4, W7, W8, W11, W13, W21, W22, W-PAD-1, W-PAD-3, 52-4-0249

9.2 Minimisation of impacts to cultural places impacted by road construction

No cultural places will be impacted by road construction.

Table 6. Protection for cultural places impacted by road construction

Protection of impacted cultural places	
Cultural Place	No impacts

9.3 Archaeological salvage excavation required to mitigate impacts on highly significant archaeological sites

The archaeological sites in Table 7 are of moderate to high Aboriginal heritage significance and require archaeological salvage excavation to mitigate the impacts. All excavation can only occur after project approval is obtained.

Table 7. Aboriginal archaeological sites requiring salvage excavation

Salvage excavation of archaeological sites	
Archaeological Sites (Impacted by concept design)	W1, W3, W5, W12, W14, W15, W16, W18, W23, W24, W-PAD-2, W-PAD-4
Salvage of Archaeological Sites post construction to verify the effectiveness of conservation management	W23, W24

9.4 Salvage through the collection of surface artefacts

Salvage would be undertaken at the sites in Table 8 through collection of surface artefacts within the impact area. Surface collection can only occur after project approval is obtained.

Table 8. Aboriginal archaeological sites requiring salvage collection

Salvage collection of archaeological sites	
Archaeological Sites (requiring collection if cannot be avoided)	W13, W17, W21, W22, W23, W24

9.5 No further archaeological mitigation required

No further archaeological mitigation is required for the sites in Table 9. Sites can only be impacted after project approval is obtained.

Table 9. No further archaeological mitigation required

No further cultural/ archaeological mitigation required	
Archaeological Sites (requiring no further archaeological mitigation provided no increase in impacts to sites)	W6, W9, W10, W19, W20

9.6 Proposed Changes to Approved Projects

The RTA recognises that in the course of undertaking the Project, design alterations or other changes to the Approved Project may be required.

Sections 9.7 – 9.10 outline the processes that the Proponent must follow to ensure that any changes to the Approved Project which may impact on Aboriginal cultural heritage are dealt with consistently and with ongoing consultation with Aboriginal stakeholders, DECCW and Department of Planning (DoP).

9.7 Management Policy for Aboriginal Heritage

The policy for the management and conservation of Aboriginal heritage in relation to salvage activities and construction activities (or fencing, investigative drilling, minor clearing, establishing site compounds, adjustment to services/utilities etc) is described below:

Responsibility for compliance with Management Policy

1. The Proponent must ensure all of its employees, contractors and subcontractors and agents are made aware of and comply with this management policy.
2. The Proponent must appoint a suitably qualified and experienced environmental manager who is responsible for overseeing the activities related to this management policy.
3. The Proponent must appoint a suitably qualified and experienced Archaeologist who is responsible for overseeing, for and on behalf of the Proponent, the salvage activities relating to the project.

Operational constraints

4. Where salvage activities have been nominated for impacted sites, no construction activities (or fencing, investigative drilling, minor clearing, establishing site compounds, adjustment to services/utilities etc) can occur on the lands to be salvaged until the relevant salvage activities at the nominated site have been completed. This restriction only relates to the specifically identified portion of an archaeological site to be salvaged and not the entire archaeological site (unless specified). Construction activities may proceed on the portion of a site not designated for salvage provided they do not impact or impede the salvage excavation and that the area to be salvaged is fenced in consultation with the Archaeologist prior to the commencement of those construction activities.
5. Prior to the commencement of early works activity (e.g. fencing, minor clearing, establishing site compounds etc) a construction heritage site map identifying conserved sites (excluded from impact) and sites to be salvaged must be prepared. The construction heritage site map should be prepared to the satisfaction of the RTA.
6. Prior to commencing substantial construction activities an Aboriginal heritage management plan must be prepared and approved by the RTA.
7. All employees, contractors, subcontractors and agents carrying out construction activities (e.g. fencing, minor clearing, establishing site compounds etc) must undertake a Project induction (including the distribution of a construction heritage site map) to ensure that they have an understanding and are aware of the Aboriginal heritage issues affecting the activity.
8. Prior to the proposed commencement of activities relating to this management policy the RTA Hume Highway Office must be notified prior to the proposed commencement date of those activities.

Protection and management of sites excluded from impacts

9. All sites listed in section 9.1 are excluded from impact.
10. All excluded archaeological sites in the construction corridor must be fenced in consultation with the Archaeologist prior to the commencement of construction activities (e.g. fencing, minor clearing, establishing site compounds etc). Sites should be identified as environmentally sensitive areas through signage.
11. All excluded cultural places in the construction corridor must be fenced in consultation with the relevant knowledge holder(s) prior to the commencement of construction activities (e.g. fencing, minor clearing, establishing site compounds etc). Sites should be identified as environmentally sensitive areas through signage.
12. All excluded cultural places and archaeological sites located outside of the construction corridor must be identified on construction maps and are not to be impacted. Where possible, cultural places and archaeological sites outside the construction site boundary should be identified as environmentally sensitive areas through signage erected on the construction site boundary fence.

Cultural places, sites and objects to be impacted

13. The cultural place and archaeological sites identified as being impacted by construction activities are listed in sections 9.2, 9.3, 9.4 and 9.5. The impacts authorised by this management policy are those listed in sections 9.2, 9.3, 9.4 and 9.5 unless otherwise agreed in writing by the RTA.

Human Remains

14. This management policy does not authorise any damage of human remains.
15. If potential human remains are disturbed the Proponent must follow the procedures outlined in section 9.8 below.

Salvage Activities

16. The archaeological salvage excavation must be carried out in accordance with the methodology specified in Appendix D of this report.
17. Archaeological testing (as a component of salvage) must be carried out in accordance with the research design methodology used previously to undertake the test excavations (KNC 2009).
18. The surface collection of Aboriginal objects must be carried out in accordance with the methodology described in Appendix D of this report.

Involvement of Aboriginal groups and/or individuals

19. Opportunity must be provided to the approved applicants from the local Aboriginal community to be involved in the following activities:
 - a. assist with the salvage excavation as outlined in section 9.3
 - b. assist with the surface collection of objects outlined in section 9.4

Salvaged Aboriginal objects

20. Any salvaged Aboriginal objects must be relocated as soon as practicable to a temporary storage location pending discussions with the RTA, Aboriginal stakeholders and the DECCW in relation to a permanent storage location or reburial.
21. In the event that a suitable storage location or reburial area cannot be identified the Proponent must request in writing that DECCW identify a suitable storage location or reburial area.
22. If reburial occurs, pursuant to s.91 of the *National Parks and Wildlife Act 1974* the location of each reburial area must be notified in writing to the DECCW as soon as practicable after reburial occurs.

Reporting requirements

23. A written salvage report about the salvage works must be provided to the RTA. The report must include:
 - a. details of the nature and type of Aboriginal objects disturbed or moved at each salvage area;
 - b. a detailed description of the methods of excavation and collection used;
 - c. a detailed plan of each salvage area;
 - d. any proposed ongoing consultation with or involvement of representatives of local Aboriginal groups in relation to the salvage work.
24. The salvage report must be provided to the RTA within six months or otherwise agreed to after the conclusion of all salvage activities.
25. Unless otherwise agreed with the Hume Highway Manager, any culturally sensitive or restricted information identified by representatives of local Aboriginal groups or individuals which is relevant to the salvage report must be detailed in a separate report provided to the RTA. The separate report must describe:
 - a. the culturally sensitive or restricted information that is relevant to the project;
 - b. any restrictions on access to that information (e.g. for gender related cultural reasons or due to a risk of damage to a particularly significant Aboriginal object or site).
26. Any separate report that is prepared must be provided to the RTA at the same time as the salvage report.
27. Provision of copies of reports to Aboriginal stakeholders and DECCW.
28. Unless otherwise agreed with the Hume Highway Manager, the Proponent must provide a copy of each report provided to the RTA to each registered local Aboriginal group or individual as soon as practicable after each report is provided to the RTA.

Notification and reporting about incidents that breach this management policy

29. Incident reporting requirements in accordance with the Project Approval is to include Aboriginal heritage.
30. Where the Environmental Representative (ER) or the RTA reasonably suspects that an incident has occurred that contravenes the management policy presented here the Proponent must prepare a written report within 5 days detailing that incident. The report must describe
 - a. the nature of the incident
 - b. the notification of the ER, and specialist where required
 - c. the nature and location of relevant Aboriginal sites and/ or PAD, with reference to and provision of maps and photographs where appropriate
 - d. the impact of the incident on Aboriginal sites and/ or PAD, with the appropriate specialist input where required
 - e. the measures which have been taken or will be taken to prevent a reoccurrence of the incident.

Report about completed work

31. The Alliance must prepare a report relating to Aboriginal cultural heritage activities undertaken for the project. The report must detail:
 - a. a short summary of the report for inclusion on AHIMS;
 - b. any ongoing consultation with or involvement of local Aboriginal groups in relation to this project;
 - c. how any excluded Aboriginal objects or sites were managed during construction;
 - d. the effectiveness of salvage activities and mitigation measures that were implemented and;
 - e. the effectiveness of any management plan which was in place.

9.8 Procedures for Handling Human Remains

- **Note that Project Approvals do not include the destruction of Aboriginal remains**

This section outlines the procedure for handling human remains in accordance with the Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the *Heritage Act 1977* (NSW Heritage Office 1998) and the Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997). In the event that construction activity reveals possible human skeletal material (remains), the following procedure is to be followed: (please note: each step of the procedure will advise if the following step is required to be implemented)

1. as soon as remains are exposed, all work is to halt at that location immediately and the Project Environmental Manager on site is to be immediately notified to allow assessment and management;
2. Project Environmental Manager on site to notify Environmental Representative, RTA Hume Highway Manager and RTA Senior Environmental Officer (South West region)
3. contact police;
4. contact DECCW's Environment line on 131 555 and the Heritage Office on (02) 9873 8500;
5. a physical or forensic anthropologist should inspect the remains in situ, and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic);
 - i. if the remains are identified as forensic the area is deemed as crime scene; or
 - ii. if the remains are identified as Aboriginal, the site is to be secured and DECCW and all Aboriginal stakeholders are to be notified in writing; or
 - iii. if the remains are identified as non-Aboriginal (historical) remains, the site is to be secured and the Heritage Office is to be contacted.

The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the area and remains is to be determined through one of the following means:

- A. If the remains are identified forensic matter liaison with the police; or
- B. If the remains are identified as Aboriginal liaison with the RTA, the Department of Planning (DoP), the DECCW and Aboriginal stakeholders; or
- C. If the remains are identified as non-Aboriginal (historical) liaison with the RTA, the DoP and the Heritage Office; or
- D. If the remains are identified as not being human then work can recommence once the appropriate clearances have been given.

9.9 Procedure for proposed changes to Approved Projects

A proposed change to the Approved Project (such as an alteration of the current alignment, the location of ancillary facilities) within the project corridor may result in a:

- Reduced impact to Aboriginal cultural heritage; or an
- Increased impact to Aboriginal cultural heritage.

Note: the use of the word impact in this section is defined as an impact on the significance of Aboriginal cultural heritage rather than simply an increased physical impact.

To ensure consistency with the Approved Project and this document any change in the overall impact on Aboriginal cultural heritage will need to be considered. The process to determine consistency is outlined in section 9.9.1 below.

Where a proposed change to the Approved Project occurs outside of the project corridor considered for the environmental assessment further heritage assessment will be required to determine if there would be an impact on Aboriginal cultural heritage and whether this represents a modification to the Approved Project (outlined below).

9.9.1 Changes in heritage impact

Where the Proponent seeks to make a change to the design and construction of the Approved Project which changes the assessed impact on Aboriginal cultural heritage, as detailed in sections 9.1-9.5 of this document, the Proponent will need to prepare an assessment of the new impacts of this work in consultation

with the appointed Archaeologist. The continued involvement of the Aboriginal stakeholders in this process is outlined in section 9.10.

The RTA is responsible for determining whether a proposed change is consistent with the Approved Project. The decision as to whether a change is consistent or inconsistent with the Approved Project will be documented. This process is explained below.

- ♦ New impacts consistent with previously identified impacts

If a proposed change to the Approved Project is considered to have a neutral or lesser significant impact on Aboriginal cultural heritage than that identified in this document it would be considered a consistent impact.

If the proposed change is considered to be consistent with the Approved Project the RTA may approve the change with no requirements to seek further approval from the Minister for Planning. However, in certain circumstances, further consultation with Aboriginal stakeholders may still be required (see section 9.10 below).

- ♦ New impacts inconsistent with previously identified impacts

If a proposed change to the Approved Project is considered to have a more significant impact on Aboriginal cultural heritage than that identified in the environmental assessment it would be considered an inconsistent impact.

If the proposed change is considered inconsistent with the assessed impact on Aboriginal cultural heritage, as detailed in sections 9.1-9.5 of this document, the RTA would require an amendment to the mitigation measures agreed in this report. If this proposed change is considered inconsistent with the Approved Project the RTA would require a modification of the Minister's approval (the Approved Project) from the Minister for Planning. Further consultation with Aboriginal stakeholders will be undertaken (see 9.10 below).

9.10 Process for continued consultation with Aboriginal stakeholders

The extent to which the RTA will continue to consult with Aboriginal stakeholders is dependent upon the level of impact and whether the area was assessed as part of the environmental assessment. The types of potential impacts are identified as reduced impacts, increased impacts or unknown impacts.

a) Neutral or reduced impact

If as a result of alterations to the project design a previously identified impact to an Aboriginal heritage item is reduced or neutral then no further consultation is required.

If as a result of alterations to the project design an impact to a conserved Aboriginal heritage item [section 9.1] is proposed that results in a reduced impact on the overall heritage significance of the study area (i.e. the cumulative impact is reduced), then further consultation with Aboriginal stakeholders will be undertaken. This consultation may entail a phone call and phone log of comments received or the provision of a report for comment (10 working days).

b) Increased Impact

Where as a result of alterations to the project design an impact on Aboriginal heritage is considered to be greater than identified by the Approved Project further consultation will be undertaken. This consultation will either entail a phone call and phone log of comments received or the provision of a report for comment (10 working days).

c) Unknown impacts: Assessment process

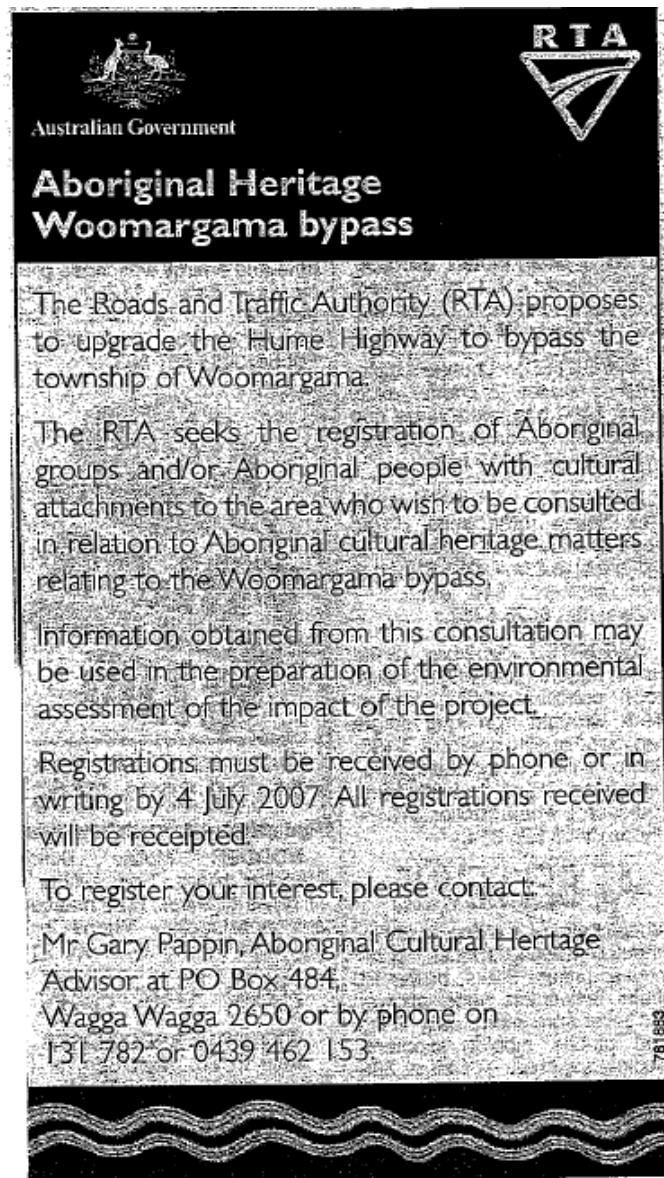
Where a proposed change is an area located outside of the project corridor assessed as part of the Approved Project the impact on Aboriginal cultural heritage is considered to be unknown. This area would require preliminary assessment to determine any impacts upon Aboriginal heritage. This assessment should be provided to the RTA Hume Highway Office for review. Should no impacts be identified then no consultation with Aboriginal stakeholders is required. Should potential impacts be identified consultation with Aboriginal stakeholders will be undertaken. This consultation will entail the provision of a report for stakeholder comment (10 working days) detailing the impacts and mitigation strategies proposed.

References

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Appendix A Advertisement for Stakeholders

The RTA placed the following advertisements inviting stakeholders to register their interest for the Woomargama town bypass project. Details of where they were advertised and the dates they appeared are provided in the table below.



Advertisement placed in:

Print Media	Date
The Border Mail (Albury)	23 June 2007
Eastern Riverina Chronicle	20 June 2007
Koori Mail	20 June 2007
National Indigenous Times	28 June 2007
Deadly Vibe	6 July 2007
In Vibe	6 July 2007

Note the closing date in the above advertisement is 4 July. This is more than 10 working days after first appearance of the advertisement in the Koori Mail. The closing date in subsequent advertisements was at least 10 days after publication.

Appendix B Aboriginal Stakeholder Comments

Stakeholder comments

Verbal comments were received by RTA from several stakeholders after the closing date for submissions. Verbal comments were received from Waagan Waagan Project Group, Norma Freeman, Enid Clark and Ramsay Freeman on 9 and 10 September 2009.

Stakeholders commented that the proposed conservation strategy at sites W23 and W24 was acceptable, if a few measures were ensured. They have requested that surface artefacts be collected (and their locations recorded via GPS) prior to the laying down of the protective layer, and that after removal of the protective layer, artefacts be replaced in their original locations.

RTA response to stakeholder comments

The surface artefacts at sites W23 and W24 would be collected prior to the laying down of the protective layer. The collected artefacts would be recorded and analysed as detailed in the Research Design (Appendix D of this document). The relocation of salvaged artefacts would be decided in consultation with Aboriginal stakeholders, DECC and RTA, as outlined in Section 9.7 (20) of this document.

Appendix C Place Sheets

Appendix deleted from public document.

Appendix D Research Design of Woomargama Bypass

Methodology

Research Aims

The main aims of the proposed salvage excavation program are to:

- ♦ Salvage representative samples of identified archaeological activity areas, landforms and/or archaeological resources at key locations along the Woomargama bypass prior to development impact.
- ♦ Analyse the salvaged archaeological material to gain and conserve knowledge and understanding of the scientific and cultural information exhibited by the activities associated with the Aboriginal heritage from the Woomargama area.
- ♦ Use the excavation results to gain insight into the subsurface archaeology of the adjacent areas not being impacted by the highway construction (i.e. sites outside the construction corridor). This will allow an increase in future educational opportunities and a more informed management of Woomargama's Aboriginal heritage.

The further scientific aim of the salvage excavation program would be to determine the subsurface integrity, extent, spatial distribution and nature of the cultural deposits in varying landscapes and the specific types of associated archaeological/cultural activities.

- ♦ Determining the integrity of the deposit involves assessing the degree of disturbance which is present.
- ♦ Determining the extent of the sites and/or activity areas involves identifying the boundaries associated with the identified archaeological deposit.
- ♦ Assessing the spatial distribution involves identifying the presence/absence of archaeological material across identified land forms (e.g. crest, slope, creek flat).
- ♦ The nature of the sites refer to the type of activities indicated by the artefactual material (e.g. primary production, domestic knapping, hunting camps). The goal would be to retrieve entire assemblages from specific activities if such activities were present.
- ♦ Retrieved assemblages would be compared with the results from other relevant archaeological projects (e.g. Hume Highway duplication – M21, M19-20, YC9, TT4) in order to assess significance.

The archaeological program proposed in this research design will salvage the significant archaeology, but equally important is the aim to use this information to bring the Aboriginal story back to the forefront of knowledge. Furthermore as part of the archaeological program, KNC will continue to bolster the recovered archaeological information with geomorphic data designed to offer a glimpse of the physical stage and timeline associated with the cultural story. It is envisioned that this complete archaeological program will be the foundation for the area's future cultural, educational and management opportunities.

Conservation is a primary goal of all Aboriginal heritage management. All archaeological excavation undertaken during the proposed program will be restricted to the actual construction site boundary associated with the impacted sites. The construction site includes the actual roadwork and all associated impacts such as support vehicle tracks, drainage works and other ancillary facilities.

Archaeological Salvage Areas

Salvage excavation will focus on four primary areas (outlined in sections 8 and 9):

- ♦ W1
- ♦ W3
- ♦ W16
- ♦ W18

And secondary investigative salvage will target seven areas:

- ♦ W5
- ♦ W12
- ♦ W14
- ♦ W15
- ♦ W23
- ♦ W24
- ♦ W-PAD-2
- ♦ W-PAD-4

Salvage excavation of W1, W3, W16 and W18 will focus on the extraction of collections of artefacts related to activity areas. In practice this means undertaking large open area excavation on the order of 150-300m². Secondary investigative salvage of W5, W12, W14, W15, W23, W24, W-PAD-2 and W-PAD-4 will concentrate on describing the archaeological deposit and evaluating the archaeological significance. These excavations are generally smaller at 20-60m². If the archaeological significance (section 7.1) of a secondary area is found to be at least moderate-high then a primary salvage of the area will be required prior to construction. These follow-up extensive salvage excavations are likely to range in size from 100-200m².

Site Descriptions

Site descriptions for both primary and secondary salvage areas are found in section 5.3.

Surface Collection

Construction of the Woomargama bypass may impact several surface artefact scatters. Prior to construction surface artefacts from all known archaeological sites (not included in the salvage excavation program) directly impacted by the project should be collected. Site identified for surface collection are listed in section 9.4.

Field Methods

The goal of the field excavation program is to recover significant assemblages of artefacts from each salvage area which will characterise the site and offer comparable information with other sites. The field methods reflect this goal and will use a standard (comparable) methodology often used by archaeologists and one which has been previously utilised along the Hume Highway.

Combined Program

In order to achieve the most robust and comparable result it is recommended utilising a combination 1) target program and 2) open area excavation program. The combined program applies to both primary and secondary salvage excavations (see above); however secondary salvage is much smaller in scale.

The initial excavation of each salvage location, i.e. the target program, will be to lay out a series of excavation squares in transects across land formations in order to locate specific activity areas and then open area excavations will be undertaken around these initial squares yielding higher (or otherwise significant) artefact densities. The advantages of this combined program are both statistical and practical. Statistically, the target program will allow for a direct comparison with test data from other excavations undertaken along the highway where extensive salvage excavation was not warranted. This statistically sound information will create a baseline for the region and inform future management and research studies. In addition, the geoarchaeological data covering this same extensive transect will enhance our archaeological assessment by demonstrating the relationship between Aboriginal cultural heritage and the geomorphic process (e.g. climate change). The practical side of the combined program means that we will be 1) finding and 2) salvaging the most relevant archaeological deposits impacted by the road construction. Experience has shown that the most fruitful salvage of open areas involves the need to fully assess the deposit (i.e. subsurface integrity, extent, spatial distribution and nature) in order to demonstrate that the material recovered is truly representative.

Excavation Process

The mechanics of the excavation follow the same standard approach adopted by previous successful excavation methodologies used on Hume Highway Duplication project. Excavation squares measuring 1m x 1m will be hand excavated in bulk or (where possible) stratigraphic units. Squares will be excavated until the basal layer or culturally sterile deposit is reached (past experience indicates that the depth is variable but the cultural deposit is usually contained in the upper 15-35cm). The initial excavation squares at each location will be excavated well into the sterile unit to confirm the absence of artefacts before commencing open area salvage.

Initial excavation will involve around 20-40 squares per salvage area. The precise number of squares would depend on the archaeological deposit and geology. Excavation grids (transects) will be established using AMG coordinates for each square. Squares will be placed at 15m intervals along sampling transects. The squares in adjoining transects will be staggered (at five metre intervals) to achieve maximum sampling coverage. This approach is consistent (and directly comparable) with previous excavations.

Where more extensive salvage is required, open area excavation will follow from the results of the initial target program. Reasons for salvage excavation may be but are not limited to the following:

- ♦ Significant frequencies or densities of artefacts are encountered;
- ♦ Significant stratigraphy or other geomorphic indicators suggest time depth or unusual taphonomy;
- ♦ Unusual artefacts or raw materials are encountered.

It is anticipated that around 100-250 additional squares will be excavated per salvage area. Open area excavation will follow a standard cuneiform approach and expand to encompass identified activity areas. On average it is anticipated that two open areas (c. 50m² – 150m²) will be salvaged per location, although where feasible an effort will be made to connect identified activity areas into a single open area.

All of the deposit will be wet sieved on 5.0mm and 2.5mm nested sieves. All artefacts would be collected and bagged. Excavated squares will be backfilled where required (by the Proponent).

The location of each excavated square would be identified on a surveyed plan of the site. Stratigraphic sections detailing the stratigraphy and features within the excavated deposit would be drawn and all squares would be photographed. Soil and carbon samples would also be collected. The stratigraphy of all excavated areas will be fully documented and appropriate records will be archived.

Analysis

Artefacts would be analysed on a comparable level with previous analyses of excavated assemblages (KNC 2008, 2007; AMBS 2000; 2006; Jo McDonald Cultural Heritage Management 2003, 2004; Attenbrow 1981). Information derived from this analysis; in particular the identification of specific artefact types, and their distributions and associations; will be used to put together interpretations about how sites were used, where sites were located across the landscape, the age of sites, and to assess cultural heritage values. By comparing different areas it will be possible to determine whether there were differences in the kinds of activities carried out and if different activities were related to different landforms. Sufficient information will be recovered from each excavation in order to assess how people and the land work together to create a social landscape. Differences could be expected if different aspects of settlement organisation varied in relation to the landscape units as defined.

A range of stone artefacts may be present across the salvage areas and the analysis would expand accordingly to account for artefact variability. All information would be recorded in database form (MS Excel). Various types of evidence would be used to determine the kinds of activities that were carried out. A short description of the proposed analysis is outlined below.

- Field analysis would record basic data, such as material type, number, and any significant technological characteristics, such as backing or bipolar techniques; added to this would be any provenance data such as pit ID and spit number. The purpose of the field recording is twofold: 1) establish a basic recording of artefacts retrieved and 2) to allow on-going assessment of the excavation regime (e.g. whether higher stratigraphic resolution is required while digging).
- Detailed (laboratory) analysis would entail recording a larger number of characteristics for each individual artefact. These details would be recorded in matrices suitable for comparative analysis (e.g. multivariate and univariate) of the excavated assemblage on a local and regional basis.
- Lithic characteristics to be recorded cover a range of basic information but are not limited to these categories (see example below). For transparency, terms and category types would in large part be derived from Holdaway and Stern (2004).

Sample Categories		
Record Number	% Cortex	Flake Type
Pit ID	Length	Termination Type
Spit Number	Width	Core Type
Count	Thickness	Number of Scars (Core)
Raw Material	Weight	Scar Type (Core)
Colour	Modification	Shape of Flake
Quality	Reduction Type	Platform Type

- A detailed explanation and glossary would be provided with the final excavation report.
- Minimum Number of Flake (MNF) calculations formulated by Hiscock (2000, 2002) will be undertaken where applicable (although past experience indicates MNF calculations will not be required for this excavation program). The main outcomes of the analysis would be to investigate: the type of activities being carried out across the subject area; stone materials used and quantity; technology; and modification/retouch (type and quantity).

The analysis of artefacts recovered during the excavation program would be undertaken in a transparent and replicable fashion so as to permit the comparison of the entire excavated assemblage with data from other regions. This would also allow for an interpretation of the study area's archaeological significance.

Field Team

KNC directors, Dr Matthew Kelleher and Alison Nightingale, would be responsible for the salvage excavation program. Dr Matthew Kelleher would direct the excavation component of the Aboriginal archaeological assessment. Matthew has extensive experience in managing large scale archaeological excavations and research projects. Alison is the principal contact for the overall Aboriginal archaeological assessment for the Woomargama bypass. She has over 14 years experience managing Aboriginal cultural heritage. Matthew and Alison have both been involved in the highly successful archaeological assessment for the Hume Highway Duplication Project between Mullengandra and the Sturt Highway.