

# Appendix 5

## Aboriginal Cultural Heritage Assessment Report

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# OnSite

Cultural Heritage Management



## ***Aboriginal Cultural Heritage Assessment Report***

### ***Avoca Tank Project Environmental Impact Statement***

***Tritton Resources, Girilambone,  
Bogan Shire NSW 2831***

**A report prepared for  
RW Corkery & Co Pty Limited  
Geological and Environmental Consultants  
and Tritton Resources Pty Ltd**

**May 2014**

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## EXECUTIVE SUMMARY

R.W. Corkery and Co is preparing an Environmental Impact Statement (EIS) for Tritton Resources Pty Ltd (the Applicant) to undertake mining activity at an identified resource to the north of its Girilambone Copper Mine, currently referred to as the Avoca Tank Project (the Proposal). On Site Cultural Heritage Management Pty Ltd (On Site CHM) has been engaged by RW Corkery and Co Pty Limited and Tritton Resources to prepare an Aboriginal Cultural Heritage Assessment to inform the EIS about the management of Aboriginal heritage places values within the Avoca Tank Project Site.

The information presented in this Aboriginal Cultural Heritage Assessment has built upon the assessment (On Site CHM 2013) originally prepared for the exploration phase and Review of Environmental Factors (REF) that preceded the EIS. The survey and assessment processes and Aboriginal community consultation to inform the Proposal was undertaken in a two stage assessment process between March and August of 2012 and September 2012 and January 2013.

The results and recommendations of that assessment (On Site CHM 2013) were considered in the final design of the Proposal which has avoided all identified Aboriginal places and values. This report describes the Aboriginal heritage assessment processes undertaken by On Site CHM for the Avoca Tank Project and provides management strategies to ensure the conservation of identified Aboriginal places within the Avoca Tank Project Site during the development and operation of the Proposal.

The Avoca Tank Project Site is located approximately 4 kilometres northwest of Girilambone NSW 2831 along the Mitchell Highway within the Bogan Shire NSW 2831. The Project Site covers an area of 1846 ha (18.46 km<sup>2</sup>) and the Proposed Disturbance Footprint covering an area of 33.6 ha (0.336 km<sup>2</sup>). Proposed extraction will occur underground meaning that the Proposed Disturbance Footprint will only cover a small percentage (1.8%) of the entire Project Site. The Avoca Tank Project Site occurs across Lots 135 and 144 (DP 751315) and part Lots 10 (DP 751315) and part Lot 3 (DP 751342). The Project Site is situated on the Coolabah 8235 1:100,000 map sheet.

Four objectives were defined for the Aboriginal Cultural Heritage Assessment in partnership with the local Aboriginal community:

1. Investigate and assess the nature and extent of Aboriginal heritage places and values within the Avoca Tank Project Site
2. Assess the cultural significance of these places and values
3. Assess the potential impacts on identified Aboriginal heritage places and values
4. Provide appropriate recommendations for the conservation and management of identified Aboriginal heritage places and values during the development and operation of the Proposal.

Extensive consultation has been conducted with the Aboriginal community in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010 (Section 3.0)*. The Avoca Tank project area falls within the boundaries of the Nyngan Local Aboriginal Land Council and according to Tindale (1974) falls within the boundaries of the Wongaibon Aboriginal people. The project area is also within land under the Ngemba/Ngiyampaa Native Title Claim. A copy of relevant claim details was provided by the National Native Title Tribunal and is included in **Appendix 1**.

On the basis of the review of the environmental context (**Section 4.0**) and previous archaeological studies (**Section 5.0**) predictions were made about the archaeological potential of the Avoca Tank project area:

1. Scarred trees are likely to be the most common site type within the Study Area with hearth sites (some potentially with artefacts) likely to be the next most common site type.
2. Stone artefact occurrences are predicted to be low given the paucity of potable water and suitable stone for the manufacture of stone tools.
3. The broad scale land clearing and previous land-use practices within the Study Area are likely to have impacted heavily on all of the site types discussed above.

On the basis of these predictions the archaeological potential and sensitivity of the Avoca Tank project area was considered to be low.

Representatives of the Nyngan Local Aboriginal Land Council (Sheila Couley) and Bogan Aboriginal Corporation (Lesly Ryan) participated in the archaeological survey of the Avoca Tank (Stage 1) assessment area between 26 and 30 April 2012. These representatives and Neville Merritt of the Ngemba/Ngiyampaa Native Title Claim group also participated in the archaeological survey of the Avoca Tank (Stage 2) assessment area between 29 October and 2 November 2012. During the fieldwork the significance and management of all Aboriginal objects and sites was discussed with representatives of the Nyngan Local Aboriginal Land Council, Bogan Aboriginal Corporation and the Ngemba/Ngiyampaa Native Title Claim group.

Assessment of the Avoca Tank Project Site has identified a total of five locations where Aboriginal objects and occupation evidence occurs (See **Table Error! Reference source not found.**, Avoca Tank 1 to 5).

A review of the 11 previously recorded AHIMS sites within the Avoca Tank Project Site determined that there are duplicate recordings and these 11 sites actually represent 5 sites. Two of these sites were rerecorded as part of this survey. Duplicate site recordings 26-3-0034 / 26-3-0119/ 26-3-0149 have been rerecorded as Avoca Tank 1 and duplicate site recordings 26-3-0067 / 26-3-0146, 26-3-0068 / 26-3-0147, 26-3-0066 / 26-3-0145 have been recorded as Avoca Tank 3 comprising 3 hearth locales. Hearth nodules previously recorded at site 26-3-0070 / 26-3-0071 were unable to be relocated as part of this survey and it is likely that these features have since eroded away.

**Table 1: Results of archaeological assessment of Avoca Tank Project Site. Grid references recorded by On Site CHM (GDA 94) and differ from AHIMS (See Section 5.1)**

On Site CHM Site Name	Site Features	Easting	Northing	Corresponding AHIMS Sites
Avoca Tank 1	Stone artefact scatter	55 484966	6548490	26-3-0034 / 26-3-0119/ 26-3-0149 (open artefact scatter) 26-3-0070 / 26-3-0071 (hearth)
Avoca Tank 2	Isolated stone artefact	55 484857	6548245	-
Avoca Tank 3 (3 x hearths)	Hearth 1	55 484835	6547528	26-3-0067 / 26-3-0146
	Hearth 2	55 484815	6547517	26-3-0068 / 26-3-0147
	Hearth 3	55 484729	6547486	26-3-0066 / 26-3-0145
Avoca Tank 4	Historic Scar Tree & Aboriginal Stockman's Camp	55 485027	6547775	-
Avoca Tank 5	2 x isolated stone artefacts	55 481436	6548043	-

The results of this assessment reveal Aboriginal occupation evidence is sparsely distributed across the Avoca Tank Project Site and is indicative of low intensity use of the landscape by Aboriginal people characterised by a high level of mobility and relatively short term occupation or single use of these places.

The low intensity of Aboriginal occupation materials across the Project Site is likely due to the paucity of reliable sources of potable water, stone outcrops suitable for the manufacture of stone tools and to some extent the disturbance upon Aboriginal occupation materials by previous land use practices.

The cultural significance (encompassing Aboriginal and archaeological significance) of the identified Aboriginal places and the Project site has been assessed through Aboriginal consultation and archaeological analysis within a regional context as follows:

- Avoca Tank 1 (an open artefact scatter) is assessed as having a low to moderate level of cultural significance.
- Avoca Tank 2 (a single isolated stone artefact) is assessed as having a low level of cultural significance.
- Avoca Tank 3 (three 'hearths') is assessed as having a low level of cultural significance.
- Avoca Tank 4 (historic scar tree and Aboriginal stockman's camp) is assessed as having a moderate level of cultural significance. Avoca Tank 4 has been identified by Registered Aboriginal Parties as having a moderate to high level of Aboriginal significance and also attributed with historic and aesthetic values.

- Avoca Tank 5 (2 x isolated stone artefacts) is assessed as having a low level of cultural significance.
- The Registered Aboriginal Parties (RAPs) participating in the survey attributed the Study Area with a low level of Aboriginal significance.
- Given the paucity of Aboriginal sites and objects across the Project Site, the subject land has also been assessed as having a low archaeological potential and significance.

The Proposal has subsequently been developed to avoid all of the identified Aboriginal sites and objects within the Avoca Tank Project Site. None of the identified places (Avoca Tank 1 to 5 and associated AHIMS Sites) are proposed to be directly impacted upon or *harm*ed during the development of this Proposal and AHIPs will therefore not be required.

The development of management strategies is therefore concerned with the prevention of *harm* through protection and conservation of these places during the development and operation of the Proposal.

On the basis that all of the identified places (Avoca Tank 1 to 5) and locations of previously recorded AHIMS Sites will be avoided and conserved during the development and operation of the Proposal, it is recommended that:

1. Avoca Tank sites (1 to 5) and locations of previously recorded AHIMS sites should continue to be designated as 'no go' areas in accordance with the Straits Community and Heritage Policy and Straits Procedures - Heritage Management Planning (Australia).
2. The existing fencing to demarcate these sites as 'no go' areas should be upgraded to steel pickets and wire sufficient to prevent unauthorised persons and animals prior to the development and operation of the Proposal. Fencing of these places does not require an Aboriginal Heritage Impact Permits (AHIPs).
3. The design and construction of Proposal components should consider the effect of water movement across the landscape and be sensitive to the possibility of creating indirect potential threats that may impact upon these places. This potential is perhaps most acute for the design of the haul road and location of drains. A buffer of at least 50 metres should be established and maintained between the 'no go' areas around identified places and proposed mine infrastructure.
4. Some specific conservation management planning is undertaken for Avoca Tank 4 to mitigate the potential increased risk of fire. The fencing of Avoca Tank 4 and shift in fire management across the Project Site may result in an increased fuel load and fire risk. Specific conservation management strategies may involve spraying / slashing of grass at appropriate intervals to suppress the fuel load or installation of a fire break outside fencing. The development of these management strategies should be informed by specialist advice.

5. The location of each place be accurately mapped as a polygon and incorporated into the relevant spatial management tool (GIS - Geographic Information System) during the development and operation of the Proposal. A buffer of at least 50 metres should be applied for these places.
6. Long term conservation management and monitoring strategies be developed and implemented for these places. These strategies should be developed as part of a specific Heritage Management Plan or incorporated into the relevant Environmental Management Plan as appropriate.
7. Information about the presence of these Aboriginal places, their values and management be incorporated into the induction materials and delivered to relevant personnel or contractors that may come into contact with these places.
8. Given the paucity of Aboriginal objects and sites across the Avoca Tank Study Area no further archaeological surveys of the Proposed Disturbance Footprint are considered warranted.

With regard to Recommendation 8, the previous assessment (On Site CHM 2013) prepared for Tritton Resources also recommended that no further archaeological surveys of the Avoca Tank Study Area were required should the project proceed to full scale mining.

Two of the Registered Aboriginal Parties (Nyngan LALC and Bogan Aboriginal Corporation) provided their support for this recommendation. Native Title Services Corporation, on behalf of the Ngemba/Ngiyampaa Native Title claim group considered that further more intensive surveys of the Proposed Disturbance Footprint should be undertaken. A response was provided by On Site CHM to NTS Corp (**Appendix 7**) who provided a further response also included at **Appendix 7**.

A copy of this assessment report has been distributed to the Registered Aboriginal Parties.

A summary of sites identified within the Avoca Tank Project Site, their significance and recommendations is provided below in **Table 10.1**.

Table 2: Summary table for identified sites within Avoca Tank project area, assessed significance, impacts and recommendations

Sites	Previously recorded AHIMS Sites	Site type and comments	Aboriginal Significance	Archaeological Significance	Impacts (harm) of Disturbance	Summary of mitigation strategy
Avoca Tank 1	26-3-0034 / 26-3-0119 / 26-3-0149	Open artefact scatter –Low density scatter (11 x stone artefacts) with high raw material diversity and moderate artefact type diversity.	Moderate	Low to moderate	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
-	26-3-0070 / 26-3-0071	Hearth – unable to be relocated during this survey. Likely washed away and not extant	-	-	None	Location will be avoided. No further action warranted.
Avoca Tank 2	-	Isolated stone artefact	Low	Low	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
Avoca Tank 3	26-3-0067 / 26-3-0146 / 26-3-0068 / 26-3-0147 / 26-3-0066 / 26-3-0145	3 x hearths – no other cultural material in association.	Low to moderate	Low	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
Avoca Tank 4	-	Historic scar tree and Aboriginal stockman's camp.	Moderate to high	Moderate	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents. Undertake specific conservation management planning to mitigate the risk of fire.
Avoca Tank 5	-	2 x Isolated stone artefacts	Low	Low	None	Upgrade existing fencing (if appropriate). Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.



## 1.0 INTRODUCTION

R.W. Corkery and Co is preparing an Environmental Impact Statement (EIS) for Tritton Resources Pty Ltd (the Applicant) to undertake mining activity at an identified resource to the north of its Girilambone Copper Mine, currently referred to as the Avoca Tank Project (the Proposal). On Site Cultural Heritage Management Pty Ltd (On Site CHM) has been engaged by RW Corkery and Co Pty Limited and Tritton Resources to prepare an Aboriginal Cultural Heritage Assessment to inform the EIS about the management of Aboriginal heritage places values (including Aboriginal sites and objects) within the Avoca Tank Project Site.

The information presented in this Aboriginal Cultural Heritage Assessment has built upon the assessment (On Site CHM 2013) originally prepared for the exploration phase and Review of Environmental Factors (REF) that preceded this EIS. The baseline survey and assessment process undertaken for the exploration phase extended across the entire Avoca Tank Project Site including the Proposed Disturbance Footprint described in **Section 1.1** and displayed in **Figures 1.1** and **1.2**. The results and recommendations of that assessment (On Site CHM 2013) were considered in the final design of the Proposal which has avoided all identified Aboriginal places and values.

This report describes the Aboriginal heritage assessment processes undertaken by On Site CHM for the Avoca Tank Project and provides management strategies to ensure the conservation of identified Aboriginal places within the Avoca Tank Project Site during the development and operation of the Proposal.

### 1.1 OVER VIEW OF THE AVOCA TANK PROJECT

The Avoca Tank Project Site is located approximately 4 kilometres northwest of Girilambone NSW 2831 along the Mitchell Highway within the Bogan Shire NSW 2831. The Avoca Tank Project Site covers an area of 1846 ha (18.46 km<sup>2</sup>) and the Proposed Disturbance Footprint covering an area of 33.6 ha (0.336 km<sup>2</sup>) (See **Figure 1.1** and **1.2**). Proposed extraction will occur underground meaning that the Proposed Disturbance Footprint will only cover a small percentage (1.8%) of the entire Project Site.

The Avoca Tank Project Site occurs across Lots 135 and 144 (DP 751315) and part Lots 10 (DP 751315) and part Lot 3 (DP 751342). The Project Site is situated on the Coolabah 8235 1:100,000 map sheet.

The Proposal would include the following Key Components (**Figure 1.2**):

- Construction and use of a boxcut, portal, decline, underground workings and two rises (one equipped as an emergency egress and the other with a ventilation fan at surface).

- Extraction of the economically recoverable copper-gold-silver resources to a depth of approximately 500m below surface using bench stoping and long hole open stope mining techniques.
- Transportation of ore material to the Tritton Copper Mine for processing using road registered road trains via a combination of a private haul road and Yarrandale Road.
- Establishment of a temporary surface waste rock emplacement for storage of waste rock extracted during construction of the boxcut and initial sections of the decline and mine workings.
- Establishment of surface infrastructure, including a mine water pond, run-of-mine (ROM) pad, laydown area, fuel store and refuelling bay and a hardstand area comprising a workshop, mobile plant parking area, wash down bay and transportable offices, crib room and ablution facilities.
- Extension of infrastructure from the North East Open Cut, including a site access road, water pipeline and transmission line.
- Establishment of ancillary infrastructure.
- Construction and rehabilitation of a final landform that would be geotechnically stable and suitable for a final land use of intermittent agriculture and nature conservation.

**Figure 1.1: Avoca Tank Project Site. Project Site Boundary shown in red outline and Proposed Disturbance Footprint, including the proposed haul road are shown by the light blue line.**

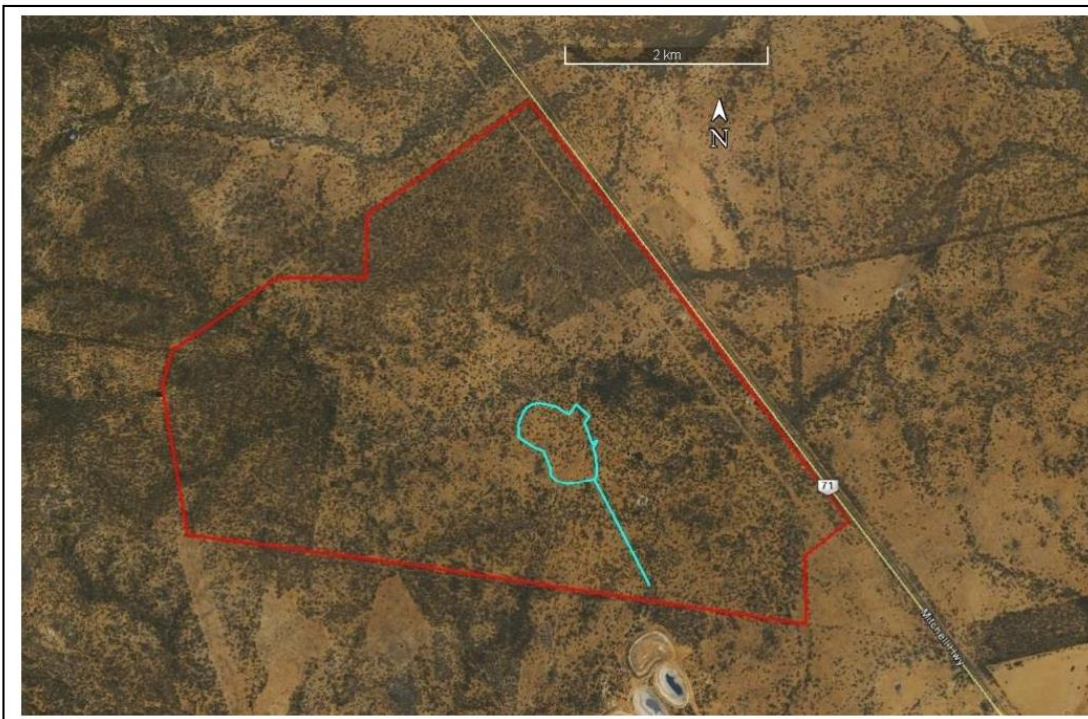
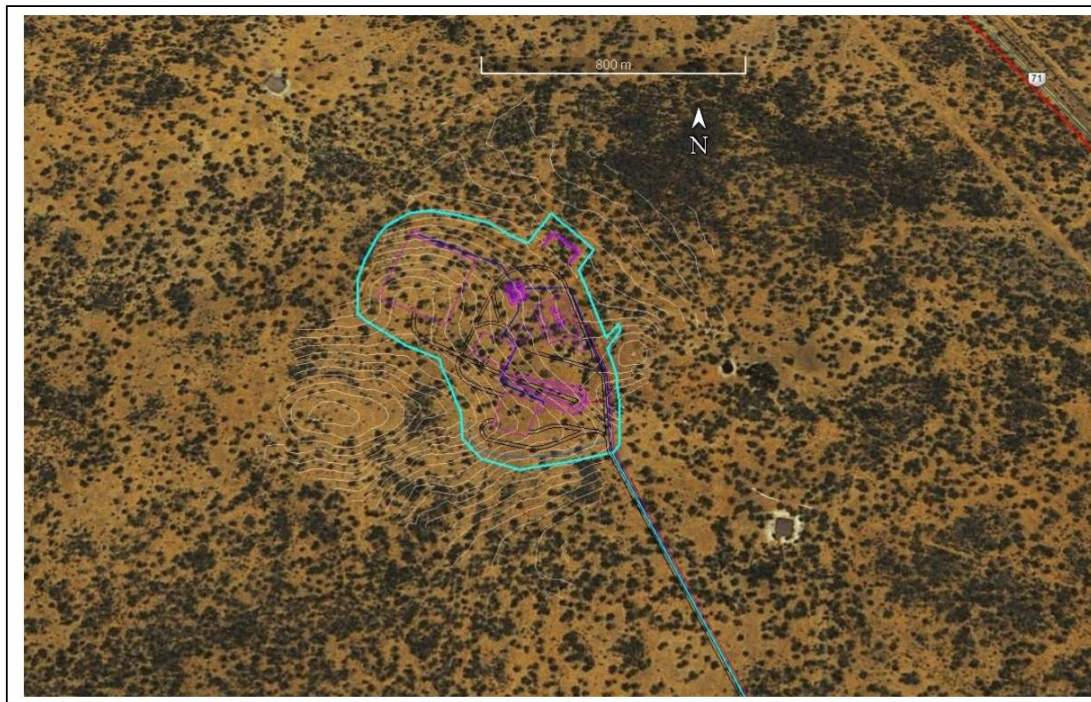


Figure 1.2: Proposed Disturbance Footprint and proposed haul road shown by the light blue line. Project components described in Section 1.1 shown within light blue line.



## 1.2 OBJECTIVES OF THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Four objectives were defined for this Aboriginal Cultural Heritage Assessment in partnership with the local Aboriginal community:

1. Investigate and assess the nature and extent of Aboriginal heritage places and values within the Avoca Tank Project Site
2. Assess the cultural significance of these places and values
3. Assess the potential impacts on identified Aboriginal heritage places and values
4. Provide appropriate recommendations for the conservation and management of identified Aboriginal heritage places and values during the development and operation of the Proposal.

## 1.3 BACKGROUND TO THIS ABORIGINAL CULTURAL HERITAGE ASSESSMENT

The Aboriginal Cultural Heritage Assessment processes documented in this report were conducted in two stages (Stage 1 and Stage 2) and included Aboriginal community consultation in accordance with *Aboriginal cultural heritage consultation requirements for proponents*.



Aboriginal community consultation, survey and assessment for the Stage 1 assessment area occurred between March and August of 2012 and Stage 2 was undertaken between September 2012 and January 2013.

The results of the Stage 1 and Stage 2 assessments were combined to produce a single assessment report (On Site CHM 2013) for the current Avoca Tank Project Site. These staged assessments were described within the Background Paper prepared for the Applicant by R.W Corkery & Co Pty Ltd (2013). The Aboriginal Cultural Heritage Assessment report (On Site CHM 2013) has been updated to inform the EIS.

Some of the assessment processes undertaken by On Site CHM for Stage 1 and 2 are still described and explained separately within some sections of this report to demonstrate compliance with the NPW Act and associated policy protecting Aboriginal sites and objects.

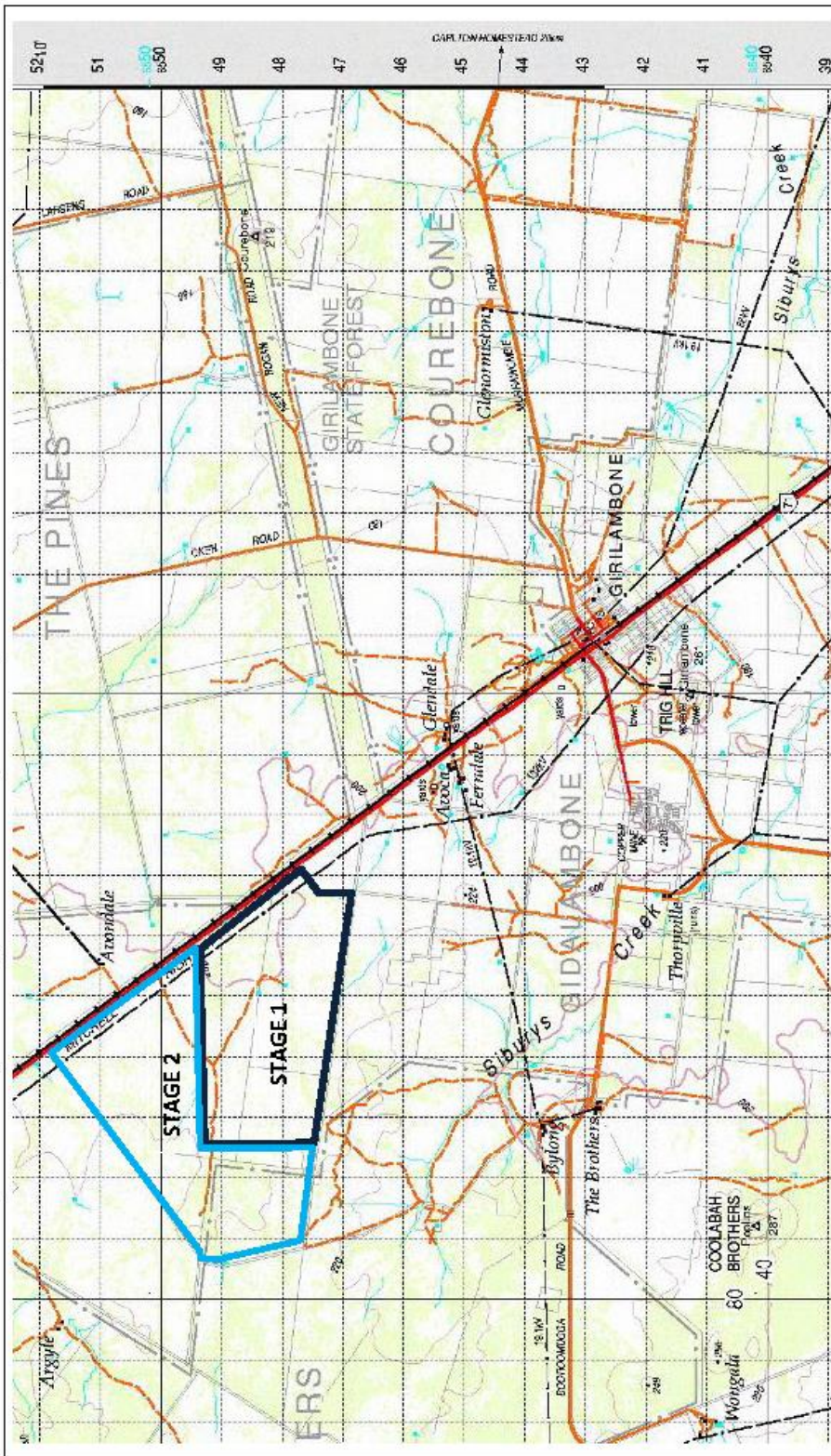
At the time of the surveys and assessments, the combined assessment areas of Stage 1 and 2 was 18.62km<sup>2</sup>, slightly more than the current Project Site described in **Section 1.1** and shown in **Figure 1.1**. The Stage 1 Avoca Tank assessment area covered approximately 8.72km<sup>2</sup> across part of Lots 10, 135 and 144 (DP 751315) and the Stage 2 assessment area covered approximately 9.90 km<sup>2</sup> across part of Lot 3 (DP 751342), Lots 10 and 135 (DP 751315). The Avoca Tank assessment areas (Stages 1 and 2) are situated on the Coolabah 8235 1:100,000 map sheet and a map showing their location is shown in **Figure 1.3**.

#### 1.4 PERSONNEL AND AUTHORSHIP

Gerard Niemoeller Principal Heritage Consultant of On Site CHM managed the project and led the research, fieldwork and preparation of this assessment report. Craig Reid, Assistant Archaeologist OSCHM assisted in the field work for Stage 1 and, Kate Duca Assistant Archaeologist On Site CHM assisted in the field work for Stage 2. David Tutchener, Archaeologist of On Site CHM undertook background research and prepared sections of this report.

Gerard Niemoeller conducted the Aboriginal consultation process in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010*. Paul Calvin of Straits Resources (Tritton) has also consulted with the Registered Aboriginal Parties about this Proposal and assessment.

Figure 1.3: Avoca Tank assessment area (18.62km<sup>2</sup>) assessed by On Site CHM (Stages 1 and 2). Stage 1 assessment area (8.72km<sup>2</sup>) across part of Lots 10, 135 and 144 (DP 751315) is shown in the dark blue polygon. The Stage 2 assessment area is shown in the light blue polygon (9.90 km<sup>2</sup>), across part of Lot 3 (DP 751342), Lots 10 and 135 (DP 751315) on the Coolabah 8235 1:100,000 map sheet.



## 2.0 METHODOLOGY

### 2.1 ABORIGINAL CULTURAL HERITAGE

Aboriginal or Indigenous cultural heritage is a broad and complex concept and encompasses both tangible and intangible aspects relating to Aboriginal Culture, Country and People.

The language for defining and describing Aboriginal cultural heritage (places, sites / archaeological sites, items and objects) is also often complex. The terms and definitions applied for describing Aboriginal cultural heritage varies between Federal, State and Local Government legislation and policy. The language and description applied in studies will not only commonly vary in response to jurisdictions, legislation and policy, but also between disciplines and practitioners in response to range of factors.

To provide some consistency and clarity for the reader this study applies the terms 'Aboriginal heritage places and values' in accordance with the Australia ICOMOS Burra Charter (Marquis-Kyle, P & M. Walker 2004). The *Burra Charter* definition of 'place' includes locations that embody spiritual value (such as Dreaming places, sacred landscapes, and stone arrangements), social and historical value (such as massacre sites), as well as scientific value (such as archaeological sites or objects). In fact, one place may be all of these things or may embody all of these values at the same time. (Practice Note: The Burra Charter and Indigenous Cultural Heritage Management)

In this study and relevant to NSW, use of the term 'place' includes the Aboriginal places, objects, sites and items within the meaning of the *NSW National Parks and Wildlife Act* and associated policy and relevant *NSW Local Environment Plan*. Information about Aboriginal places and objects is registered on the Aboriginal Heritage Information Management System or AHIMS register which commonly refers to 'sites'. Use of the terms sites and objects specifically relate to interpretation of the *NSW National Parks and Wildlife Act* and associated policy.

The values of a place refer to their cultural significance. The Burra Charter defines cultural significance as meaning aesthetic, historic, scientific, social or spiritual for past present or future generations (Marquis-Kyle, P & M. Walker 2004:11).

### 2.2 STATUTORY AND POLICY FRAMEWORK

Primary protection of Aboriginal heritage places and values in NSW is established at the State level under the *NSW National Parks and Wildlife Act* and information about Aboriginal places and objects is registered on the AHIMS register.

Aboriginal heritage may however also be protected under Commonwealth, additional NSW State and Local Government legislation and included on various databases. Commonwealth

legislation protecting Aboriginal cultural may include the *Environment Protection and Biodiversity Conservation Act (EPBC Act)* and the *Aboriginal and Torres Strait Islander Heritage Protection Act (ATSHPA)*. The Australian Heritage Database contains information about places nominated, under assessment or included on the World, National or Commonwealth Heritage lists and the Register of the National Estate.

In NSW Aboriginal heritage may also be protected under the *NSW Heritage Act* or the *Local Environment Plan* respectively. The NSW State Heritage Inventory or database contains information about heritage places and items on statutory lists in NSW. Relevant registers (Australian heritage database, NSW Heritage database and local heritage inventory) were searched as part of the due diligence process and the results are discussed below.

The Avoca Tank Project Site and any place or feature within is not nominated, under assessment or listed, or subject to relevant processes for the identification and protection of Aboriginal cultural heritage values under EPBC Act, NSW Heritage Act or Local Environment Plan.

### **2.2.1 NSW National Parks and Wildlife Act**

The Director General of the Office of Environment and Heritage (OEH) is responsible for protecting and conserving Aboriginal objects and declared Aboriginal places in NSW protected under the *NSW National Parks and Wildlife Act*.

**Aboriginal objects** are defined in NPW Act as any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

**Aboriginal places** are defined in NPW Act as a place declared under s.84 of the NPW Act that, in the opinion of the Minister, is or was of special significance to Aboriginal culture. Such areas need not contain any Aboriginal objects but can only be gazetted with the approval of the Minister.

Part 6 of the *National Parks and Wildlife Act 1974 (NPW Act)* provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. Harm is defined to mean destroying, defacing, damaging or moving an object from the land. There are a number of defences and exemptions to the offence of harming an Aboriginal object or place. One of the defences is that the harm was carried out under an Aboriginal Heritage Impact Permit (AHIP).

This assessment is being undertaken in accordance with relevant OEH policy and against the requirements of:

- *Aboriginal cultural heritage consultation requirements for proponents 2010*
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*
- *Guide to investigation, assessing and reporting on Aboriginal Cultural heritage in NSW*

### 2.3 STUDY METHODOLOGY

This Aboriginal Cultural Heritage Assessment has included:

- Consultation with the Aboriginal Community to: identify Aboriginal traditional owners, elders and custodians who can speak about the assessment area; ascertain their views about the cultural significance of identified Aboriginal heritage places and values; identify whether there are particular research themes or questions of interest that could be incorporated into any research design or addressed through archaeological assessment.
- An AHIMS database search to identify previously recorded Aboriginal sites and objects within or within proximity to the Study Area.
- Review of AHIMS Site cards to provide archaeological context for the assessment of the Study Area.
- Review of other relevant heritage registers and databases (such as the Australian Heritage Database, NSW State Heritage Register and Inventory, Bogan Local Heritage Register).
- Review relevant cultural heritage and archaeological reports to provide a regional and local context for the assessment of the Study Area and Aboriginal places and values.
- A description of the environmental context of the Study Area as an explanation of the relevant resource structure and to aid the development of predictions.
- Development of predictions concerning the archaeological potential within the Study Area.
- Conduct a site assessment/archaeological survey in partnership with the Aboriginal community to record and document information about Aboriginal places relevant to determining and assessing the cultural heritage significance.
- Relocation of previously recorded Aboriginal places, sites and objects (if appropriate or possible).
- Preparation of this report documenting the results of the above processes, assessing the significance of identified places and formulation of management strategies.



### 3.0 ABORIGINAL COMMUNITY AND CONSULTATION

#### 3.1 Aboriginal People in the Bogan Shire

The Avoca Tank study area falls within the boundaries of the Nyngan Local Aboriginal Land Council. According to Tindale (1974) the Girilambone and study area and falls within the boundaries of the Wongaibon Aboriginal people.

The study area is also within land under the Ngemba/Ngiyampaa Native Title Claim. A copy of relevant claim details was provided by the National Native Title Tribunal and is included in **Appendix 1**.

On Site Cultural Heritage Management and Straits Resources have consulted with NTS Corp in relation to the Native Title application for the Ngemba/Ngiyampaa People (Federal Court number: NSD415/12, NNTT number: NC12/1) throughout the assessment processes. Consultation against the *Aboriginal cultural heritage consultation requirements for proponents 2010* is documented in **Section 3.3**

#### 3.2 Aboriginal history

This section will outline the Aboriginal occupation of the region by drawing on available historical, ethno-historical and anthropological records of the Ngiyampaa Wangaaypuwan (Wongaibon) Aboriginal people and their neighbours.

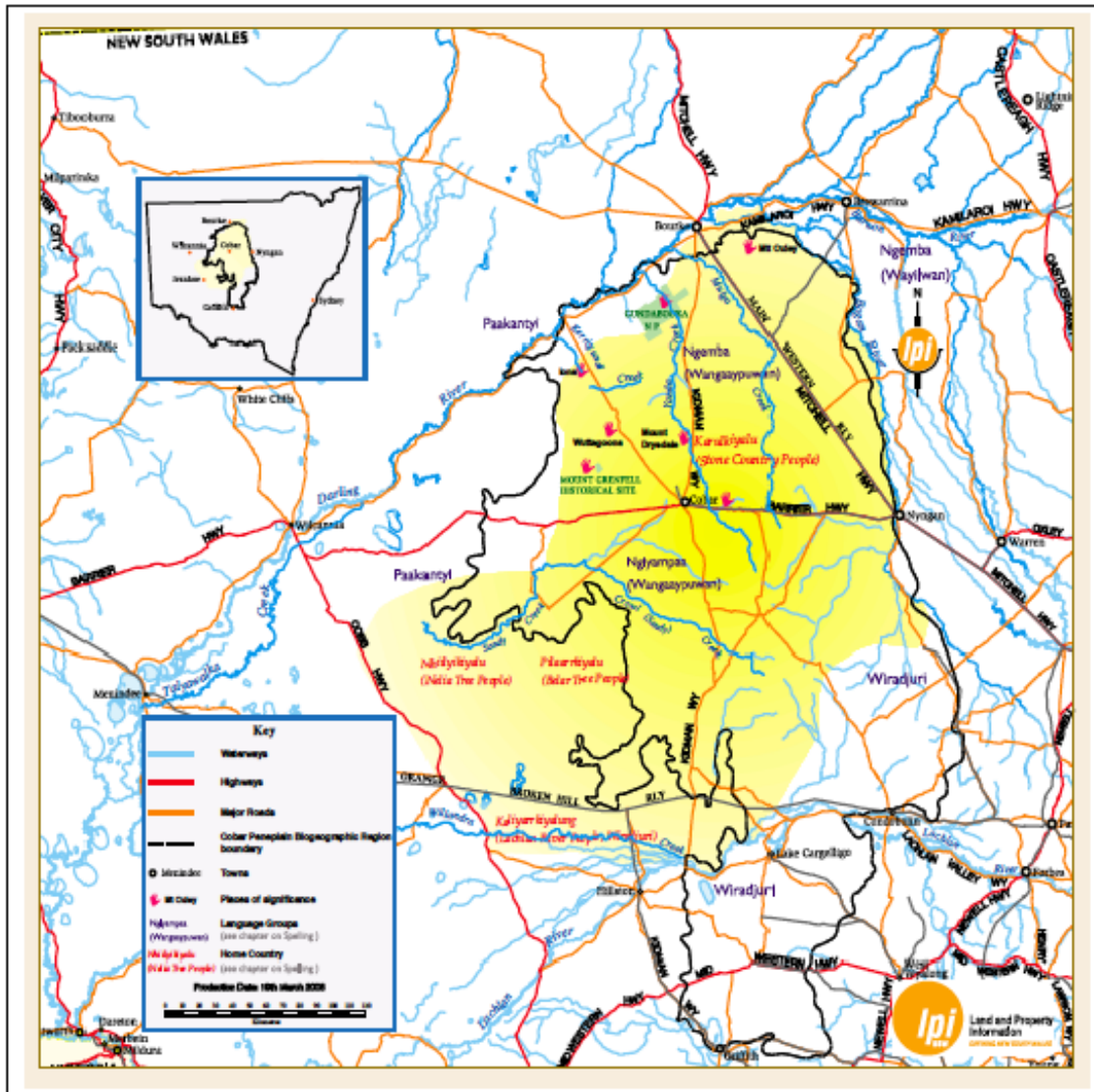
The Ngiyampaa Wangaaypuwan people are associated with the country roughly bounded in the north by the Darling-Barwon and Bogan Rivers, and in the south by the Lachlan River (Beckett et al, 2003) (See **Figure 3.3.1**). Ngiyampaa is a Pamu-Nyungan language of the Wiradhuric subgroup that once dominated the central highlands of the New South Wales. Ngiyampaa is also the word used to identify its speakers in this case, the Ngiyampaa Wangaaypuwan people. They distinguish themselves from other language groups in the area, these being the Ngemba, the Wiradjuri and the Paakantkji people.

Historical sources indicate that the European recording of the Ngiyampaa Wangaaypuwan and the consequent confusion in spelling causes some difficulty for the researcher. Other names for this group include Wongaibon, Wongai-bun, Wonghibone, Wonjhibon, Wonjibone, Wongibone, Wonghi, Wungai, Wuzai and Wozai (Tindale, 1974). Research (Donaldson, 1984) indicates that Wangaaypuwan is a way of speaking Ngiyampaa and differentiates them from other Ngiyampaa people in the area. Wangaaypuwan is comprised of the word 'Wangaay' and means the people who use 'Wangaay' for the word 'no' (Beckett et al, 2003). Ngiyampaa people also defined their identity by the type of country they occupied. For example the Ngiyampaa Wangaaypuwan people were stone country people whereas pilarr-kiyalu or Belar tree people lived near Willandra Creek. Donaldson (1997) has made a detailed comparison of

the Ngiyampaa place names and their anglicized equivalents. This study also includes further

details of the language and how it utilizes names to structure and communicate aspects of the Ngiyampaa Wangaaypuwan’s knowledge about and relationships to the land (Donaldson, 1997).

**Figure 3.1: Ngiyampaa Wangaaypuwan country (from Beckett, et al 2003:7)**



Traditionally the Ngiyampaa Wangaaypuwan people were organized as a matriarchal society with men moving to live with the bride’s family group after marriage. There were also strict laws regarding organized marriage and not marrying within your own ‘meat’, or family group. According to Fred Biggs who was interviewed by Jeremy Beckett the Ngiyampaa Wangaaypuwan people’s religion centred on the sky world inhabited by a creator Baiami and his law was used in initiation and marriage ceremonies (Beckett, 1994). A particular aspect of the Baiami belief system was the role of the ‘clever men’ who were mortal men who were

able to perform extraordinary feats. Exploits included such things as travelling long distances and being able to project long strings from their testicles, from which they were able to project themselves into the sky world and make rain (Beckett, 1994).

It is recorded that The Bogan River Wiradjuri, the Ngiyampaa Wangaaypuwan's eastern neighbours suffered significant conflict with early white settlers in the region. The early contact history in this region from 1835 to the 1920's is characterized by conflict between indigenous people and white settlers regarding land use (Native Title Tribunal, 1998). The penalties for Indigenous people attacking stock, or indeed settlers, were in many cases extreme. In 1824, Aboriginal resistance to pastoralism west of the Great Dividing Range was met with a proclamation of martial law, the NSW colonial government's strongest military response to pastoralist complaints (Harrison, 2004). Even still by 1846–49, there were 1866 squatters' runs in New South Wales and from 1860 to 1890 the success of the colonies' wool industry accompanied intensified European land use (Roberts, 1970: 362).

The transportation of convict labour to NSW ended in during the 1840s, and the discovery of gold in the 1850s produced an employment gap in the pastoral industry that was met by Indigenous men and women (See Figure 2.2) (Harrison, 2004).

The work itself was often only seasonal and mostly poorly paid. Often after time pastoralists came to appreciate the in depth Indigenous knowledge of the land including water sources, which made it possible to transport stock over long distances. In later years, as more European workers became available, pastoralists reduced the cash component of Aboriginal workers' wages to virtually nothing, or entrapped it in the accounts book of the property store (Goodall, 1995).

**Figure 2.2: W H Watts, 'Aboriginal workers, Willandra Station, Hillston area, New South Wales', c 1880. (Harrison, 2004: 33)**



By the 1930s, in most parts of NSW nearly all of the Indigenous pastoral workers were either fringe dwellers or 'clients' of the Aborigines Protection Board (Harrison, 2004). This was due to number of factors including; The Soldier Settlement Scheme which was used as a way of settling returned soldiers in the country after both world wars, and the simple fact that family sized blocks of land needed less people to work them than the larger pastoral properties had done in earlier periods (Brock, 1995). With the introduction of various technologies by the 1950's the swathes of jobs were lost in both the agricultural and pastoral industries, for example mechanized harvesters, the widespread use of motorbikes instead of horses and road trains eliminated the need for droving almost completely.

### 3.3 Aboriginal Community Consultation

The Aboriginal Consultation for this assessment has been conducted in accordance with the consultation processes set out in the OEH policy *Aboriginal cultural heritage consultation requirements for proponents 2010*.

According to the *Aboriginal cultural heritage consultation requirements for proponents 2010* (Section 1.1, pg 1) the purpose of the document is to establish the requirements for consultation with the registered Aboriginal parties as part of the heritage assessment process to determine potential impacts of proposed activities on Aboriginal objects and places and to inform decision making for any application for an AHIP.

The aim is to facilitate positive Aboriginal cultural heritage outcomes by:

- Affording an opportunity for Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal objects(s) and/or place(s) in the area of the proposed project to be involved in consultation so that information about cultural significance can be provided to OEH to inform decisions regarding applications for an AHIP.
- Providing Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal objects (s) and/or place(s) in the area of the proposed project with the opportunity to participate in decision making regarding the management of their cultural heritage by providing proponents information regarding cultural significance and inputting into management options.

The requirements set out a 4 stage consultation process (see attached summary) designed to feed into the assessment process and establish a timeframe of 84 days to progress through the 4 stages. The timeframes are documented against the stages in the table below. **Please note this is a simplified outline of the requirements.** A full version of the requirements can be downloaded at the OEH website:

[www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf](http://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf)

STAGE	MANDATORY TASKS FOR CONSULTATION STAGES	MIN REVIEW PERIOD
<b>Stage 1:</b>	<b>(Section 4.1.2) Notification of project proposal</b> Proponents required to identify Aboriginal persons who may hold cultural knowledge relevant to determining the significance of any Aboriginal places and objects within the study area by corresponding with 7 organisations as stipulated in requirements.	14 days
	<b>(Section 4.1.3) Registration of Interest</b> Advertise in the local newspaper Write to identified Aboriginal organisations or individuals and provide opportunity to register their interest to be consulted about the project and AHIPs (Registered Aboriginal Parties)	14 days
<b>Stage 2</b>	<b>(Section 4.2) Presentation of information about the proposed project</b> Provide information and methodology for the project to the Registered Aboriginal Parties	28 days
<b>Stage 3</b>	<b>(Section 4.3) Gathering information about cultural significance</b> Gather and document information about cultural significance of places and objects through consultation (conducted concurrently with Stage 2)	
<b>Stage 4</b>	<b>(Section 4.4) Review of draft cultural heritage assessment report</b> Incorporate information obtained in Stages 2 & 3 into draft Aboriginal heritage assessment report. Distribute draft Aboriginal heritage assessment report to Registered Aboriginal parties for review and incorporate any further input or comments.	28 days

Aboriginal consultation for Avoca Tank Study Areas (Stages 1 and 2) was conducted as part of the assessment process. Aboriginal community consultation process Stages 1 – 4 (consistent with that discussed in **Section 3.2** above) was conducted for the Avoca Tank Stage 1 Study Area between March and August of 2012.

The Aboriginal community consultation process was conducted for the Avoca Tank Stage 2 Study Area between September 2012 and January of 2013. The record of consultation for the Avoca Tank assessments for Stages 1 and 2 and demonstration of compliance with the requirements is detailed below in **Sections 3.3.1** and **3.3.2**

### 3.3.1 Aboriginal Community Consultation: Avoca Tank Study Area – Stage 1

#### **Stage 1 (Section 4.1.2)**

In accordance with Stage 1 (Section 4.1.2) of the requirements On Site CHM wrote to the below organisations on 19 March 2012 to identify Aboriginal persons who may hold cultural knowledge relevant to determining the significance of the Avoca Tank Study Area and any Aboriginal values that may be located within. Closing date for replies was 3 April 2012.

- a) Office of Environment and Heritage EPRG regional office, North West Dubbo.
- b) Nyngan Local Aboriginal Land Council.
- c) The Registrar, *Aboriginal Land Rights Act 1983* for a list of Aboriginal owners.
- d) The National Native Title Tribunal for a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements.

- e) Native Title Services Corporation Limited (NTSCORP Limited).
- f) Bogan Shire Council, Nyngan.
- g) Central West Catchment Management Authority, Nyngan for contact details of any established Aboriginal reference group.

Four responses were received from organisations (a), (b), (d) and (f) by close of comments on 3 April. Joedie Davis of CMA replied on 5 April following the close of comments. The only additional Aboriginal party identified by the CMA (other than OEH) not identified in correspondence from organisations (a), (b), (d) and (f) was that of Raylene Weldon.

The Aboriginal persons and organisations identified as potentially holding cultural knowledge relevant to determining the significance of Aboriginal values within the Avoca Tank Study Area are shown below in **Table 2.1**.

**Table 2.1: Aboriginal persons and organisations identified during stage 4.1.2 of the Aboriginal cultural heritage consultation requirements for proponents 2010**

Aboriginal Organisation / Individual Name	Address	Contact Details
Bogan Aboriginal Corporation CEO Lesly Ryan	46 Nymagee St NYNGAN NSW 2825	<a href="mailto:boganac@netxp.com.au">boganac@netxp.com.au</a> Ph: (02) 6832 1750 M: 0419418851
Nyngan Local Aboriginal Land Council / Vaneta Dutton CEO	PO Box 43 NYNGAN NSW 2825	<a href="mailto:nynganlalc@bigpond.com">nynganlalc@bigpond.com</a>
Marra Wallan Pty Ltd Mr John Shipp CEO	PO BOX 6088 Dubbo NSW 2830	<a href="mailto:John@marrawallan.com.au">John@marrawallan.com.au</a> <a href="mailto:john.shipp@bigpond.com">john.shipp@bigpond.com</a>
<b>NTS Corp Ltd</b> on behalf of Native Title application for the Ngemba/Ngiyampaa People (Federal Court number: NSD415/12, NNTT number: NC12/1) and Native Title applicants: Mrs Elaine Ohlsen Mr Peter Williams Mr Brett Smith Ms Danielle Flakeler-Carney Mr Neville Merritt Mr Edward Shipp Mr John Shipp Ms Grace Gordon Mr Jason Ford (identified by National Native Title Tribunal)	NTSCORP Ltd Unit 1a Suite 2.02, 44-70 Rosehill Street REDFERN NSW 2016	Phone: (02) 9310 3188 Fax: (02) 9310 4177 <a href="mailto:tlawrence@ntscorp.com.au">tlawrence@ntscorp.com.au</a> <a href="mailto:nkim@ntscorp.com.au">nkim@ntscorp.com.au</a>
Raylene Weldon Aboriginal Community member		<a href="mailto:raylene.weldan@det.edu.nsw.gov.au">raylene.weldan@det.edu.nsw.gov.au</a>

**Stage 1 (Section 4.1.3)**

On Site CHM wrote to identified Aboriginal persons and organisations listed in Table 2.1 on 4 April 2012 inviting them to register their interest by 19 April 2012 (**Appendix 1**).

In accordance with Section 4.1.3 of the consultation requirements a notice inviting registrations of interest and participation in the community consultation process also appeared in the Public Notices of the Nyngan Observer on Wednesday 4 April 2012. A copy of the advert is included below. Respondents were asked to register their interest by 19 April 2012 (**Appendix 1**).

**Aboriginal Cultural Heritage Assessment**

Tritton Resources Limited Pty proposes to undertake mineral exploration within part of Lots 10, 135 and 144 (DP 751315) on the Coolabah 8235 1:100,000 map sheet. The project area is approximately 4 kilometres northwest of the town of Girilambone NSW 2831 along the Mitchell Highway within the Bogan Shire.

Pursuant to *Aboriginal cultural heritage consultation requirements for proponents and National Parks & Wildlife Act 1974*, Aboriginal people holding cultural knowledge relevant to determining the significance of the subject land or Aboriginal objects within are invited to register interest and participate in a community consultation process.

The purpose of this consultation is to assist the proponent undertake an Aboriginal cultural heritage assessment, prepare an Aboriginal Heritage Impact Permit application if required and assist the Director General of OEH consider and make a determination of the application. Please register your interest by 19 April 2012.

Gerard Niemoeller  
On Site Cultural Heritage Management  
PO Box 574 NAROOMA NSW 2546  
[gerard@onsitechm.com.au](mailto:gerard@onsitechm.com.au)  
Ph: 0414441896

Below is a list of Aboriginal persons and organisations who registered their interest in response to the correspondence and advertisement in the paper to participate in the community consultation process (Registered Aboriginal Parties).

1. Bogan Aboriginal Corporation - Lesly Ryan, (via email)
2. Nyngan Local Aboriginal Land Council - Vaneta Dutton CEO (via email)
3. Marra Wallan Pty Ltd – John Shipp, CEO (via email)
4. Native Title Services for Ngemba/Ngiyampaa Claimants

**Stage 2 (Section 4.2) and Stage 3 (section 4.3)**

In accordance with Stage 2 (Section 4.2) and Stage 3 (section 4.3) of the *Aboriginal cultural heritage consultation requirements for proponents 2010* information about the proposed project, assessment methodology and request for information about the significance of this place was sent to the Registered Aboriginal parties on 24 April 2012 (**Appendix 1**). Respondents were asked to provide their input by 23 May 2012.

In accordance with Section 4.2.4(b) of the requirements and as part of the Aboriginal Cultural Heritage Assessment, the Registered Aboriginal parties (1, 2 and 3) were invited by Tritton Resources to participate in fieldwork between 26 - 30 April 2012.

Representatives of the Nyngan Local Aboriginal Land Council (Sheila Couley) and Bogan Aboriginal Corporation (Lesly Ryan) participated in an archaeological survey of the Avoca Tank Study Area area (Stager 1) between 26 and 30 April. Both Nyngan Local Aboriginal Land Council and Bogan Aboriginal Corporation are Registered Aboriginal Parties and participating in the formal consultation process. John Shipp of Marra Wallan was unable to participate in the fieldwork.

During the fieldwork the significance and management of all Aboriginal places were discussed with representatives of the Nyngan Local Aboriginal Land Council and Bogan Aboriginal Corporation (See **Section 9.0**).

It was also discussed that should the proposal shift from exploration to mining that AHIPs may be sought by Tritton Resources Pty Ltd to disturb the identified Aboriginal sites and objects.

The Registered Aboriginal Parties did not submit any written information or comments in response to documentation provided as part of Stage 2 or 3.

**Stage 4 (Section 4.4)**

A draft of the Stage 1 assessment report was sent to the registered Aboriginal parties on 26 July 2012. The Registered Aboriginal parties were provided 28 days to review the report and provide comment. The closing date for comments is 23 August 2012.

The Registered Aboriginal Parties did not submit any written information or comments about the draft assessment.

All correspondence documenting the consultation process for the Stage 1 Study Area is provided in **Appendix 1**.



### 3.3.2 Aboriginal Community Consultation: Avoca Tank Study Area – Stage 2

#### Stage 1 (Section 4.1.2)

In accordance with Stage 1 (Section 4.1.2) of the requirements On Site CHM wrote to the below organisations on 12 September 2012 to identify Aboriginal persons who may hold cultural knowledge relevant to determining the significance of the Avoca Tank Study Area and any Aboriginal values that may be located within. Closing date for replies was 27 September 2012.

- a) Office of Environment and Heritage EPRG regional office, North West Dubbo
- b) Nyngan Local Aboriginal Land Council
- c) the Registrar, *Aboriginal Land Rights Act 1983* for a list of Aboriginal owners
- d) the National Native Title Tribunal for a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements
- e) Native Title Services Corporation Limited (NTSCORP Limited)
- f) Bogan Shire Council, Nyngan
- g) Central West Catchment Management Authority, Nyngan for contact details of any established Aboriginal reference group

Five responses were received from organisations (a), (b), (c), (d) and (e) by close of comments on 27 September. The Aboriginal persons and organisations identified as potentially holding cultural knowledge relevant to determining the significance of Aboriginal values within the Avoca Tank Study Area are shown below in **Table 3.2**.

**Table 3.2: Aboriginal persons and organisations identified during stage 4.1.2 of the Aboriginal cultural heritage consultation requirements for proponents 2010**

Aboriginal Organisation / Individual Name	Address	Contact Details
Bogan Aboriginal Corporation CEO Lesly Ryan	46 Nymagee St PO Box 345 NYNGAN NSW 2825	<a href="mailto:boganac@netxp.com.au">boganac@netxp.com.au</a> Ph: (02) 6832 1750 M: 0419418851
Nyngan Local Aboriginal Land Council / Vaneta Dutton CEO	PO Box 43 NYNGAN NSW 2825	<a href="mailto:nynganlalc@bigpond.com">nynganlalc@bigpond.com</a>
Marra Wallan Pty Ltd Mr John Shipp CEO	79 Thompson Street / PO BOX 6088 Dubbo NSW 2830	<a href="mailto:John@marrawallan.com.au">John@marrawallan.com.au</a> <a href="mailto:john.shipp@bigpond.com">john.shipp@bigpond.com</a>
<b>NTS Corp Ltd</b> on behalf of Native Title application for the Ngemba/Ngiyampaa People (Federal Court number: NSD415/12, NNTT number: NC12/1) and Native Title applicants: Mrs Elaine Ohlsen Mr Peter Williams Mr Brett Smith Ms Danielle Flakeler-Carney	NTSCORP Ltd Notifications Officer PO Box 2105 STRAWBERRY HILLS NSW 2012.  Unit 1a Suite 2.02, 44-70 Rosehill Street REDFERN NSW 2016	Phone: (02) 9310 3188 Fax: (02) 9310 4177

Mr Neville Merritt Mr Edward Shipp Mr John Shipp Ms Grace Gordon Mr Jason Ford (identified by National Native Title Tribunal)		
Trevor Robinson	PO Box 73, Peak Hill NSW 2869	
Wiradjuri Interim Working party	PO Box 73, Peak Hill NSW 2869	

### Stage 1 (Section 4.1.3)

On Site CHM wrote to identified Aboriginal persons and organisations listed in **Table 2.2** on 9 October 2012 inviting them to register their interest by 24 October 2012 (**Appendix 2**).

In accordance with Section 4.1.3 of the consultation requirements a notice inviting registrations of interest and participation in the community consultation process also appeared in the Public Notices of the Nyngan Observer on Wednesday 10 October 2012. Copy of the advert is included below (see below). Respondents were asked to register their interest by 24 October 2012 (**Appendix 2**).

#### Aboriginal Cultural Heritage Assessment

Tritton Resources Limited Pty proposes to undertake mineral exploration within part of Lots 3 (DP 751342), Lots 10 and 135 (DP 751315) on the Coolabah 8235 1:100,000 map sheet. The Avoca Tank (Stage 2) project area is approximately 9 kilometres northwest of the town of Girilambone NSW 2831 along the Mitchell Highway within the Bogan Shire.

Pursuant to *Aboriginal cultural heritage consultation requirements for proponents and National Parks & Wildlife Act 1974*, Aboriginal people holding cultural knowledge relevant to determining the significance of the subject land or Aboriginal objects within are invited to register interest and participate in a community consultation process.

The purpose of this consultation is to assist the proponent undertake an Aboriginal cultural heritage assessment, prepare an Aboriginal Heritage Impact Permit application if required and assist the Director General of OEH consider and make a determination of the application. Please register your interest by 24 October 2012.

Gerard Niemoeller  
On Site Cultural Heritage Management  
PO Box 574 NAROOMA NSW 2546  
[gerard@onsitechm.com.au](mailto:gerard@onsitechm.com.au)  
Ph: 0414441896

Below is a list of Aboriginal persons and organisations who registered their interest in response to the correspondence and advertisement in the paper to participate in the community consultation process (Registered Aboriginal Parties).

1. Bogan Aboriginal Corporation - Lesly Ryan, CEO (via email).
2. Nyngan Local Aboriginal Land Council - Vaneta Dutton CEO (via email).
3. Native Title Services for Ngemba/Ngiyampaa Claimants – c/o Neville Kim.

**Stage 2 (Section 4.2) and Stage 3 (section 4.3)**

In accordance with Stage 2 (Section 4.2) and Stage 3 (section 4.3) of the *Aboriginal cultural heritage consultation requirements for proponents 2010* information about the proposed project, assessment methodology and request for information about the significance of this place was sent to the Registered Aboriginal parties on 26 October 2012 (**Appendix 2**). Respondents were asked to provide their input by 24 November 2012.

In accordance with Section 4.2.4(b) of the requirements and as part of the Aboriginal Cultural Heritage Assessment, the Registered Aboriginal parties (1, 2 and 3) were invited by Tritton Resources to participate in fieldwork survey from the 29<sup>th</sup> of October – 2<sup>nd</sup> of November 2012.

Representatives of the Nyngan Local Aboriginal Land Council (Sheila Couley) and Bogan Aboriginal Corporation (Lesly Ryan) participated in an archaeological survey of the Avoca Tank area between 29 October and 2 November 2012. Both Nyngan Local Aboriginal Land Council and Bogan Aboriginal Corporation are Registered Aboriginal Parties and participating in the formal consultation process. Neville Merritt of the Ngemba/Ngiyampaa Native Title claim group also participated in the fieldwork and survey on 1 – 2 November 2012. On November 1 Neville Merritt met with Sheila Couley (Nyngan Local Aboriginal Land Council) and Lesly Ryan (Bogan Aboriginal Corporation), Paul Calvin (Straits Resources) and Gerard Niemoeller and Kate Duca of On Site CHM. Paul Calvin and Gerard Niemoeller provided an overview of the survey and assessment process for the Avoca Tank project area. Results and identified places within the Avoca Tank Stage 1 study area were also discussed. The agenda and survey plan for following day was also discussed.

On Friday 2 November 2012, Neville Merritt was also shown the Avoca Tank Stage 1 study area surveyed in April 2012. We also visited sites Avoca Tank 1, 2 and 4. Management recommendations from the Stage 1 assessment were also discussed with Neville. Some lengthy discussion was had with the Aboriginal parties about the scar tree (Avoca Tanks 4) and the potential mine footprint. The mine footprint would largely be determined by the location and depth of the target ore deposit and whether the mine was proposed to be open cut or underground.

The Aboriginal parties agreed that if the tree needed to be moved it could and some preliminary strategies about any future potential removal and relocation were discussed. The

Aboriginal parties present expressed the opinion that the sensitive removal, conservation treatment, relocation and reinstatement at another location would be an acceptable outcome. The Registered Aboriginal parties would decide on an appropriate location for the relocation and reinstatement of the tree. On Site CHM explained that such a process would require an AHIP and a methodology for the removal, conservation and reinstatement would need to be developed as part of the AHIP application. A Care Agreement would also need to be developed as part of the AHIP application. Aboriginal parties present were satisfied with these discussions and generally in agreement with this management strategy if required. The Registered Aboriginal Parties did not submit any written information or comments in response to documentation provided as part of Stage 2 or 3.

#### **Stage 4 (Section 4.4)**

A draft of this report was sent to the registered Aboriginal parties on 21<sup>st</sup> February 2013. The Registered Aboriginal parties were provided 28 days to review the report and provide comment. The closing date for comments was 22<sup>nd</sup> March 2013.

All of the registered parties supplied comment on the draft. Nyngan LALC and Bogan Aboriginal Corporation endorsed the assessment and resulting recommendations. A copy of these endorsement letters is included in **Appendix 2**.

Native Title Services Corporation, on behalf of the Ngemba/Ngiyampaa Native Title claim group, also provided comment on the assessment. A copy of the comments is also included at **Appendix 2** and a response to these comments is included in **Section 10.4**. NTS provided further response to these comments and these are also included at **Appendix 2**.

## 4.0 LANDSCAPE CONTEXT

According to the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010: 8), the purpose of reviewing the landscape context is to assist in the determination or prediction of:

- The potential of the landscape, over time, to have accumulated and preserved objects.
- The ways Aboriginal people have used the landscape in the past, with reference to the presence of resource areas, surfaces for art, other focal points for activities and settlement.
- The likely distribution of the material traces of Aboriginal land use based on the above.

Consideration of the landscape is essential to the definition and interpretation of Aboriginal land use across a landscape. The landscape will provide clues as to those areas of land that may have been more intensively used by Aboriginal people in the past, and also provide the context within which the material remains of past Aboriginal occupation may be preserved and detectable (DECCW 2010:8).

The landscape context should be appropriate in scale and detail relative to the study area and might include aspects relating to landscape history, description of landforms and geomorphic activity, soils, land use history and where relevant natural resources.

The archaeological record that we seek to understand is a reflection of Aboriginal land use and occupation. The archaeological potential of a given area will commonly be influenced by major factors such as access to potable water, stone resources suitable for the manufacture of stone tools, natural resources providing foodstuffs and other materials, shelter and suitable camping areas.

### 4.1 ENVIRONMENTAL CONTEXT OF THE AVOCA TANK STUDY AREA

Unless otherwise referenced the following environmental information is summarised from information supplied by Tritton from the Review of Environmental Factors for the Avoca Tank Project.

The Girilambone Region is classified as having a sub-arid climate with mean daily temperatures ranging between 19°C to 34°C in summer (January) and 4°C to 16°C in winter and with annual rainfall of approximately 445mm. The landscape around Girilambone consists of flat to gently undulating surfaces with extensive low lying ridges formed in response to the more resistant lithologies, such as quartzites and minor volcanic, formed throughout the region (Ackerman 2005:66). There are no major outcrops of these lithologies within the study area.

The desktop review indicates that there is very little topographic variation or relief within the Avoca Tank study areas (Stage 1 and Stage 2). Topographic maps show no rivers, creeks or permanent water holes and no potable water is readily available. Several dams are present but these are presumably from more recent times.

Most of the Stage 1 Study Area is dominated by a low rise extending east west. Broad and shallow drainage channels extend along the northern and southern margin of the rise. Several broad and shallow drainage channels also dissect the Stage 2 Study Area project and low rises in between. Drainage channels in the Stage 1 and 2 Study Areas are generally marked by dense white cypress regrowth. The drainage channels do not hold water or form formalised creeks at any point in the Study Areas and would only drain water during periods of heavy rains.

The Study Area appears to have been grazed heavily in the past. This is based on signs of disturbance including bare soil scalds, soil erosion, multi-stemmed Poplar Box trees (which have coppiced after ring barking or cutting off near the base) and patches of dense White Cypress pine regrowth. Minor areas occur as derived grassland, probably from more recent land clearing, while the entire Study Area was probably cleared at an earlier time based on the number of coppiced trees.

### Geology

The Girilambone region is located within the western portion of the Lachlan Fold Belt. The district is underlain by the Girilambone Beds, a Cambro-Ordovician sequence of dominantly clastic rock types. Regionally, the Girilambone Beds consist of quartzofelspathic schist, phyllite, greywacke, slate, quartzite and minor altered basic volcanics and intrusives.

Within the vicinity of the Avoca Tank Project area, the Girilambone Beds include variably to well laminated psammopelites, pelites and greywackes lying stratigraphically above a thick sequence of mafic volcanics and intrusives. Strong magnetite minor sulphide alteration occurs on and above the contact zone and locally is well mineralised.

### Landscapes

According to the landscape classification system described by Mitchell DECCW (2002) the Study Area falls within the Cobar Downs (Crd) landscape of the Cobar Penepplain Bioregion. The Cobar Downs landscape includes parts of seven land systems: *Cobar*, *Coolabah*, *Ironstone*, *Killala*, *Kopyje*, *Pirillie* and *Prattenville*.

According to Mitchell DECCW (2002:32) the Cobar Downs landscape is a landscape complex of slightly undulating rounded ridges and higher residuals of many Ordovician and Silurian sedimentary and metamorphic rocks, undulating rounded Devonian sandstone ridges or low plateau, rounded ridges with siliceous and ferruginous stones from Cretaceous or Tertiary conglomerates. Occasional overlying sand dune. Well defined dendritic drainage lines vary from broad to narrow, relief 10 to 20m. Scattered rock outcrop on ridges, stony surfaces

common on slopes. Shallow gravelly loamy soils, or ferruginous clay loam on ridges, grading to deeper acid and neutral red earths with hardpan down slope and calcareous red earths with areas of gilgai in drainage lines. Deep sands, sandy earths, and red earths on dunes.

### Soils

Soils in the Girilambone area typically comprise sands, red-brown sandy gravels and colluvial soil. Around the minor rocky outcrops on the exploration site the soils are normally skeletal and on the hill flanks and plains, silty clays and sandy loams predominate.

Soils within the Study Area are classified within the Cobar land system and the Mineshaft land system. Soils of the Cobar land system comprise shallow gravelly loamy soils, grading to deeper acid and neutral red earths with hardpans downslope and in drainage lines. Soils of the Mineshaft land system comprise shallow stony, sandy and loamy soils that deepen slightly along drainage lines.

Soils within the Study Area are characterised by red earths. Very little topsoil remains, principally, as a result of poor farming practices, such as overgrazing. Gully erosion is evident on and surrounding the Avoca Tank Project area.

**Vegetation Communities** of the Study Area (Stages 1 and 2) can be characterized as woodland. The canopy trees are generally relatively young in age and most trees are coppiced confirming that broad scale clearing has occurred in the past. Vegetation of the study area is described as:

- **Canopy:** Dominated by Poplar Box (*Eucalyptus populnea* subsp. *bimbil*) and Gum Coolibah (*Eucalyptus intertexta*), with occasional Kurrajong (*Brachychiton populneus* subsp. *populneus*) with areas of dense White Cypress Pine regrowth.
- **Midstorey:** Dominated by Wilga (*Geijera parviflora*) and Emubush (*Eremophila mitchellii*), with various Wattles (*Acacia* spp.) and Western Rosewood (*Alectryon oleifolius*). Poplar Box and Gum Coolibah saplings were quite common.
- **Groundcover layer:** Dominated by various native grasses, including Curly Windmill Grass (*Enteropogon acicularis*), Purple Lovegrass (*Eragrostis lacunaria*), Panic grass (*Panicum decompositum* var. *tenuius*), Knottybutt Grass (*Paspalidium constrictum*), Small Burrgrass (*Tragus australianus*), Five minute Grass (*Tripogon loliiformis*), plus various chenopods and herbs.

EnviroKey (2012) identified four vegetation communities within the study Avoca Tank Stage 1 and 2 Study Areas. A table showing identified vegetation communities is provided at Table 3.1 and the spatial extent of vegetation communities described by EnviroKey is shown in Figure 4.14.1.

**Table 3.1: Native vegetation communities of the Study Area (Stages 1 and 2) (after EnviroKey 2012).**

Vegetation Community Type	Extent within study area (ha)	Extent within study area (%)
Benson ID 103 - Poplar Box – Gum Coolabah and White Cypress Pine Shrubby Woodland mainly in the Cobar Penneplain Bioregion	1,749 ha	97.5 %
ID 72 – White Cypress Pine – Poplar Box woodland on footslopes and penneplains mainly in the Cobar Penneplain Bioregion	1.4 ha	0.08 %
ID 174 – Mallee – Gum Coolabah woodland on red earth flats of the eastern Cobar Penneplain Bioregion	17 ha	0.9 %
Benson ID 229 – Derived mixed shrubland on loamy-clay soils in the Cobar Penneplain Bioregion	29 ha	1.6 %

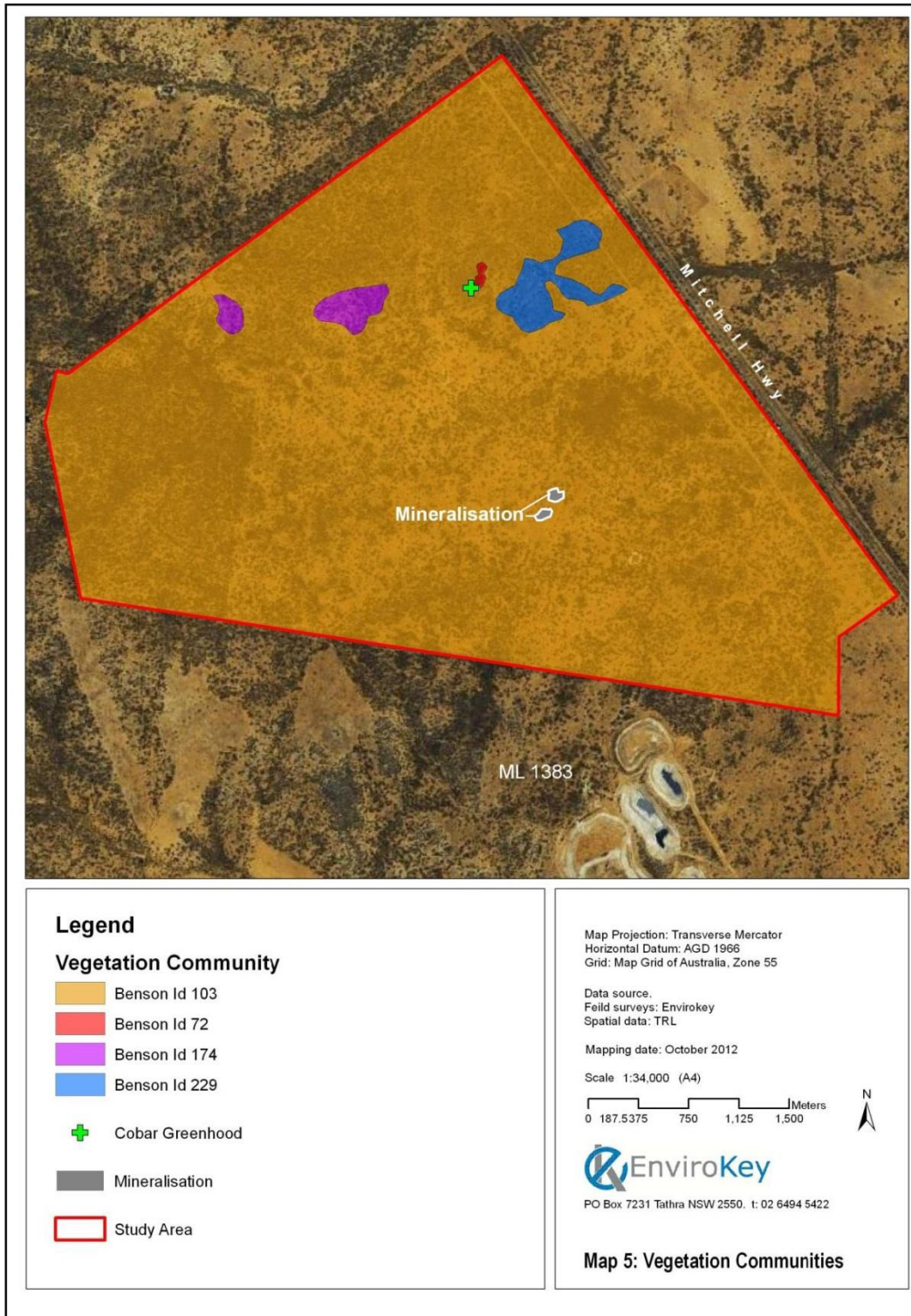
The majority vegetation community (Benson ID 103) is described below. For additional vegetation descriptions please see EnviroKey (2012).

Benson ID 103 - Poplar Box – Gum Coolabah and White Cypress Pine Shrubby Woodland mainly in the Cobar Penneplain Bioregion

- This community comprised a woodland (occasionally an open woodland) and was generally dominated by Poplar Box (*Eucalyptus populnea* subsp. *bimbil*) and Gum Coolabah (*Eucalyptus intertexta*), with occasional Kurrajong (*Brachychiton populneus* subsp. *populneus*) and White Cypress Pine (*Callitris glaucophylla*) to 20m in height. In run-on areas, Gum Coolabah and White Cypress Pine dominated. Shrub cover ranged from sparse to dense, with the most dense cover occurring under canopy trees and/or in run-on areas. The most common shrub species were Wilga (*Geijera parviflora*), Budda (*Eremopholia mitchellii*), Western Golden Wattle (*Acacia decora*) and Ironwood (*Acacia excelsa*). Good rainfall in recent seasons supported a relatively high number and density of native groundcovers, including 20 grass species and various chenopods and herbs.
- Some variation in vegetation composition was evident within the study area, which generally is associated with subtle differences in topography. Run-on areas often had a relatively dense canopy/midstorey cover that was dominated by Poplar Box (*Eucalyptus populnea* subsp. *bimbil*) and/or White Cypress Pine (*Callitris glaucophylla*). Whereas, run-off areas generally had a sparser canopy/midstorey cover with Gum Coolabah (*Eucalyptus intertexta*) being a co-dominant with Poplar Box and only scattered White Cypress Pine. Historic disturbance factors probably played a role in this variation also (e.g. some run-on areas were covered with patches of very dense White Cyprus Pine regrowth). Despite this variation, vegetation composition and structure across the entire site aligned more closely to Benson ID 103 than any other vegetation communities described in that classification.



Figure 4.1: Native vegetation communities of the Study Area (reproduced from EnviroKey 2012).



## 4.2 EUROPEAN HISTORY AND LANDUSE

### *Early History*

Charles Sturt first named the River Bogan in 1828, yet it was explorer and surveyor Major Mitchell who documented early European exploration of the Bogan region (Bogan Shire Council, 2012). Mitchell first surveyed the area in 1835 and many settlers came closely behind, but due to the resistance of the local indigenous groups many cattle runs were given up and later reclaimed by other graziers, making it difficult to record all the changes that occurred (Nyngan Historical Society, 1983). The European relationship with local indigenous groups on the lower Bogan River was strained by conflict and, as a result, and after multiple massacres and retaliations in the area the government cancelled a number of pastoral licenses in 1845 (About NSW, 2012). The area surrounding the Bogan River was difficult to settle in a number of ways as the early graziers of West Bogan County not only had difficulties attempting to subdue the local Indigenous groups, but they also suffered through anthrax outbreaks among their sheep and cattle herds, which devastated livestock numbers (Nyngan Historical Society, 1983). The Municipality of Nyngan was proclaimed on February 17, 1891 with Nyngan having a population of 1355, and in 1906 the Bogan Shire was incorporated.

### *History of the Avoca Tank Project Area*

The subject land within the Avoca Tank Project area (Lots 10, 135 and 144 [DP 751315] or part of) are within the local government area of Bogan, Parish of Gidalambone within the county of Canbelego.

Investigation into the site history for the Avoca Tank project area is divided into two stages: Stage 1 (Lot 135 and subsequently 144 and 10) and Stage 2 investigations (Lot 3).

### **Stage 1 Study Area**

An early Parish Map of Gidalambone indicates that the land units in the activity area of the Avoca Tank Project Stage 1 was marked as Lot 135 and was wholly owned by a Kenneth MacKinnon as early as 1910 and had a total area of 4087 acres (See **Appendix 3.1**). The Sydney Morning Herald on Tuesday 14 January 1919 notes that upon his death Kenneth McKinnon, grazier, bequeathed his property to his widow Catherine McKinnon and two sons Malcolm and Donald.

A later Parish Map in 1916 (See **Appendix 3.2**) indicates that the original Lot 135 was subdivided as early as 1907 into three parcels; Lot 10 (Acres 2563), Lot 135 (502 Acres) and Lot 144 (1022 Acres). Lot 144 was acquired by The Australian Bank of Commerce (See **Appendix 3.2**) and repurchased by at a later date by MacKinnon, Fuller and Lanson as illustrated by a 1937 parish map (See **Appendix 3.3**).

It would appear likely that the activity area under investigation was not only used for grazing purposes, but also for mining or at the very least mineral prospecting. The activity area, which

incorporates the Avoca Tank project area, is clearly marked as part of the Bogan Gold Fields on the map of West Bogan (See **Appendix 3.3**). It is also noted in a local history of the region (Heckendorf, K. 1980) that at Avoca, 3 miles NNW of Girilambone traces of gold were found.

It is also quite possible that the MacKinnon family (the name was most probably also spelt McKinnon) was related to the Alec McKinnon who held the licence for the Railway Hotel (also known as the Girilambone Hotel) from 1881 to 1921 (Heckendorf, K. 1980; 28).

### Stage 2 Study Area

Is located to the south western corner of McKinnon's block, Lot 3 that comprises an area of 1575 acres is marked in 1910 as under the control of H. Thorpe, and may have utilized for mining purposes at some point (See **Appendix 3.1**). This block falls into a different parish division from the Stage 1 investigation and is included in the Parish of The Brothers. This is most likely the Henry Thorpe who also owned the block directly to the north of the activity area. A Parish map of the Brothers in 1911 (See **Appendix 3.4**) shows that this portion of the activity area was a Crown Lease under the name of J.H. Ferguson. Later maps of the Brothers Parish (See **Appendix 3.5** and **3.6**) indicated that Lot 3 was still listed under the name J.H. Ferguson in 1926 and 1957.

In 1900 the Girilambone Primary School photo (See Figure 4.2) a pupil named Mary Thorpe is listed as Mary Thorpe (McKinnon) of 'Glendale', most likely indicating a marriage later in life into the McKinnon family, perhaps coincidentally there is a Tom McKinnon of 'Glendale' is also shown in the photo (Heckendorf, K. 1980; 48). 'Glendale' appears to be an agricultural property within Girilambone. It would also appear that both the Thorpe's and McKinnon's had a hand in the businesses of Girilambone in stores and hotels respectively (Heckendorf, K. 1980; 19).

It would appear that the Thorpe family had a substantial impact on the town of Girilambone as it is known that the 'Thorpe boys had a butchery and other retail based interests in the town' (Heckendorf, K. 1980; 17). It is also quite likely that William Henry Thorpe who was postmaster of Girilambone from 1921-24 was a descendant of Henry Thorpe (Heckendorf, K. 1980; 39).

### 4.3 LATER 20TH CENTURY LAND USE

The area of Bogan in the later 20th Century has been utilized mostly for agricultural purposes and mining. For instance during the 1980's the price of copper was pushed to record highs because of supply disruptions such as the Bougainville conflict. This stimulated the slackened local interest in copper exploration, and Nord Pacific Ltd commenced work aimed at bringing the old Girilambone copper mine back into production as an open cut mine (NSW DPI, 2007).

Figure 4.2: 1900 the Girilambone Primary School photo (Heckendorf, K. 1980; 48)



The greater area of Nyngan has suffered from a number of major floods in the 1990's, in order to combat this a levee was built to protect against future flooding of the Bogan River (Bogan Shire Council, 2012).

#### 4.4 SUMMARY CONCLUSIONS

The Avoca Tank Study Area (Stages 1 and 2) does not contain major sources of potable water likely to act as a foci point for Aboriginal occupation in the past. No major topographic relief, reflecting more resistant lithologies (such as quartzite and minor volcanic) is apparent in the Study Area. This is also likely to mean that stone outcrops suitable for the manufacture of stone tools may be scarce.

The integrity of the Study Area has been degraded due to previous land use and practices. Based on the number of coppiced trees the entire Study Area was probably cleared at an earlier time. Very little topsoil remains, principally, as a result of poor farming practices, such as overgrazing. Floods in the 1990's are also likely to have displaced, eroded or potentially obscured Aboriginal objects. These factors are likely to have had an effect on the visibility and integrity of any Aboriginal occupation material within the Study Area.

## 5.0 PREVIOUS ARCHAEOLOGICAL WORK

### 5.1 PREVIOUS STUDIES AND DISTRIBUTION OF SITES IN GIRILAMBONE AREA

A search of the Aboriginal Heritage Information Management System or AHIMS register was undertaken for a 10 EW x 10 NS kilometre area (100 km<sup>2</sup>) surrounding the Avoca Tank Study Area. Table 4.1 below shows the grid coordinates for the AHIMS register search. A total of 57 sites have been previously recorded within the 100 km<sup>2</sup> search area. Aboriginal sites identified by the AHIMS site register search are listed in Table 5.2 and shown in Figure 5.1. The results of the AHIMS site register search are provided in Appendix 4.

**Table 4.1 - Minimum and maximum grid references employed for AHIMS register search**

	Minimum	Maximum
<b>Easting</b>	55 478000	55 488000
<b>Northing</b>	6545000	6555000

Of the 57 previously recorded AHIMS sites a total of 11 sites have been previously recorded within the current Avoca Tank Study Area. Sites previously recorded within Study Area are listed in Table 5.33 and their distribution is shown in Figure 5.25.2. The site cards for the 11 sites previously recorded within the Study Area are also provided in Appendix 4.

**Table 5.2 – AHIMS Sites recorded in within 100km<sup>2</sup> search area. Grid references from AHIMS**

SiteID	SiteName	Zone (AGD)	Easting	Northing	Site Features
26-3-0067	GM-HS-28_(Hearth);Girilambone Copper Mine;	55	484710	6547330	Earth Mound :Hearth : -
26-3-0068	GM-HS- 9_(Hearth);Girilambone Copper Mine;	55	484680	6547340	Earth Mound : -, Hearth : -
26-3-0070	GM-OS/HS- 1_(Hearth); Girilambone Copper Mine;	55	484760	6548100	Earth Mound : -, Hearth : -, Artefact : -
26-3-0071	GC-OS/HS-2_(Hearth); Girilambone Copper Mine;	55	484760	6548100	Earth Mound : -, Hearth : -, Artefact : -
26-3-0017	GC-ST-11; Girilambone Copper Mine;	55	485880	6545950	Modified Tree (Carved or Scarred) : -
26-3-0018	GC-ST-12;Girilambone Copper Mine;	55	485880	6545950	Modified Tree (Carved or Scarred) : -
26-3-0019	GC-ST-13;Girilambone Copper Mine;	55	485960	6546010	Modified Tree (Carved or Scarred) : -
26-3-0020	GC-ST-14;Girilambone Copper Mine;	55	485960	6546010	Modified Tree (Carved or Scarred) : -
26-3-0021	GC-ST-15;Girilambone Copper Mine;	55	485960	6546010	Modified Tree (Carved or Scarred) : -
26-3-0022	GC-ST-16;Girilambone Copper Mine;	55	485930	6545730	Modified Tree (Carved or Scarred) : -
26-3-0023	GC-ST-17;Girilambone Copper Mine;	55	486390	6545590	Modified Tree (Carved or Scarred) : -

SiteID	SiteName	Zone (AGD)	Easting	Northing	Site Features
26-3-0024	GC-ST-18;Girilambone Copper Mine;	55	486390	6545590	Modified Tree (Carved or Scarred) : -
26-3-0025	GC-ST-19;Girilambone Copper Mine;	55	486390	6545470	Modified Tree (Carved or Scarred) : -
26-3-0026	GC-ST-20;Girilambone Copper Mine;	55	486680	6545530	Modified Tree (Carved or Scarred) : -
26-3-0027	GC-CT/ST-20;Girilambone Copper Mine;	55	486650	6545500	Modified Tree (Carved or Scarred) : -
26-3-0028	GC-CT/ST-22;Girilambone Copper Mine;	55	486650	6545500	Modified Tree (Carved or Scarred) : -
26-3-0029	GC-ST-23;Girilambone Copper Mine;	55	487690	6545180	Modified Tree (Carved or Scarred) : -
26-3-0030	GC-ST-24;Girilambone Copper Mine;	55	487700	6545510	Modified Tree (Carved or Scarred) : -
26-3-0031	GC-ST-25;Girilambone Copper Mine;	55	485990	6545590	Modified Tree (Carved or Scarred) : -
26-3-0032	GC-ST-26;Girilambone Copper Mine;	55	485760	6546080	Modified Tree (Carved or Scarred) : -
26-3-0033	GC-ST-27;Girilambone Copper Mine;	55	484900	6545900	Modified Tree (Carved or Scarred) : -
26-3-0034	GC-OS-1;Girilambone Copper Mine;	55	484760	6548100	Artefact : -
26-3-0065	GM-HS-26_(Hearth);Girilambone Copper Mine;	55	486680	6545530	Earth Mound : -, Hearth : -
26-3-0066	GM-HS-27_(Hearth);Girilambone Copper Mine;	55	484630	6547340	Earth Mound : -, Hearth : -
26-3-0011	GC-ST-7;Girilambone Copper Mine;	55	485780	6544830	Modified Tree (Carved or Scarred) : -
26-3-0012	GC-ST-6;Girilambone Copper Mine;	55	485780	6544830	Modified Tree (Carved or Scarred) : -
26-3-0013	GC-ST-8;Girilambone Copper Mine;	55	486150	6545810	Modified Tree (Carved or Scarred) : -
26-3-0014	GC-ST-10;Girilambone Copper Mine;	55	485930	6546000	Modified Tree (Carved or Scarred) : -
26-3-0016	GC-ST-9;Girilambone Copper Mine;	55	485930	6546000	Modified Tree (Carved or Scarred) : -
26-3-0119	GC-OS-1	55	484760	6548100	Artefact : 1
26-3-0144	GC-HS-26	55	486680	6545530	Hearth : 1
26-3-0145	GC-HS-27	55	484630	6547340	Hearth : 1
26-3-0146	GC-HS-28	55	484710	6547330	Hearth : 1
26-3-0147	GC-HS-29	55	484680	6547340	Hearth : 1
26-3-0149	GC-OS-HS-1	55	484760	6548100	Hearth : 1
26-3-0155	GC-ST-6	55	485780	6544830	Modified Tree (Carved or Scarred) : 1
26-3-0156	GC-ST-7	55	485780	6544830	Modified Tree (Carved or Scarred) : 1
26-3-0157	GC-ST-8	55	486150	6545180	Modified Tree (Carved or Scarred) : 1
26-3-0158	GC-ST-9	55	485930	6546000	Modified Tree (Carved or Scarred) : 1
26-3-0159	GC-ST-10	55	485930	6546000	Modified Tree (Carved or Scarred) : 1
26-3-0160	GC-ST-11	55	485880	6545950	Modified Tree (Carved or Scarred) : 1
26-3-0161	GC-ST-12	55	485880	6545950	Modified Tree (Carved or

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SiteID	SiteName	Zone (AGD)	Easting	Northing	Site Features
					Scarred) : 1
26-3-0162	GC-T-13	55	485960	6546010	Modified Tree (Carved or Scarred) : 1
26-3-0163	GC-ST-14	55	485960	6546010	Modified Tree (Carved or Scarred) : 1
26-3-0164	GC-ST-15	55	485960	6546010	Modified Tree (Carved or Scarred) : 1
26-3-0165	GC-ST-16	55	485930	6545730	Modified Tree (Carved or Scarred) : 1
26-3-0166	GC-ST-17	55	486390	6545590	Modified Tree (Carved or Scarred) : 1
26-3-0167	GC-ST-18	55	486390	6545590	Modified Tree (Carved or Scarred) : 1
26-3-0168	GC-ST-19	55	486390	6545470	Modified Tree (Carved or Scarred) : 1
26-3-0169	GC-ST-20	55	486680	6545530	Modified Tree (Carved or Scarred) : 1
26-3-0170	GC-CT/ST-21	55	486650	6545500	Modified Tree (Carved or Scarred) : 1
26-3-0171	GC-CT/ST-22	55	486650	6545500	Modified Tree (Carved or Scarred) : 1
26-3-0173	GC-ST-24	55	487700	6545510	Modified Tree (Carved or Scarred) : 1
26-3-0174	GC-ST-25	55	485990	6545590	Modified Tree (Carved or Scarred) : 1
26-3-0175	GC-ST-26	55	485760	6546080	Modified Tree (Carved or Scarred) : 1
26-3-0176	GC-ST-27	55	484900	6545900	Modified Tree (Carved or Scarred) : 1
26-3-0172	GC-ST-23	55	487690	6545180	Modified Tree (Carved or Scarred) : 1

**Table 5.3: AHIMS Sites recorded in within the Avoca Tank Project Site. Grid references from AHIMS (Datum AGD)**

AHIMS Site ID	Site Name	Easting	Northing	Site Features
26-3-0067	GM-HS-28JHearth Girilambone Copper Mine;	484710	6547330	Earth Mound, hearth
26-3-0068	GM-HS-29_(Hearth) ;Girilambone Copper Mine;	484680	6547340	Earth Mound, hearth
26-3-0070	GM-OS/HS-1JHearth);Girilambone Copper Mine;	484760	6548100	Earth Mound, hearth, artefact
26-3-0071	GC-OS/HS-2_(Hearth);Girilambone Copper Mine;	484760	6548100	Earth Mound, hearth, artefact
26-3-0034	GC-OS-1;Girilambone Copper Mine;	484760	6548100	Artefact : -
26-3-0066	GM-HS-27_(Hearth);Girilambone Copper Mine;	484630	6547340	Earth Mound, hearth
26-3-0119	GC-OS-1	484760	6548100	Artefact : 1
26-3-0145	GC-HS-27	484630	6547340	Hearth : 1
26-3-0146	GC-HS-28	484710	6547330	Hearth: 1

AHIMS Site ID	Site Name	Easting	Northing	Site Features
26-3-0147	GC-HS-29	484680	6547340	Hearth: 1
26-3-0149	GC-OS-HS-1	484760	6548100	Hearth : 1

Review of the AHIMS site cards and details reveals duplicate recordings of these sites and their features. This duplication is most evident in the site names and grid references but also in the descriptions and attached drawings. An examination of the site cards shows that the 11 sites are actually 5 sites with duplicate recordings. Table below shows these AHIMS sites re-organised accordingly. Site cards have been similarly organised and grouped in **Appendix 4**.

**Table 5.4: AHIMS Sites recorded in within the Avoca Tank project area noting duplications. Grid references from AHIMS (Datum AGD)**

AHIMS Site ID	Site Name	Easting	Northing	Site Features
26-3-0066 / 26-3-0145	GM-HS- 27_(Hearth); Girilambone Copper Mine;	484630	6547340	Earth Mound, hearth
26-3-0067 / 26-3-0146	GM-HS-28 Hearth Girilambone Copper Mine;	484710	6547330	Earth Mound, hearth
26-3-0068 / 26-3-0147	GM-HS-29_(Hearth); Girilambone Copper Mine;	484680	6547340	Earth Mound, hearth
26-3-0070 / 26-3-0071	GM-OS/HS-1 (Hearth); Girilambone Copper Mine;	484760	6548100	Earth Mound, hearth, artefact
26-3-0034 / 26-3-0119 26-3-0149	GC-OS-1; GC-OS-HS-1 Girilambone Copper Mine;	484760	6548100	Open Artefact scatter / Hearth

All but one of the 57 previously recorded sites were recorded by Central West Archaeological and Heritage Services. Annie Nicholson of National Heritage Studies also undertook two studies in the Girilambone Region in 1989 and 1990. Available reports are reviewed below. Tritton Resources supplied these reports, as none appear listed or available through the OEH AHIMS Database.



Figure 5.1: AHIMS Search boundary (orange) and plotted AHIMS Sites (red dots) from (Table 5.2) shown in relation to Avoca Tank Project. Project Site Boundary shown in red outline and Proposed Disturbance Footprint, including the haul road are shown by the light blue line. AHIMS Sites plotted with grid references from AHIMS. See also Figure 5.2.

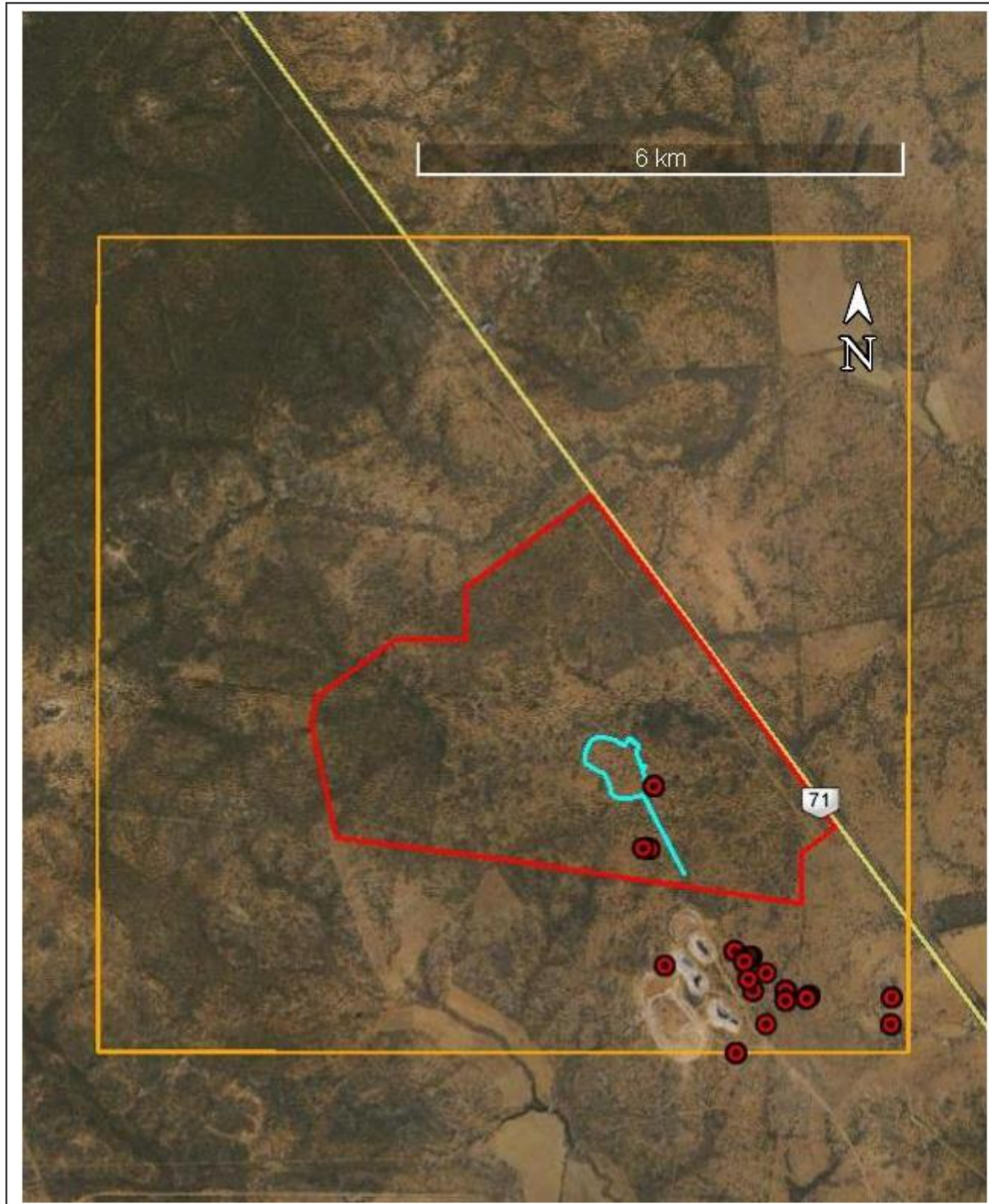
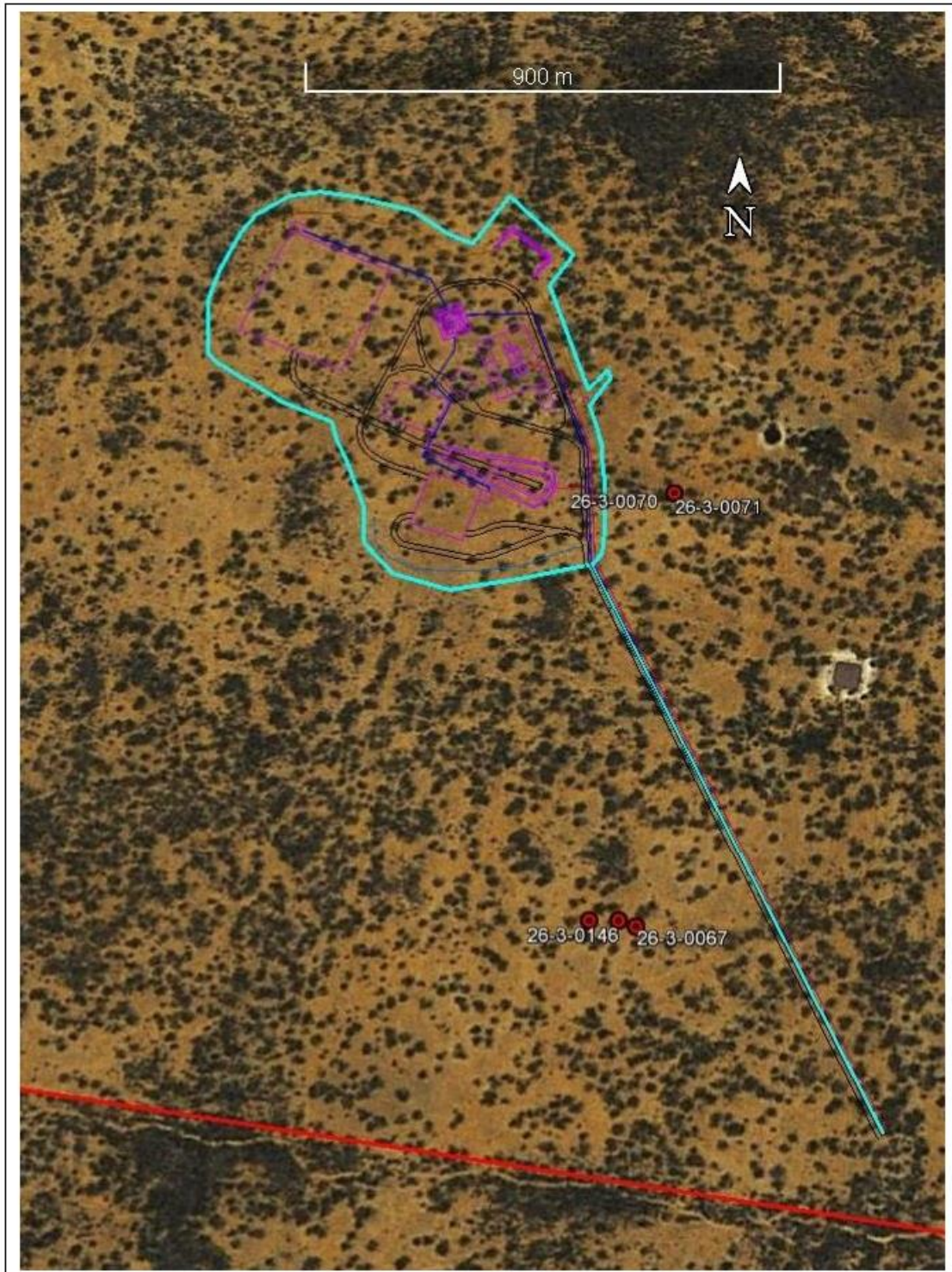




Figure 5.2: Distribution of previously recorded AHIMS Sites (red dots) within the Avoca Tank Project area and Proposed Disturbance Footprint. Southern Project Site Boundary shown in red at bottom of figure. Note the identical grid references and duplicate recordings of these sites as shown in Table 5.4. AHIMS Sites plotted with grid references from AHIMS



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**Nicholson (1989)**

Nicholson (1989) conducted an An Environmental Baseline Report for the Environmental Impact Statement for proposed copper mining activities at the old Girilambone mine workings (the North-East Prospect and the Girilambone Prospect). The North-East prospect included a survey across Lot 138, an area of land adjoining the southern boundary of Lot 144 forming part of the current Avoca Tank study area. The survey was conducted with Lesly Ryan of Bogan Aboriginal Corporation who also participated in the current survey for the Avoca Tank project.

Nicholson (1989:2) in establishing a predictive model for the study area, discusses the range of site types present in the North-Central Rivers region and to the east of Nyngan. According to Nicholson (1989:2) these sites were represented in the following proportions;

Scarred trees	29% (20)
Carved trees	29% (20)
Open camp sites	19% (13)
Burial sites	9% (6)
Stone arrangements	7% (5)
Quarries	6% (4)
Contact sites	2% (1)

Nicholson (1989:3) also reviewed the work of Witter (cited in Nicholson 1989: 3, 1990:6) and Hughes, Hiscock and Donaldson (1984, cited in Nicholson 1989: 3). Witter found that large scatters of artefacts were found adjacent to water sources whilst on the plain away from major creek lines the artefact scatters were found to be much smaller.

Witter interpreted the large artefacts scatters as 'base camps' occupied by large groups of Aboriginal people between 5000 and 2000 years ago. The major water sources provided the focus for occupation during this period with people foraging out from these locations on a day-to-day basis (Nicholson 1989:3).

According to Witter (cited in Nicholson 1989: 3) sometime between 2000 and 200 years ago this settlement pattern changed, and people become more dispersed across the landscape. This settlement pattern change is reflected in the numerous small, widely dispersed artefact scatters characterising the region.

Hughes, Hiscock and Donaldson (1984; cited in Nicholson) conducted an archaeological survey south of Cobar and found that major campsites occurred throughout the region and were concentrated around major water sources (such as rivers, creeks, springs, rockholes and soaks). Other sites such as rock shelters with occupation deposit, rock art sites and axe grinding grooves occur but are restricted to the sandstone hill country and generally located near water.

Nicholson (1989:3) also reviews work conducted by Bonhomme (1983, cited in Nicholson 1989) near Cobar that identified the termite lump and/or sandstone hearth as the most common site type. This study produced the same pattern of base camps associated with small transient camps as discussed by Hughes et al (1984) and special activity areas previously identified by Witter (cited in Nicholson). A date of 4000 years B.P. for occupation in this area was obtained by dating material excavated from one of the hearths (Nicholson 1989:3-4).

Nicholson (1989:5) located one scarred tree and two isolated stone artefacts outside the Girilambone Prospect during the survey. The scarred tree recorded was a river red gum with a well defined oval scar on its trunk and measuring approximately 1.2 x 0.55m and 2.7m above the base of the trunk. One of the isolated stone artefacts recorded was a yellow chert flaked piece found on an eroded surface. The second isolated stone artefact was a broken river pebble utilised as a grinding stone (6.5 x 3.5cm) and was smooth on one side.

Nicholson (1989:7) concluded that the absence of more extensive archaeological material in the study area is expected due to the lack of any major water sources and the results were consistent with models proposed for Aboriginal settlement in this region. These models posited that Aboriginal occupation focused on the major water sources with base camps (characterised by large artefact scatters) located adjacent to rivers, creeks, springs and soaks. Away from these areas evidence of occupation reduces to small low density scatters of artefacts representing short-term camps and/or special activity areas used during hunting and gathering trips (Nicholson, 1989:7).

Nicholson (1989:7) further concludes that the absence of archaeological remains in the North-East Prospect suggests that this; harsh, dry, flat land was probably not occupied by Aboriginal people in the past although it is likely to have been visited. The presence of a scarred tree and two isolated artefacts in the area around the Girilambone Prospect is indicative of this sort of activity.

#### ***Nicholson (1990)***

A second survey was also conducted by Nicholson (1990) for associated mining infrastructure including a pumping station on the Bogan River, an electricity spurline and a 22 km pipeline corridor extending west to proposed settling ponds to the immediate east of the Girilambone Prospect (the current Girilambone Copper Mine).

A total of five sites were located, all were open surface scatters of stone artefacts. The sites were clustered in two locations. Two of the sites (Sites 1 and 2) were found in the vicinity of the Bogan River with the remaining three sites located in the area proposed for the series of settling ponds on the Girilambone Prospect (Sites 3, 4 and 5). Three of the sites contained less than 11 stone artefacts whilst the remaining two sites contained 42 and +50 stone artefacts and all but one site displayed 'extremely low' artefact densities. Flakes represented the majority of the recorded artefacts types for all assemblages (81%) and whilst quartz represented the dominant raw material type (82%). Other raw materials represented include

chert (10%), silcrete (3%), metamorphosed shale (2%), quartzite (2%) and volcanics (1 %) (Nicholson 1990:17). Sites 4 and 5 contained the highest raw material diversity with the remaining 3 sites being composed nearly entirely of quartz.

Two of the smaller sites (Sites 2 and 3) contained flakes only and cores represented 13% of the recorded artefact assemblages and were present on at three sites (Sites 1, 4 and 5). The cores were of a small size (<5cm) and taken to indicate that artefact manufacture had occurred at these locations (Nicholson 1990: 17-19). The presence of cortex on several cores allowed Nicholson to conclude that the cores were derived from river-rolled cobbles.

(Nicholson 1990: 17-19) concluded that sites 1 and 2 near the Bogan River were originally part of the same artefact scatter subject to disturbance in the space between which had subsequently revegetated to obscure connecting archaeological material. Sites 3, 4 and 5 were located adjacent to small ephemeral drainage lines. (Nicholson 1990:21) suggests that sites 3 – 5 (ie. small, low density scatters) represented a typical sample of the archaeological signature of the region.

(Nicholson 1990: 20) concluded that the pattern of artefact scatters located adjacent to watercourses is characteristic of semi-arid regions. The absence of sites away from watercourses was not unexpected and the pattern of site location recorded during the survey consistent with predictive models for site location in this region.

#### ***Kelton (1995)***

Jim Kelton of Central West Archaeological and Heritage Services conducted an archaeological survey of an area of the proposed North Copper Mine, a portion of which was subject to previous archaeological investigation by Nicholson (1989). The original area surveyed by Kelton (1995) included a large part of the current Avoca Tank Stage 1 project area and adjoining land to the immediate south of the current Avoca Tank Stage 1 project area. The survey area was subsequently reduced to exclude the current Stage 1 area land.

Kelton (1995:6) also reports that he resurveyed at least part of the land surveyed by Nicholson (1989) as part of her investigation for the initial Girilambone Copper Mine Environmental Impact Assessment. Nicholson (1989) did not locate or record sites in this area.

Based on previous work in the region and his own observations Kelton predicts that open artefact scatters, scarred / carved trees, burial sites, hearth sites, ceremonial sites (such as 'bora grounds') are possible within the study area.

Kelton (1995:10) suggests criteria established by Pearson (cited in Kelton) for the location of camp sites/open artefact scatters in the NSW tablelands could also be applied to the region, with the most relative criteria being the following:

1. Accessibility to water. The need for ample supplies of drinking water, and a sufficiently large resource zone associated with that supply;
2. Level ground with good drainage;
3. Shelter from cold winter winds, with adequate summer cooling breezes; and,
4. Adequate fuel supplies.

Kelton (1995:12) in discussing hearth sites posits:

Termite nest material was often use by Aboriginal people in the region as an alternative heat retaining material in cooking fires, or else in conjunction with natural stone hearths which were used for the same purpose. A difficulty of interpretation arises where termite nest material occurs isolated from any other cultural material in what appears to be a hearth formation. The problem occurs in determining whether the hearth is in fact an Aboriginal hearth or else a natural occurrence resulting from a rotted and burnt tree.

This site type is common in the region and it is predicted that Aboriginal fire hearths of stone and termite nest material will occur across the study area, perhaps with the exception of on the higher quartzite hills and associated rocky slopes.

Kelton (1995) divided the survey area in two based on the different level of proposed mining activity (high and low impact) and surveyed these areas with differing levels of intensity/coverage. Kelton (1995:19) located 34 hearth sites, 27 scarred tree sites (including 2 possible carved trees), one open artefact scatter site, and 4 isolated artefact finds located during the field survey. A number of these sites recorded by Kelton (1995) are shown in Table 5.3 and are of relevance to the current study area.

Kelton (1995:24) recorded a total of 32 hearth sites during the field survey, all of which were of termite nest material (with a further two sites recorded as part of a site complex, GC-OS-1). Kelton (1995:24-25) states that "a number of hearths have questionable Aboriginal origin due to the lack of supporting, associated cultural material, and the apparent questionable origin of the actual hearth material, with some material indicating the possibility that it has originated from natural sources rather than from collection and exploitation by past Aboriginal groups. However, when comparison was drawn between hearth sites of doubtful origin and hearth sites located in association with stone artefactual material, e.g. GC-OS-1, little difference could be established, thus raising the credibility of the majority of doubtful sites".

"On the other hand, some clumps of termite nest material were definitely observed to be the remains of rotted, burnt trees, with no cultural heritage value. These occurrences were not recorded" (Kelton 1995:24-25).

According to Kelton (1995:25) hearth sites were recorded across the study area with the only landform unit void of these sites being the rocky quartzite ridges and peaks. Kelton (1995:25) concludes that "based on the relatively large number of hearth sites located over the study area, it would appear that the drier areas away from perennial water sources may have been

more significant for resource exploitation to past Aboriginal groups in the region than has been proposed by those who have previously conducted archaeological studies in the region”.

Kelton (1995:25) assessed the majority of hearth sites with a Low to Moderate significance due to their low scientific and educational value and the large number of this site type in the study area and adjacent areas. The two hearth sites associated with open artefact scatter site GC-OS-1 were attributed with moderate to high level of significance due to their relationship with the open artefacts scatter site complex.

Kelton (1995:26) states that 23 of the 27 recorded scarred tree sites displayed no axe marks. Two sites of the sites displaying axe marks GC-CT/ST- 21 and 22 were asserted be burial site markers by the Aboriginal representative present. The majority of scarred trees located during the field survey reflect the opportunistic removal of portions of bark and / or outer cambium, for use as implements or else shelters.

Kelton (1995:30) concluded that the site prediction model produced by Nicholson (1989,1990) was reasonably accurate with regard to the level of past Aboriginal 'settlement' or occupation site density in the locality, but not entirely reliable when applied to the level of occupation evidence identified during the 1995 survey by Kelton.

Kelton (1995:30) however could not explain the disparity between the site types and the numbers of sites located during that study (1995) when compared to the site types and numbers recorded in Nicholson's overlapping study area. Kelton (1995:31) posits that site types recorded during his study reflected a greater level of occupation than was expected throughout that study area.

Kelton (1995:31) argues that the results of his study tend to support Witter's (c1990) theory of change in Aboriginal settlement patterns throughout the region, depending on the potential of sites to yield reliable dates.

According to Kelton (1995:31) the evidence of occupation in the study area certainly pointed to the movement of small groups across the landscape, however, it could also be argued that this pattern of occupation would have been expected, given the nature of the local environment, irrespective of changes in settlement patterns.

“The high number of small hearth sites and scarred trees points to considerable, (and unexpected) possibly seasonal exploitation of the locality, even if only by small groups, and if only for short periods during the year. This higher than expected evidence of occupation within the study area should have been predicted, bearing in mind the relatively close proximity of the study area to the Bogan River and the associated rich riverine margin resource zone. The presence of 'soaks' some distance from the river would have meant adequate supplies of water were available to small groups of hunter gatherers whilst



travelling out from the resource rich riverine margins, and particularly following seasonal rain" (Kelton 1995:31).

According to Kelton (1995:31) the virtual absence of open artefact scatter sites was not unexpected, given that the study area was by no means abundant in resources and would not have supported large gatherings for any length of time. The location of a single extensive scatter of artefacts and hearth sites in the study area's northern section does not comply, totally, with previous models of occupation proposed for the area by researchers.

#### **Central West Archaeological and Heritage Services (1998)**

Central West Archaeological and Heritage Services also undertook an archaeological survey for the Tritton Copper project EIS (1998: 3-40-42) some 20 kms to the south west of the current study area. The predictive model developed by Central West predicted:

- Open campsites with stone artefacts and possible hearth sites might be expected around water occurrences such as the banks of ephemeral creeks and drainage lines.
- Scarred trees can be expected across all landform units.
- Isolated artefacts might occur across the entire survey area.
- Presence of previously recorded stone axe grinding groove site located 5km west of that survey area may indicate potential for similar occurrences.

The survey located a total of 47 scarred trees, two open artefact scatters one containing a single hearth and two isolated stone artefacts.

Both of the open artefact scatters were located along ephemeral creeks, one of which was described as extensive and of moderate to high significance. The other was extensively disturbed by Council works and considered of low significance.

Interestingly all of the scarred trees were considered to be of 'possible' Aboriginal origin and considered of low significance. Central West asserted that most of the tree sites identified were "bark shelter" type scars and that many were of European origin.

## **5.2 PREDICTIONS FOR THE STUDY AREA**

Prior to undertaking any archaeological study it is useful to assess the archaeological potential of the Study Area. Predictions on the archaeological potential of a given area are made through synthesis of the environmental context, land use history and applying the findings of previous studies within the local area or region. This provides information about whether Aboriginal sites or objects are likely to occur in a given area, where these sites are likely to be located, their potential frequency, type, density and nature of Aboriginal sites or objects.

An analysis of the site details for the previously recorded AHIMS sites in **Table 5.3** shows that the most common site type recorded was that scarred trees (44, 77.2%) followed by hearths



(11, 19.3%) two of which were associated with artefacts, and 2 (3.5%) open stone artefact scatters.

It was previously discussed in **Section 4.0** that the Study Area is unlikely to contain substantial potable water. The relationship between Aboriginal occupation evidence and potable water is well understood and often most pronounced in semi arid to arid regions with low rainfall conditions. The Study Area does not contain any permanent water or defined ephemeral creek channels likely to support long to medium term Aboriginal occupation. Potential Aboriginal occupation evidence in the Study Area is therefore more likely to be sparsely distributed and discrete reflecting high mobility of small groups and short term task specific localities.

Review of the available information above in **Section 5.1** suggests that scarred trees are likely to be most common site type to occur in the region, although previous studies have treated this site type cautiously (Central West A&HS 1998). Hearths sites are likely to be the next most common site type. Stone artefacts scatters were found to be generally associated with water. The absence of potable water in the Study Area is likely to mean that open artefact scatters reflecting longer term encampments will be relatively few within the Study Area. The scarcity of stone outcrops suitable for the manufacture of stone artefacts is also likely to influence stone artefact occurrence in the Study Area.

It was also discussed in **Section 4.0** that the integrity of the Study Area has been degraded due to previous land use practices. Based on the number of coppiced trees the entire Study Area was probably cleared at an earlier time. Very little topsoil remains, principally, as a result of poor farming practices, such as overgrazing. These factors are also likely to have an effect on the integrity of any Aboriginal occupation material.

On the basis of the review of the environmental context and previous studies discussed above some predictions can be made about the archaeological potential of the Avoca Tank Study Area:

1. Scarred trees are likely to be the most common site type within the Study Area with hearth sites (some potentially with artefacts) likely to be the next most common site type.
2. Stone artefact occurrences are predicted to be low given the paucity of potable water and suitable stone for the manufacture of stone tools.
3. The broad scale land clearing and poor previous land-use practices within the Study Area are likely to have impacted heavily on all site types discussed above.

On the basis of these predictions the archaeological potential and sensitivity of the Avoca Tank Study Area is considered to be low.

## 6.0 SURVEY METHODOLOGY

### **Avoca Tank Stage 1**

The archaeological survey strategy for the Stage 1 Study Area was designed with consideration of the immediate potential *harm* to Aboriginal objects was posed by the exploratory drilling program. Accordingly these potential impacts influenced the survey strategy. Tritton Resources supplied the location of all drill lines and holes to On Site CHM and the location of each and every proposed drill hole was inspected.

The drill lines formed the basis for the archaeological survey transects which were extended towards the boundaries of the Study Area to achieve greater coverage over the Study Area. The location of transects conducted across the Stage 1 Study Area are shown in **Figure 6.1**. The Proposed Disturbance Footprint and survey transects across this area are shown in **Figure 6.2** to understand the coverage of the survey further discussed in **Section 10.0**.

An intensive pedestrian archaeological survey of the Avoca Tank Study Area was conducted between 26 and 30 April 2012 by On Site Cultural Heritage Management archaeologists Gerard Niemoeller and Craig Reid.

Representatives of the Nyngan Local Aboriginal Land Council and Bogan Aboriginal Corporation participated in the entire archaeological survey and were present during the recording of all Aboriginal archaeological sites. Representatives were:

Sheila Couley – Chair, Nyngan Local Aboriginal Land Council  
Lesly Ryan – CEO, Bogan Aboriginal Corporation  
Deputy Chair, Nyngan Local Aboriginal Land Council

At least one but usually 2 to 3 representatives of Tritton/Straits participated and assisted in the survey every day over the 5 days. Tritton/Straits participants included:

Paul Calvin - Community and Heritage Manager  
Phil Jones - Senior Project Geologist  
Catherine Sullivan - Environmental Officer  
Rodney Cooper - Environmental Advisor

The survey consisted of a series of transects north south along the proposed drill lines, spaced approximately 200 metres apart. Survey participants were spaced approximately 10 to 20 metres apart providing good survey coverage along each of the drill lines across the Avoca Tank project area. Each participant was therefore able to survey approximately 20 metres in width and allowing survey of approximately 100 metres in width per transect.

Transects were generally in straight lines along the drill lines but particular attention was also afforded to interesting features within the landscape such as prominent clearings or

exposures, gravel lags or concentrations, deflations or other areas of erosion and trees potentially bearing scars. This sometimes resulted in a meandering transect.

### **Avoca Tank Stage 2**

At the time of the survey the proponent had advised that the Stage 2 area was being subject to archaeological survey to identify potential impacts on Aboriginal objects and identify constraints on the planning process for the mine footprint should the exploration program shift to full scale mining to be considered in the EIS.

For consistency and compatibility of results between the Stage 1 and 2 Study Areas a similar survey strategy was employed for the Stage 2 Study Area as was employed for the Stage 1 Study Area. The location of transects undertaken as part of Stage 2 is also shown in Figure 6.1. The Proposed Disturbance Footprint is also shown to understand the coverage of the survey strategy.

A pedestrian archaeological survey of the Avoca Tank Study Area (Stage 2) was conducted between 29 October and 2 November 2012 by On Site Cultural Heritage Management Principal Heritage Consultant / Archaeologist Gerard Niemoeller and Assistant Archaeologist Kate Duca.

Representatives of the Nyngan Local Aboriginal Land Council and Bogan Aboriginal Corporation participated in the entire archaeological survey and were present during the recording of all Aboriginal archaeological sites. Representatives were:

Sheila Couley – Chair, Nyngan Local Aboriginal Land Council

Lesly Ryan – CEO, Bogan Aboriginal Corporation

Deputy Chair, Nyngan Local Aboriginal Land Council

Neville Merritt of the Ngemba/Ngiyampaa Native Title claim group also participated in the fieldwork and survey on 1 – 2 November 2012.

At least one representative of Tritton/Straits participated and assisted in the survey every day over the 5 days. Tritton/Straits participants included:

Paul Calvin - Community and Heritage Manager

Rodney Cooper - Environmental Advisor

The survey consisted of a series of transects in a north south direction and spaced approximately 200 metres apart but at times, depending on the vegetation between 150 and 300 metres apart. Survey participants were spaced approximately 20 metres apart providing good survey coverage along each of the transects. Each participant was therefore able to

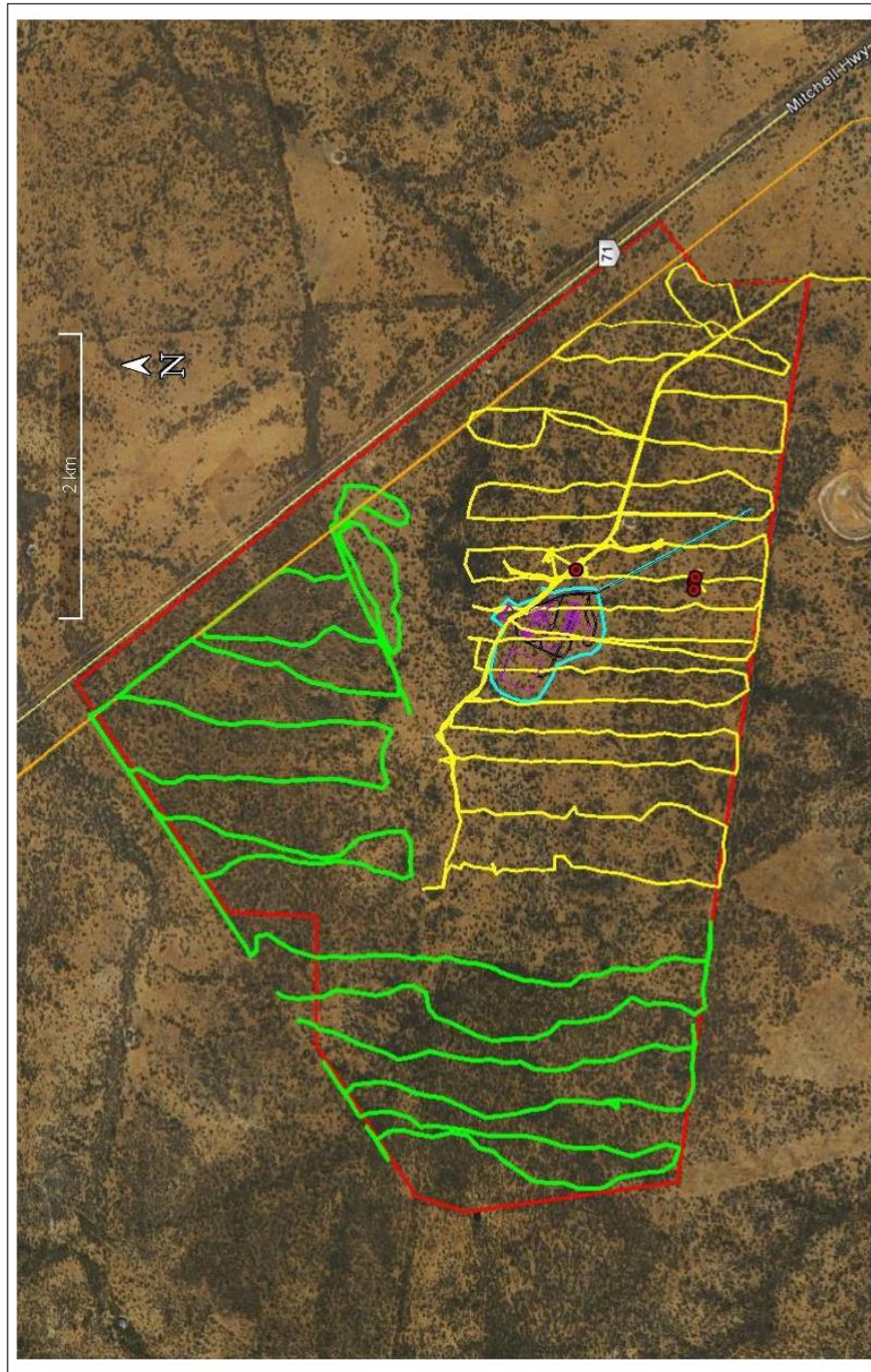
survey approximately 20 metres in width and allowing survey of approximately 100 metres in width per transect.

Transects were generally in a north south direction although particular attention was also afforded to interesting features within the landscape such as prominent clearings or exposures, gravel lags or concentrations, deflations or other areas of erosion and trees potentially bearing scars. This sometimes resulted in a meandering transect.

### 6.1 RELOCATION OF PREVIOUSLY RECORDED SITES

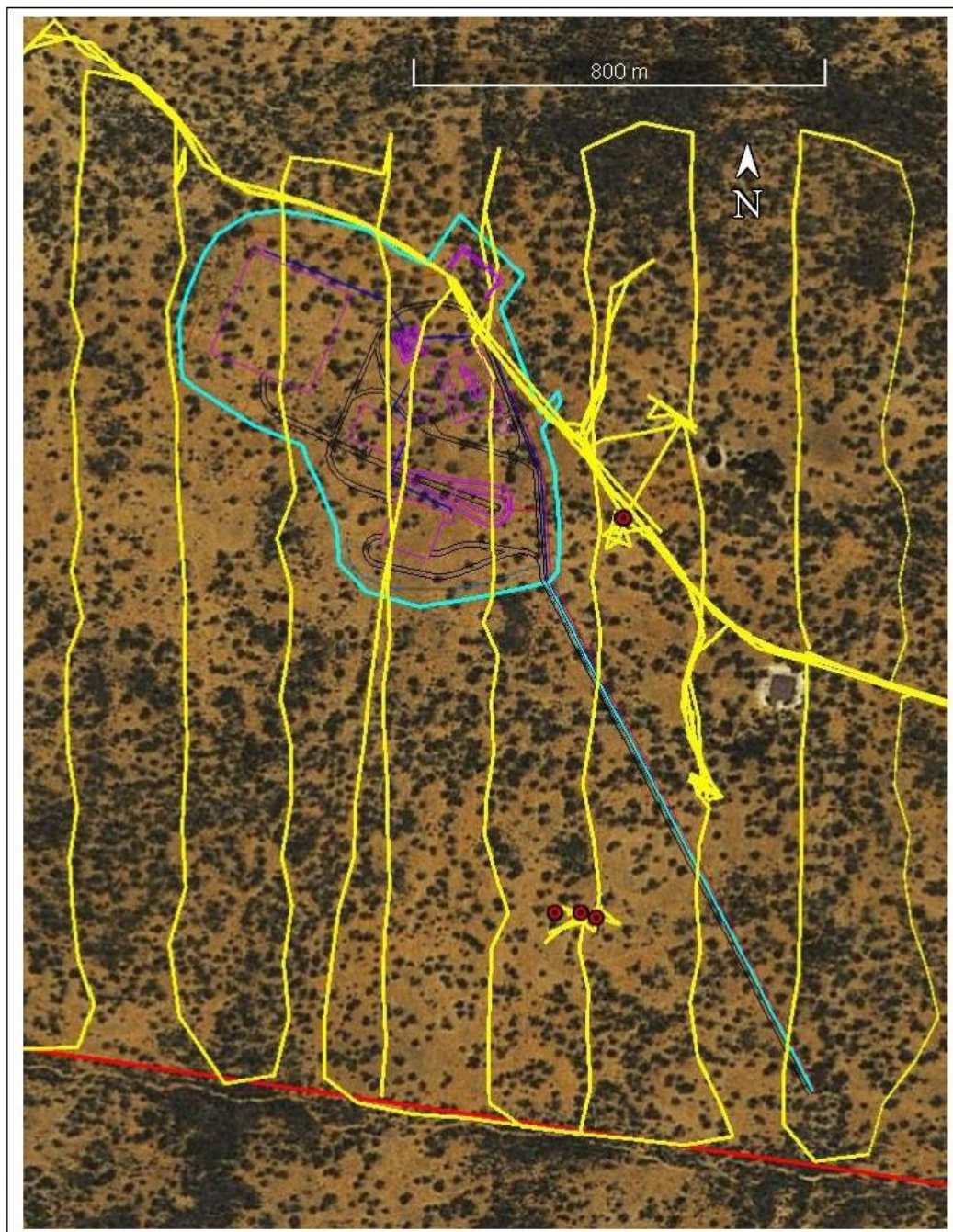
As discussed in **Section 5.1**, five AHIMS sites have been previously recorded within the Avoca Tank Study Area. An attempt to relocate all of these sites (via grid references) was undertaken as part of the Stage 1 survey. The AHIMS site cards do not however provide a datum for their recording beyond AGD. Given the age of the recording (1994) the grid references and localities were investigated using different datums (AGD 66, WGS 84, GDA 94) where required. Investigations to relocate these sites are discussed below in **Section 7.0**.

Figure 6.1: Pedestrian survey transects by On Site CHM. Stage 1 Study Area survey transects shown in yellow, Stage 2 shown in green. Red dots show previously recorded AHIMS Sites. Current Project Site Boundary shown in red and Proposed Disturbance Footprint shown in light blue. Orange line west of Mitchell Highway is power easement.





**Figure 6.2: Stage 1 Study Area survey transects (yellow) in relation to the Proposed Disturbance Footprint (light blue). Red dots show previously recorded AHIMS Sites. Southern Project Site Boundary shown in red at bottom of figure.**



## 7.0 RESULTS

### 7.1 GENERAL COMMENTS

The total length of all survey transects walked across the Avoca Tank project area Stages 1 and 2 (18.62km<sup>2</sup>) was 63.5 kms. Based on the 100 metres wide survey transect it is estimated that 6.35km<sup>2</sup>, or 34.1% of the 18.62 km<sup>2</sup> Avoca Tank Study Area was surveyed during the Stage 1 and 2 investigations.

A total of 4 transects conducted as part of the Stage 1 study traversed the Proposed Disturbance Footprint. Based on the 100 metres wide survey transect it is calculated that the Stage 1 transects covered approx 221,900m<sup>2</sup> (0.222km<sup>2</sup> or 66%) of the 0.336 km<sup>2</sup> Proposed Disturbance Footprint. Survey coverage of the Proposed Disturbance Footprint was shown in **Figure 6.2**.

Low quality milky quartz gravels were widespread across the project area but were generally too small to be part of any stone tool reduction sequence (median size 1-2cm). Gravel lags were still consistently inspected for evidence of artefact manufacture. A single outcrop of low quality milky quartz boulders (up to 60cm) was located during the survey. The outcrop was carefully inspected for any evidence of stone tool quarrying or manufacturing, of which there was none.

Five locations containing Aboriginal occupation evidence were located during the surveys (See Figure 7.1). Avoca Tank 1 to 4 were located within the Stage 1 area and one of these places Avoca Tank 3 consists of three 'hearths' within proximity and was recorded as one site. Avoca Tank 5 was located within the Stage 2 area. The location and summary details for these places are included in **Table 7.1** below.

#### AVOCA TANK STAGE 1

The total length of all survey transects walked along the drill lines was 35.9 kms. Based on the 100 metres wide survey transect discussed above it is estimated that 3.59km<sup>2</sup>, or 41% of the 8.74 km<sup>2</sup> Avoca Tank project area was surveyed during this investigation.

The average percentage of ground surface visibility and exposures was recorded for every transect. The average visibility across the area is calculated to be 24.6% and average area of ground surface exposure is 14.6%. Details recorded for each pedestrian transect (Transects A-Q) as was shown in Figure 6.1 is included in **Appendix 5**.

#### AVOCA TANK STAGE 2

The total length of all survey transects walked as part of the Stage 2 survey 27.6 kms. Based on the 100 metres wide survey transect discussed above it is estimated that 2.76 km<sup>2</sup>, or 28% of the 9.90 km<sup>2</sup> Avoca Tank project area (Stage 2) was surveyed during this investigation.

The average percentage of ground surface visibility and exposures was recorded for every transect. The average visibility across the Stage 2 area is calculated to be 26.6% and average area of ground surface exposure is 15.3%. Details recorded for each pedestrian transect (Transects 1-16) shown in **Figure 6.1** is included in **Appendix 5**.

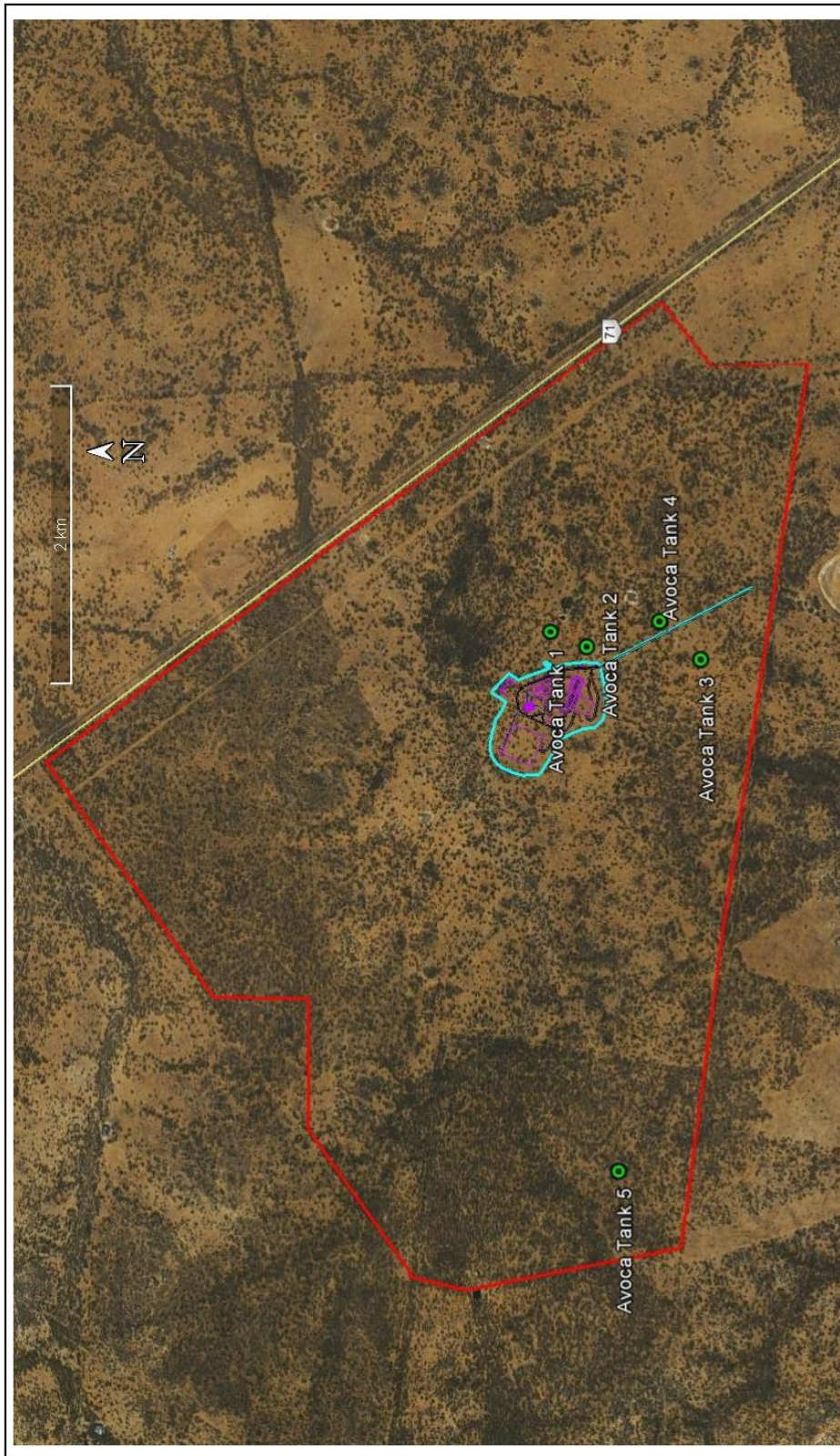
**Table 7.1: Summary details for Aboriginal sites recorded during this survey.**

**Datum is GDA 94. Grid references recorded by On Site CHM.**

Study Area	Site Name	Site Features	Easting	Northing
Stage 1	Avoca Tank 1	Stone artefact scatter	55 484966	6548490
Stage 1	Avoca Tank 2	Isolated stone artefact	55 484857	6548245
Stage 1	Avoca Tank 3 (3 x hearths)	Hearth 1	55 484835	6547528
Stage 1		Hearth 2	55 484815	6547517
Stage 1		Hearth 3	55 484729	6547486
Stage 1	Avoca Tank 4	Historic Scar Tree and Aboriginal Stockman's camp	55 485027	6547775
Stage 2	Avoca Tank 5	2 x isolated stone artefacts	55 481436	6548043



Figure 7.1 Sites Avoca Tank 1-5 (green dots) recorded across the Avoca Tank Project area.



## 7.2 SITE DESCRIPTIONS

### 7.2.1 Avoca Tank 1

**Grid Reference:** 55 484966 E, 6548490 N (GDA 94)

**Site Type:** Stone artefact scatter

**Site Description:** Avoca Tank 1 is located on an open gently undulating grassy plain with tall open eucalypt woodland and some minor acacia. The site is located on a gentle slope with south east aspect. Artefacts are distributed along and either side of a disused eroded track.

The ground surface consists of fine grain silts with some minor quartz gravels. More dense quartz gravels are eroding out along track. A total of 11 artefacts were sparsely distributed along the eroded track and to either side. The majority of the artefacts are located at the eastern end of the scatter. It is likely that artefacts have been washed down the eroded track and gentle slope. The site is located approximately 50 metres north west of a dam. It is not clear whether this dam is a modified soak or entirely of more recent historical creation. Spoil around the edges of the dam indicates that the dam has been modified in recent times. Research of historical parish maps for this location did not show a dam.

Table 7.27.2 and 7.3 below show summary details for this site and recorded artefacts. Detailed attributes recording of these artefacts are provided in **Appendix 5**.

**Table 7.2: Summary details for Avoca Tank 1**

<b>Approximate site size</b>	2600 m <sup>2</sup>	20m NS x 130 m EW	
<b>Visibility (%)</b>	Min: 0	Mean: 70	Max: 100
<b>No. artefacts types represented</b>	4		
<b>No. raw materials represented</b>	5		
<b>Artefact densities (m<sup>2</sup>)</b>	Min: 0.1	Mean: 0.2	Max: 1
<b>Artefact lengths (mm)</b>	Min: 17	Mean: 34.8	Max: 80.8

**Table 7.3: Artefact and raw material types recorded at Avoca Tank 1**

	Basalt	Grannodiorite	Porphyritic	Quartz	Quartzite	Total	%
Flake	1			3	1	5	45.5
Retouched flake				1	3	4	36.3
Ground fragment		1				1	9.1
Hammerstone			1			1	9.1
Total	1	1	1	4	4	11	100
%	9.0	9.0	9.0	36.5	36.5	100	

Despite the low density of artefacts the site displays a relatively high diversity of stone artefact and raw material types. According to Phil Jones, Senior Geologist with Straits, three of these raw material types (porphyritic, grannodiorite, basalt) are not local and from outside the immediate region. The porphyritic and grannodiorite artefacts appeared to be manufactured from rounded worn cobbles indicating that these may have been sourced from a waterway. A high diversity of raw materials and low density of artefacts may indicate that Aboriginal occupants were highly mobile, visiting repeatedly but staying for short periods of time.

#### **Site Integrity**

The integrity of the site is considered low to moderate given the erosion that has occurred over the site. The erosion is also likely to have diminished the archaeological significance of this site.

#### ***Potential impact of proposal:***

The western end of Avoca Tank 1 is approximately 150 metres from the eastern extent of the Proposed Disturbance Footprint and will therefore not be directly impacted by the Proposal. The site is within proximity to the Proposal and therefore has the potential to be accidentally disturbed through ancillary activities. Any disturbance or impact upon this site would require an Aboriginal Heritage Impact Permit (AHIP).

To protect this site during the development and operation of the Proposal it is recommended that the proponent:

- Cordon off the site to prevent accidental disturbance through entry by any vehicles or unauthorised persons.
- Inform Tritton personnel of the location and designate this area as a "no go zone".
- Develop appropriate management strategies to ensure the long term conservation of this site

Plate 7.1: Ground fragment of granno-diorite at Avoca Tank 1



### 7.2.2 Avoca Tank 2

**Grid Reference:** 55 484857 E, 6548245 N (GDA 94)

**Site Type:** Isolated stone artefact

**Site Description:** Avoca Tank 2 consists of a single silcrete stone artefact located on a large open grassy plain with open eucalypt woodland. The site is located approximately 40 metres south west of grid reference provided for (AHIMS Sites 26-3-0070, 26-3-0071, 26-3-0034, 26-3-0119, 26-3-0149). The artefact is located on the lower slope of a gentle rise to the west. Large exposures, with low quality quartz gravels and a low level of grass cover afforded good visibility across the immediate area (60%). There was also evidence of widespread sheet wash and gullyng across the area. Detailed attributes recording of these artefacts are provided in **Appendix 5**.

**Potential impact of proposal:**

Avoca Tank 2 is approximately 120 metres east of the Proposed Disturbance Footprint and will therefore not be directly impacted by the Proposal. The site is within proximity to the Proposal and therefore has the potential to be accidentally disturbed through ancillary activities. Any disturbance or impact upon this site would require an Aboriginal Heritage Impact Permit (AHIP).

To protect this site during the development and operation of the Proposal it is recommended that the proponent:

- Cordon off the site to prevent accidental disturbance through entry by any vehicles or unauthorised persons.
- Inform Tritton personnel of the location and designate this area is a “no go zone”.
- Develop appropriate management strategies to ensure the long term conservation of this site.



### 7.2.3 Avoca Tank 3

#### **Site Type:** 3 x Hearths

**General Site Description:** 3 hearth features (within 80 metres) are located on large open grassy plain gently sloping to the north. The area is vegetated with sparse tall eucalypts with minor acacias around their drip line. The ground surface is comprised of thick grasses and large exposures with low quality gravels. The area has been subject to sheet wash. These places have been recorded due to their proximity to previously recorded 'hearth sites' by Kelton (1995) on the AHIMS Database as opposed to exhibiting any convincing evidence that they are in fact Aboriginal sites (See **Section 7.3** and **8.0**).

#### **Hearth 1:** (55 484835 E 6547528 N) (GDA 94)

Is situated on a hard exposure and consists of 4 loose compacted sediment nodules (all <10cm in size) over a 3m x 3m area. This feature is approximately 20 metres north east from the grid reference provided for AHIMS Site 26-3-0067/26-3-0146.

#### **Hearth 2:** (55 484815 E 6547517 N) (GDA 94)

Consists of small, hard nodules of sediments embedded in hard compacted silty matrix. The feature is approximately 1m x 1m and located in thick grass. Nodules appear to have minor charcoal content. This feature is approximately 9 metres WNW from the grid reference provided for AHIMS Site 26-3-0067/26-3-0146 and 22 metres ENE from the grid reference provided for 26-3-0068/26-3-0147.

#### **Hearth 3:** (55 484729 E 6547486 N) (GDA 94)

Is located on a large exposure (20m x 20m) with quartz gravels. The feature consists of small, hard nodules of sediments embedded in hard compacted silty matrix over an area of 2m x 2m. This feature is approximately 40 metres SSW from the grid reference provided for AHIMS Site 26-3-0066/26-3-0145

Despite an extensive search of the immediate surrounding area for each of these features no other cultural features or Aboriginal artefacts were located.

#### **Potential impact of proposal:**

Avoca Tank 3 is approximately 650 metres south of the Proposed Disturbance Footprint and 280 west of the proposed haul road and will therefore not be directly impacted by the Proposal. The site is within proximity to the Proposal and therefore has the potential to be accidentally disturbed through ancillary activities. Any disturbance or impact upon this site would require an Aboriginal Heritage Impact Permit (AHIP).

To protect this site during the development and operation of the Proposal it is recommended that the proponent:

- Cordon off the site to prevent accidental disturbance through entry by any vehicles or unauthorised persons.
- Inform Tritton personnel of the location and designate this area as a “no go zone”.
- Develop appropriate management strategies to ensure the long term conservation of this site.

**Plate 7.2: ‘Hearth’ 3 located near AHIMS Site localities 26-3-0066, 26-3-0145.**



#### 7.2.4 Avoca Tank 4

**Grid Reference:** 55 485027 E, 6547775 N (GDA 94)

**Site Type:** Historic scar tree, Aboriginal stockmen's camp and dam

**Site Description:**

Site is located at a low point within a wide grassy plain and consists of two small waterholes at the end of an ephemeral drainage line. The western water hole is a natural soak and at a low point in landscape. The eastern waterhole appears to be either entirely man made or heavily modified soak evidence by the spoil heaps around the northern, eastern and southern boundary of the waterhole.

Some additional historic material also occurs in association with the waterhole. A small white earthenware ceramic jar base and three small blackened rocks which may have been used as part of a campfire (see Plates 5.5 and 5.6) were located between the waterholes and amongst a group of trees occur. Five burnt nodules across an area of 2 square metres, indicating a potential hearth, were located approximately 10 metres to the north east of the scar tree

An iron strip wedge was also located 1.5 metres north west from the base of the scar tree. The iron strip measured 250mm Long x 40mm wide and 15mm thick tapering to a thin edge at one end. The function or origin of this "wedge" is unclear but the general form, tapered edge and association with the scar tree suggest that it may have been used in the extraction of the bark from the tree. Another function for this wedge may be for the locking of cart wheels in place. The area was likely used as a water hole for working animals.

An historic flattened tin can was also found nearby.

The area does not show any intensive use or particular features that may indicate repeated use, accumulated Aboriginal objects excavation potential.

**Scar Tree:**

A large dead tree bearing a scar occurs on the north west margin of the eastern soak. The scar is 2.1 metres long and extends around 81% of the trunk. The bottom of the scar begins 40 cm from the ground and extends up the tree to approximately 2.5 metres above the ground. An epicormic or subsidiary stem extends from the base of the scar. Recorded attributes for the scar and tree are provided in Table 7.4 below.



**Table 7.4: Scar Tree dimensions**

Scar Length	210 cm
Scar circumference around tree at midpoint of scar	112 cm
Circumference of tree at midpoint of scar	138 cm
Scar Depth (min and maximum)	30mm, 60mm

The tree has been ring barked and displays several isolated and distinct axe marks above the ring barking and on remaining dead bark (xylem) running the length of the scar. These marks were made by a sharp, straight and even edge, characteristics more distinctive of a steel axe. No tool marks are visible on the scar and it is therefore difficult to discern whether this scar was produced using a stone or steel axe. It is also difficult to discern whether the removal of bark and the ring barking of the host tree are related.

The size and shape of the removed bark, a large rectangle, suggests use for a temporary shelter. The steel axe marks on the tree and presence of several historic artefacts suggest that the scar was probably produced in historic times. The absence of stone tools or other pre-contact Aboriginal occupation materials does not refute a historical date.

Aboriginal community members present suggested that the evidence represented the remains of an Aboriginal stockmen's camp. Aboriginal people were widely employed in the region during the 1900s to ring bark trees and clear land. Large dead ring barked trees were numerous across the survey area.

**Site Integrity**

The waterholes and surrounding area is heavily vegetated and grassed and does not appear subject to the erosion that covers much of the survey area. The scar tree is dead, continuing to degrading and in relatively poor condition.

**Potential impact of proposal:**

Avoca Tank 4 is approximately 480 metres south east of the Proposed Disturbance Footprint and will therefore not be directly impacted by the Proposal. The site is however approximately 60 metres east of the proposed haul road and therefore has the potential to be accidentally disturbed through ancillary activities. Any disturbance or impact upon this site would require an Aboriginal Heritage Impact Permit (AHIP).

To protect this site during the development and operation of the Proposal it is recommended that the proponent:

- Cordon off the site to prevent accidental disturbance through entry by any vehicles or unauthorised persons.
- Inform Tritton personnel of the location and designate this area is a "no go zone".
- Develop appropriate management strategies to ensure the long term conservation of this site.



Plate 7.3 (above):

Waterhole with scar tree at left of frame

Plate 7.4: (right)

Scar tree located near waterhole





Plate 7.5: (above)  
Tapered iron strip (wedge)  
located near scar tree

Plate 7.6: (right)  
Ceramic jar





### 7.2.5 Avoca Tank 5

**Grid Reference:** 55 481436 E, 6548043 N (GDA 94)

**Site Type:** Isolated artefacts

**Site Description:** Avoca Tank 5 consists of two quartz flakes, 20 metres apart and located on a gentle slope (<2°) with a south aspect. A low rise trending east west is situated to the to the north.

The area is characterised by mixed eucalypt woodland with sparse grasses and some young cypress. A low level of grass cover afforded good visibility across the immediate area (60%). The ground surface consists of compacted silts with low quality quartz gravels. Detailed attributes recording of these artefacts is provided in **Appendix 5**.

**Potential impact of proposal:**

Avoca Tank 5 is approximately 2700 metres west of the Proposed Disturbance Footprint and will therefore not be directly impacted by the Proposal. Given the considerable distance from the Proposed Disturbance Footprint there is also a low potential for this site to be accidentally disturbed through ancillary activities. Any disturbance or impact upon this site would require an Aboriginal Heritage Impact Permit (AHIP). The below recommendations are provided as a precaution.

To protect this site during the development and operation of the Proposal it is recommended that the proponent:

- Cordon off the site to prevent accidental disturbance through entry by any vehicles or unauthorised persons.
- Inform Tritton personnel of the location and designate this area is a “no go zone”.
- Develop appropriate management strategies to ensure the long term conservation of this site

### 7.3 RELOCATION OF PREVIOUSLY RECORDED AHIMS SITES

As discussed in **Section 5.1** a review of the AHIMS site cards for the 11 previously recorded AHIMS sites within the Project Site Boundary determined that there are actually 5 sites with duplicate recordings. **Table 7.5** below shows these AHIMS sites re-organised accordingly.

An intensive inspection of (identical) grid references for AHIMS sites 26-3-0070/ 26-3-0071, 26-3-0034, 26-3-0119, 26-3-0149 was conducted using different datums (AGD 66, WGS 84 and GDA 94). A single stone artefact was located within 40 metres of the grid reference (AGD 66) and was recorded as Avoca Tank 2.

**Table 7.5: Previously recorded AHIMS Sites within the Avoca Tank project area. Grid references from AHIMS. Extensive Search states AGD as Datum.**

AHIMS Site ID	Site Name	Easting	Northing	Site Features
26-3-0066 / 26-3-0145	GM-HS- 27_(Hearth); Girilambone Copper Mine;	484630	6547340	Earth Mound, hearth
26-3-0067 / 26-3-0146	GM-HS-28 Hearth Girilambone Copper Mine;	484710	6547330	Earth Mound, hearth
26-3-0068 / 26-3-0147	GM-HS-29_(Hearth); Girilambone Copper Mine;	484680	6547340	Earth Mound, hearth
26-3-0070 / 26-3-0071	GM-OS/HS-1 (Hearth); Girilambone Copper Mine;	484760	6548100	Earth Mound, hearth, artefact
26-3-0034 / 26-3-0119 26-3-0149	GC-OS-1; GC-OS-HS-1 Girilambone Copper Mine;	484760	6548100	Open Artefact scatter / Hearth

A stone artefact scatter, Avoca Tank 1, consisting of 11 stone artefacts was also located 200 metres to the north, north east of the grid reference provided for these AHIMS Sites. All of the artefacts located at Avoca Tank 1 were recorded in detail (**Appendix 5**) with summary details included in the site description at 7.2.1.

Avoca Tank 1 is located approximately 50 metres north west of a dam and occurs on an eroding vehicle track. The AHIMS site cards also reports that the open artefact scatter (26-3-0034, 26-3-0119, 26-3-0149) is located on a track and 60 metres from a dam. The major difference between the current recording and AHIMS Site cards is the number of artefacts and size of the site reported. On Site CHM estimated the site area to be approximately 2600m<sup>2</sup> (20m NS x 130 m EW). The size of the site was defined by the spatial plotting of each artefact recorded on the site. The AHIMS site cards reports the site as 10,000m<sup>2</sup> (200 x 50 metres) and attached photos also show a much higher level of visibility, probably due to drought, than that recorded during this survey. It is quite possible that the floods of recent years and resulting erosion noted in 7.2.1 has displaced and dispersed much of the assemblage. On the basis of these similarities Avoca Tank 1 and 26-3-0034, 26-3-0119, 26-3-0149 is considered the same site. The spatial error margin (200 metres) is common for recordings prior to 2000 prior to more accurate GPS technology.

A comparison of the assemblages recorded at Avoca Tank 1 and AHIMS Sites 26-3-0034, 26-3-0119, 26-3-0149 shows some similarity in the raw materials (predominantly quartz and quartzite), although the current survey recorded more raw material diversity. It is highly probable that the porphyritic hammer stone recorded as part of this survey (artefact 7, **Appendix 5**) is the same as the artefact illustrated on site cards 26-3-0034, 26-3-0119, 26-3-0149 (see **Appendix 4**). On this basis it is asserted that Avoca Tank 1 and AHIMS Sites 26-3-0034, 26-3-0119, 26-3-0149 are the same site.

The AHIMS sites cards for 26-3-0070 / 26-3-0071 reported a hearth at this same location as poorly preserved and eroded in 1994. This hearth could not be re-located as part of this investigation. Given the substantial rains experienced since 1994 and widespread evidence of sheet wash, erosion and gulying noted across the survey area it is highly probable that this site has eroded away and is no longer extant.

The location of these previously recorded AHIMS sites and those recorded during this survey is shown below in **Figure 7.2**. The spatial difference shown between AHIMS Sites 26-3-0034, 26-3-0119, 26-3-0149 26-3-0070, 26-3-0071 and Avoca Tank 1 is likely to result from spatial error margins and subsequent improvement in GPS technology and spatial recording techniques.

**Figure 7.2: Proposed Disturbance Footprint (light blue outline) in relation to location of previously recorded AHIMS Site AHIMS Sites 26-3-0034, 26-3-0119, 26-3-0149 26-3-0070, 26-3-0071 (Datum AGD 66) (red dot) and sites recorded by On Site CHM (Datum GDA 94) (green dots). Blue circle near Avoca Tank 1 marks outline of dam.**



Each of the 'hearths' located at Avoca Tank 3 were also within close proximity to the grid references provided for the AHIMS sites recorded as hearths/earth mounds:

- 1: 26-3-0067, 26-3-0146
- 2: 26-3-0068, 26-3-0147
- 3: 26-3-0066, 26-3-0145

Although the location of the 'hearths' recorded at Avoca Tank 3 during this survey approximate the locations of previously recorded AHIMS hearth sites above the general site descriptions for two of the hearths recorded during this survey are appear different. The AHIMS Site cards for these sites seem to show loose scattered nodules of ant nest. 'Hearths' 2 and 3 at Avoca Tank 3 appear less scattered and are embedded in the ground more consistent with the remains of an ant nest. None the less an extensive search of the wider surrounding area failed to locate any further nodules more consistent with that described within the AHIMS Site cards. It may be that further erosion across the area has exposed more of the underlying baked sediments or it could be that these features are unrelated.

The location of these previously recorded AHIMS sites and hearths recorded during this survey is shown below in **Figure 7.3**.

**Figure 7.3: Location of previously recorded AHIMS Sites (Datum AGD 66) (red dots) and hearths recorded at Avoca Tank 3 by On Site CHM (Datum GDA 94) (green dots). I6 is location of a drill hole.**



In the absence of other supporting Aboriginal cultural material the author is somewhat sceptical about the definition of these nodules alone as a site within this particular environment. Numerous occurrences of ant nests at or within the base of large uprights or fallen dead rotting or hollow, un-burnt or semi-burnt trees were noted across the study area. The eventual burning out of these stumps and logs over some days would be likely to produce areas of baked sediments, hardened clumps or 'nodules'. With time and weather, the charcoal remnants of the tree would disappear and likely leave a similar manifestation to the 'nodules' recorded as sites. In the absence of any other cultural material it is unclear how these natural processes might be distinguished from cultural processes. This difficulty was previously noted by Kelton (1995) and is discussed further in **Section 8**.

#### 7.4 SUMMARY OF RESULTS

The field survey of the Avoca Tank Project areas (Stages 1 and 2) covered 41% of the total land area and located Aboriginal occupation evidence at five localities (Avoca Tank 1 – 5).

At least two of these sites have been determined to be the same locations for several previously recorded AHIMS Sites. Table 7.6 shows a comparison of for previously recorded sites and those recorded during this study.

**Table 7.6: Comparison of previously recorded AHIMS sites and sites recorded during this study. Grid references recorded by On Site CHM (Datum GDA 94).**

On Site CHM Site Name	Site Features	Easting	Northing	Corresponding AHIMS Sites
Avoca Tank 1	Stone artefact scatter	55 484966	6548490	26-3-0034 / 26-3-0119/ 26-3-0149 (open artefact scatter) 26-3-0070 / 26-3-0071 (hearth)
Avoca Tank 2	Isolated stone artefact	55 484857	6548245	-
Avoca Tank 3 (3 x hearths)	Hearth 1	55 484835	6547528	26-3-0067 / 26-3-0146
	Hearth 2	55 484815	6547517	26-3-0068 / 26-3-0147
	Hearth 3	55 484729	6547486	26-3-0066 / 26-3-0145
Avoca Tank 4	Historic Scar Tree & Aboriginal Stockman's Camp	55 485027	6547775	-
Avoca Tank 5	2 x isolated stone artefacts	55 481436	6548043	-

The hearth nodules recorded at site 26-3-0070 / 26-3-0071 were unable to be relocated as part of this survey. The AHIMS site card reported this site to be eroded and in poor condition in 1994 and it is likely that these features have since been further displaced.



## 8.0 DISCUSSION

A number of predictions were outlined in **Section 5.2** concerning the nature, extent and types of Aboriginal objects that may occur within the Study Area.

These predictions were:

1. Scarred trees are likely to be the most common site type within the Study Area with hearth sites (some potentially with artefacts) likely to be the next most common site type.
2. Stone artefact occurrences are predicted to be low given the paucity of potable water and suitable stone for the manufacture of stone tools.
3. The broad scale land clearing and poor previous land-use practices within the Study Area are likely to have impacted heavily on all of the site types discussed above.

All of the site types predicted to occur within the Study Area were recorded during this survey. The scar tree recorded during this survey is, upon analysis, most likely to have been created during historic times (1900s).

A total of 14 stone artefacts were recorded at three locations (Avoca Tank 1, 2 and 5) representing a low density of artefacts across the Study Area. This was predicted to result from the paucity of potable water and suitable stone for the manufacture of stone tools. The results of this study are considered to confirm these predictions. It is also relevant to note the one artefact scatter is situated in the immediate vicinity of water. It is further interesting to note that no stone artefacts were located at the water source of Avoca Tank 4. This may indicate that the dam/waterhole was heavily modified in historical times from a seasonal soak, which may not have been particularly reliable.

It was also discussed in **Section 5.2** that potential Aboriginal occupation evidence in the Study Area was likely to be sparsely distributed and discrete reflecting high mobility and short term task specific localities. This is perhaps best reflected by the low number of artefacts yet relatively high diversity of stone artefact types and raw materials at Avoca Tank 1 (see 7.2.1). The presence of several exotic stone raw materials is a likely signature of this high mobility suggesting repeated but short term use of this locality. The absence of pre-contact Aboriginal occupation evidence at the Avoca Tank 4 waterhole may also indicate this.

Certainly the Aboriginal community representatives were of the view that occupation of the Study Area would have been infrequent and for very short periods of time. Aboriginal history from the informants suggests that people largely travelled along watercourses (rivers and creeks) rather than across the country between. It may be that the quite diverse assemblage at Avoca Tank 1 reflects such transit across country. Anecdotal evidence (Phil Jones, Tritton Senior geologist) suggests that none of the raw materials, except quartz, at Avoca Tank 1 occur within the Study Area. Certainly the authors own observations support this view where the only exposures of rock were quartz and some minor shales in several isolated areas. The

presence of two cobbles with smooth rolled surfaces suggests procurement from a distant water source.

It may also be plausible that the creation of this dam or modification of an existing soak to create a more reliable water source may have also encouraged Aboriginal people to congregate at this location of potable water in post contact times.

It was also predicted that the broad scale land clearing and poor previous land-use practices were likely to have impacted on all site types within the Study Area. It is not clear from the results of this study whether these practices have impacted or not. Recent flooding and resulting erosion in the area appears to have impacted upon Aboriginal occupation evidence and degraded artefact numbers at Avoca Tank 1 (AHIMS Sites 26-3-0034, 26-3-0119, 26-3-0149) and displaced the loose hearth nodules previously recorded at AHIMS sites 26-3-0070, 26-3-0071.

It was also predicted that the archaeological potential and sensitivity of the Study Area was considered to be low. This archaeological survey has determined that Aboriginal occupation evidence is sparsely distributed across the Avoca Tank Project area and found to only occur at five discrete locations. Despite a relatively intensive archaeological survey program, this study has only located three additional sites (Avoca Tank 2, 4 and 5) besides those previously recorded during the survey program by Kelton (1995).

### 8.1 PREVIOUS STUDIES AND SITE DEFINITION IN THE REGION

The general archaeological model posited in the region is that Aboriginal occupation, and therefore Aboriginal archaeological materials, are strongly associated with sources of potable water. (Nicholson 1989, 1990, Hughes, Hiscock and Donaldson 1984, Witter; cited in Nicholson). According to this model, occupation material will generally decrease in both frequency and density with distance away from water sources.

This decrease is likely to reflect one or all of the following factors: high level of mobility, movement of smaller groups or resource procurement in response to seasonal variation. All of these factors have been discussed in some form in the studies undertaken by practitioners in the Girilambone region.

Kelton's (1995) study results are generally consistent with this model although also indicate that occupation materials may be far more densely distributed across the landscape than previous and current studies have found. Indeed Kelton (1995:30) admits he could not explain the disparity between the site types and the numbers located during that study (1995) when compared to the site types and numbers recorded in Nicholson's overlapping study area.

One explanation for this disparity may concern the definition of sites and subsequent over representation of certain site types within the region. The most represented sites in the

region are scar trees and hearths. Discussion about the identification of scar trees is beyond the scope of the current study but the identification of hearths is discussed below in light of some observations from the current investigation.

Kelton (1995:12) in discussing hearth sites suggests:

“Termite nest material was often use by Aboriginal people in the region as an alternative heat retaining material in cooking fires, or else in conjunction with natural stone hearths which were used for the same purpose. A difficulty of interpretation arises where termite nest material occurs isolated from any other cultural material in what appears to be a hearth formation. The problem occurs in determining whether the hearth is in fact an Aboriginal hearth or else a natural occurrence resulting from a rotted and burnt tree”.

Unfortunately Kelton (1995:12) does not discuss this methodological issue any further or provide any criteria to distinguishing between cultural and natural formation of these features in the absence of other supporting other cultural evidence.

Kelton (1995:24) recorded a total of 32 hearth sites during the field survey, all of which were of termite nest material (with a further two sites recorded as part of a site complex, GC-OS-1). Kelton (1995:24-25) states that “a number of hearths have questionable Aboriginal origin due to the lack of supporting, associated cultural material, and the apparent questionable origin of the actual hearth material, with some material indicating the possibility that it has originated from natural sources rather than from collection and exploitation by past Aboriginal groups. However, when comparison was drawn between hearth sites of doubtful origin and hearth sites located in association with stone artefactual material, e.g. GC-OS-1, little difference could be established, thus raising the credibility of the majority of doubtful sites”.

“On the other hand, some clumps of termite nest material were definitely observed to be the remains of rotted, burnt trees, with no cultural heritage value. These occurrences were not recorded” (Kelton 1995:24-25).

Examination of the raw data presented for hearth sites in Appendix 4 of Kelton’s (1995) report shows that the association between hearth sites and other Aboriginal cultural material evidence only occurs at 5 (14 %) (includes duplication of site recordings) of the 34 hearth occurrences.

Based on the line of reasoning employed by Kelton, the inverse could also apply: when comparison was drawn between hearth sites of doubtful origin and hearth sites located in association with stone artefactual material, e.g. GC-OS-1, little difference could be established, thus lowering the credibility of hearth sites located in association with stone artefactual material. It is just as plausible that occurrences of ‘hearth nodules’ associated with other cultural evidence are unrelated and may also result from the natural occurrences.

It also seems that much of Kelton's assertions are based on the works of Bonhomme (1983). According to Bonhomme (1983, cited in Nicholson 1989). Open camp sites including stone artefact scatters and Aboriginal hearths were found to be the most common site type in the study area south of Cobar. Aboriginal hearths in this region consist of either lumps of termite mound and/or sandstone, clay lumps or simply accumulations of charcoal.

Several differences are apparent between Bonhomme's study area and results and that of the current Avoca Tank study area. Many of these hearth sites were located on the margins of a dry lake and across adjacent lunettes and many were closely associated with other occupation material. The occurrence of 'hearths' in a sand lunette largely absent of trees and termite mounds that may have created naturally burnt nodules is likely to be considerably more convincing than the current environment. Such occurrences in lunettes are also common in the Lake Mungo region and commonly occur with other faunal remains and artefacts.

It is evident that the identification of hearth sites should be treated somewhat cautiously given these methodological issues. It is certainly not contended here that all of the hearth sites recorded by Kelton (1995) are of natural origin but it is suggested that environmental context and association with other cultural evidence should play a critical and key role in determining whether such a feature may be of cultural or natural origin.

Certainly a reinterpretation of Kelton's 1995 findings applying such caution and indicators such as cultural association would both explain the disparity (5 hearth sites instead of 34) and present an archaeological model more consistent with the picture emerging from interpreting other more definable and reliable features of the archaeological record for Aboriginal occupation.

## 9.0 CULTURAL SIGNIFICANCE ASSESSMENT

The Burra Charter (the Australia ICOMOS Charter for Places of Cultural Significance) defines cultural significance as meaning aesthetic, historic, scientific, social or spiritual for past present or future generations (Marquis-Kyle, P & M. Walker 2004:11).

Cultural significance is embodied in; the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.

The cultural significance of the Study Area is assessed below. In the context Aboriginal cultural heritage and occupation evidence (or archaeology) and development assessment, the criteria most commonly applied to assess cultural significance are those of Aboriginal significance (encompassing social and spiritual) and archaeological (scientific significance). Where relevant aesthetic and historic values are also discussed. Educational values or potential is another category often applied to the assessment of significance. The level of educational values will comply range between different individual or groups (eg Aboriginal people and archaeologists). Management strategies to conserve identified values are discussed in **Section 10**.

### 9.1 ABORIGINAL SIGNIFICANCE (SOCIAL AND SPIRITUAL)

For Aboriginal people places of cultural significance are tangible expressions of identity and experience. The Study Area contains Aboriginal objects which represent a tangible link to Aboriginal identity and experience. To some degree then all Aboriginal objects and places are likely to be of significance to Aboriginal people. The degree of significance will vary according to a number of culturally determined factors.

#### ***Avoca Tank Study Area***

In general terms the Registered Aboriginal Parties (RAPs) participating in the survey attributed the Study Area with a low level of Aboriginal significance. Nyngan LALC and Bogan AC representatives were generally satisfied that the survey was thorough and sufficient and did not see the need for further survey should the proposal shift from exploration to mining.

All of the sites recorded during this survey were individually discussed with the Registered Aboriginal Parties participating in the survey (**Section 3.3**). Management strategies and options were also discussed for each site and were developed based on RAP views about the significance of each site. These discussions and their interpretation provided a basis to understand the Aboriginal significance of the identified sites discussed below and the development of management strategies discussed in **Section 10**.

**Avoca Tank 1:** (stone artefact scatter)

Registered Aboriginal Party participants attributed this place with a moderate level of significance. They did not express concern about Tritton applying for an AHIP to disturb the area if required but did think that the artefacts should be collected should an AHIP be granted. Participants considered many of the artefacts of interest and wanted them kept locally by the Nyngan LALC.

**Avoca Tank 2:** (isolated stone artefact)

Registered Aboriginal Party participants attributed this place with a low level of significance. They did not express concern about Tritton applying for an AHIP to disturb the artefact and did not wish to collect the single flake if required.

**Avoca Tank 3:** (hearths)

Registered Aboriginal Party participants were familiar with hearth type sites as represented at Avoca Tank 3 and did not view these hearths as particularly significant due to the absence of other occupation material. Participants attributed this place with a low to moderate level of significance and did not express concern about Tritton applying for an AHIP to disturb this place if required.

**Avoca Tank 4:** (historic scar tree, Aboriginal stockmen's camp and dam)

Registered Aboriginal Party participants attributed this place with moderate to high level of significance. They discussed this place for some time, showed interest and offered historical information about Aboriginal people being employed as stockmen as interpretation of the features. Participants attributed the place with both *historical* and *aesthetic* values and expressed a desire to retain this place. This place is also likely to have educational and interpretive values to the local Aboriginal community.

**Avoca Tank 5:** (2 x isolated stone artefacts)

Registered Aboriginal Party participants attributed this place with a low level of significance. They did not express concern about Tritton applying for an AHIP to disturb these artefacts if required and did not wish to collect them.

## 9.2 ARCHAEOLOGICAL SIGNIFICANCE

The archaeological significance of a site or artefacts may be assessed according to two criteria, representativeness/rarity and research potential. These two criteria are interrelated.

- **Representativeness / Rarity** refers to the frequency of a particular site type, or particular attributes of a site, the similarities between site types in the study area and the wider regional context. Rare or unique site types are accorded higher archaeological significance than site types that are more common. The representativeness refers to the capacity of a site to demonstrate particular attributes within a site class. A site with high representative values will commonly be an outstanding example of its type. Sites with high

representativeness and rarity values will also commonly have high educational or interpretive values.

- **Archaeological research potential** refers to the degree to which a site can contribute data to answer specific research questions. The degree of a site's research potential is related to factors such as size, structure and content reflecting the range and frequency of activities exhibited at the site, regional frequency and the level of site integrity and preservation.

The attributing of archaeological significance is primarily based on the discussion of previously recorded site types within the region.

**Avoca Tank 1:** (stone artefact scatter)

Stone artefact scatters are a moderately common site type but are generally confined to water. It is not clear whether the dam nearby may be a soak modified in recent historical times. It was discussed in Section 7 that Avoca Tank 1 was previously recorded in 1994 as AHIMS sites 26-3-0034, 26-3-0119, 26-3-0149. Recent flooding and resulting erosion has evidently degraded artefact numbers previously recorded. Avoca Tank 1 is assessed as having a **moderate level of rarity value** and **low level of representative value**.

A high diversity of artefact types and raw materials at a given site generally indicates a higher level of archaeological research potential. This is based on the potential of the assemblage to answer a range of questions about stone artefact manufacture and technologies or their use. The stone artefact assemblage has however been degraded and is relatively small. Partial artefact values have also been recorded as part of this study. Avoca Tank 1 is therefore assessed as having a **low to moderate level of archaeological research potential**. The archaeological values would be largely salvaged should collection of these artefacts occur under an AHIP and Care Agreement.

**Avoca Tank 2:** (isolated stone artefact)

Isolated stone artefacts cannot be considered particularly unusual or rare in regional terms and the capacity of a single stone artefact to answer specific research questions limited. Artefact attributes (scientific values) have also been recorded as part of this study. Avoca Tank 2 is therefore assessed as having a **low level of rarity and representative value** and a **low level of archaeological research potential**.

**Avoca Tank 3:** (hearths)

It was previously discussed in Section 5 that this type of hearth site is relatively common and well represented in the region. Avoca Tank 3 is therefore assessed as having a **low level of rarity and representative value**.

The absence of other occupation material in association limits the archaeological research potential of Avoca Tank 3 beyond those already recorded as part of this survey. As noted



previously the author, in the absence of other occupation material in association, is sceptical about the definition of this site type. Avoca Tank 3 is therefore assessed as having a **low level of archaeological research potential**.

**Avoca Tank 4:** (historic scar tree, Aboriginal stockmen's camp and dam)

Scar trees generally have a high level of rarity value and their numbers are in steady decline due to their vulnerability to destructive natural and biological elements (storms, lightning, fire, rot and insect attack etc). However according to the literature scar trees are also well represented in the wider and local region.

Examination of the data presented by Kelton (1995; Appendix 3) shows that 8 (29.6%) of the 27 scar trees recorded were considered to result from extraction of bark for 'shelters' similar to that at Avoca Tank 4. Similarly the survey by Central West Archaeological and Heritage Services (1998) for the Tritton Copper project EIS (1998: 3-40-42) some 20 kms to the south west of the current study area identified a total of 47 scarred trees all of which were considered to be of 'possible' Aboriginal origin and considered of low significance. Central West asserted that most of the tree sites identified were "bark shelter" type scars and that many were of European origin. Some time has elapsed since the undertaking of these studies and natural processes are likely to have decreased their numbers further. It is also suggested that their numbers may be overrepresented in previous studies.

The assertion that this place represents an Aboriginal stockman's camp remains an interpretation and cannot be substantiated or refuted through this study. Nonetheless it remains a very plausible explanation for the presence of the different features and in the author's opinion the most likely. It is unclear how common Aboriginal stockmen camps may be in the wider area or what typical features of such camps may be. However given the widespread employment of Aboriginal men as stockmen such camps are, or at least were, likely to be relatively common.

The top of this tree and scar is substantially deteriorated and is not considered to be a good representative example of its type. Avoca Tank 4 (scar tree) is therefore considered to have a **moderate to high level of rarity and moderate level of representative value**.

The scar tree has a limited potential to answer questions about the removal and use of bark given the degraded state of the tree and absence of tool marks. The tree therefore has a **low to moderate level of archaeological research potential**.

**Avoca Tank 5:** (2 x isolated stone artefacts)

Isolated stone artefacts cannot be considered particularly unusual or rare in regional terms and the capacity of 2 single stone artefacts to answer specific research questions is limited. Artefact attributes (scientific values) have also been recorded as part of this study. Avoca Tank 5 is therefore assessed as having a **low level of rarity and representative value** and a **low level of archaeological research potential**.

Given the paucity of Aboriginal sites and objects across the Project Site, the subject land is generally assessed as having a low archaeological potential and significance.

**9.3 AESTHETIC SIGNIFICANCE**

With the exception of the scar tree and environmental context of Avoca Tank 4 none of the recorded sites display any particularly prominent aesthetic values.

Although the environmental context of each site could be considered to have aesthetic values, those values are no greater than the surrounding areas without Aboriginal objects. Further such values do not directly relate to understanding the identified Aboriginal objects or sites or their management under the NPW Act.

It could be argued that the Aboriginal stone artefacts identified at Avoca Tank 1, 2 and 5 have some aesthetic values to Aboriginal people. These values are considered secondary to the primary value, of social significance, attributed to artefacts by Aboriginal people.

**9.4 HISTORICAL SIGNIFICANCE**

The Registered Aboriginal Parties participating in the survey attributed Avoca Tank 4 with some historical significance based on the interpretation that the features are all related and represent the activities of Aboriginal stockmen employed in the early 1900s.

This interpretation cannot be substantiated or refuted but remains a very plausible explanation for this place. This historical association remains significant for Aboriginal people at the local level.

**9.5 ATTRIBUTING SIGNIFICANCE**

Identified sites were attributed with a separate value between (1 to 5 / low to high See Table 9.1) for their Aboriginal significance (based on interpretations of the consultation) and archaeological significance (representative / rarity values and archaeological research potential). Values attributed for archaeological significance were based on the discussion above.

These scores were then totalled (0 to 5 values x 4 significance indicators = cumulative values) to provide a numeric value reflecting the level of cultural significance for each place (See Table 9.2).

These values were ranked against the following index of cumulative values to determine the overall cultural significance of each place. Aboriginal significance was also included in this matrix. The cultural significance for each site is summarised in Table 9.3.

**Table 9.1: Significance indicators and cumulative values index**

Value	Significance	Cumulative values	Attributed significance
1	Low	4-7	Low
2	Low to moderate	8-11	Low to moderate
3	Moderate	12 – 14	Moderate
4	Moderate to high	15 - 17	Moderate to high
5	High	18 – 20	High

**Table 9.2: Significance values assigned for identified sites**

Sites	Aboriginal significance	Rarity values	Representative values	Archaeological research values	Cumulative Value total	Attributed significance
Avoca Tank 1	3	3	1	2	9	Low to moderate
Avoca Tank 2	1	1	1	1	4	Low
Avoca Tank 3	2	1	1	1	5	Low
Avoca Tank 4	4	4	3	2	13	Moderate
Avoca Tank 5	1	1	1	1	4	Low

**Table 9.3: Summary of cultural significance for identified sites**

Sites	Attributed significance	Comments
Avoca Tank 1	Low to moderate	Small, low density artefact scatter with moderate diversity of stone artefact type and raw material diversity reflecting. Moderately significant to RAPs.
Avoca Tank 2	Low	Single isolated stone artefact. Common in region and of low significance to RAPs.
Avoca Tank 3	Low	3 x hearth sites with no other cultural material in association. Common site type in region. Low to moderate significance to RAPs.
Avoca Tank 4	Moderate	Scar tree has moderate to high rarity value and significance to RAPs. Aboriginal Stockmen's camp has historical and aesthetic value to RAPs
Avoca Tank 5	Low	2 x isolated stone artefact. Common in region and of low significance to RAPs.

## 10.0 CONCLUSIONS, MANAGEMENT AND RECOMMENDATIONS

### 10.1 CONCLUSIONS

1. The survey and assessment process for the Avoca Tank Project has identified a total of five locations where Aboriginal sites and objects occurs. (Avoca Tank 1 to 5).
2. A review of the 11 previously recorded AHIMS sites within the Project Site Boundary has determined that there are duplicate recordings. These 11 sites actually represent 5 sites. Two of these sites have been rerecorded as part of this survey. Duplicate site recordings 26-3-0034 / 26-3-0119/ 26-3-0149 have been identified and rerecorded as Avoca Tank 1 and duplicate site recordings 26-3-0067 / 26-3-0146, 26-3-0068 / 26-3-0147, 26-3-0066 / 26-3-0145 have been recorded as Avoca Tank 3 comprising 3 hearth locales. Hearth nodules recorded at site 26-3-0070 / 26-3-0071 were unable to be relocated as part of this survey and it is likely that these features have since eroded away. Problems relating to the definition of the 'hearth' site type have also been discussed within this assessment.
3. The results of this assessment reveal Aboriginal occupation evidence is sparsely distributed across the Study Area and is indicative of low intensity use of the landscape by Aboriginal people in the past. This use was characterised by a high level of mobility and relatively short term occupation or single use of these places.
4. The low intensity of Aboriginal occupation evidence across the Study Area is likely due to the paucity of reliable sources of potable water, stone outcrops suitable for the manufacture of stone tools and to some extent the disturbance upon Aboriginal occupation evidence through previous land use practices.
5. The cultural significance (encompassing Aboriginal and archaeological significance) of the study area and these places has been assessed through Aboriginal consultation and archaeological analysis within a regional context. The Registered Aboriginal Parties (RAPs) participating in the survey attributed the Study Area with a low level of Aboriginal significance. Given the paucity of Aboriginal sites and objects across the Project Site, the subject land has also been assessed as having a low archaeological potential and significance. Avoca Tank 1 (an open artefact scatter), is assessed as having a low to moderate level of cultural significance. Avoca Tank 2 (a single isolated stone artefact), is assessed as having a low level of cultural significance. Avoca Tank 3 (three 'hearths') is assessed as having a low level of cultural significance. Avoca Tank 4 (historic scar tree and Aboriginal stockman's camp) is assessed as having a moderate level of cultural significance. Avoca Tank 4 has been assessed by Registered Aboriginal Parties as having a moderate to high level of Aboriginal significance and also attributed with historic and aesthetic values. Avoca Tank 5 (2 x isolated stone artefacts), is assessed as having a low level of cultural significance.

## 10.2 COMMENTS FROM THE REGISTERED ABORIGINAL PARTIES

A draft of the previous assessment report (On Site CHM 2013) was sent to the Registered Aboriginal Parties on 21<sup>st</sup> February 2013. The Registered Aboriginal Parties were provided 28 days to review the report and provide comment. The closing date for comments was 22<sup>nd</sup> March 2013.

All of the Registered Aboriginal Parties supplied comment on that draft. Nyngan LALC and Bogan Aboriginal Corporation endorsed the assessment and the recommendations. A copy of those endorsement letters is included in **Appendix 7**.

Native Title Services Corporation, on behalf of the Ngemba/Ngiyampaa Native Title claim group, also provided comment on the assessment (**Appendix 7**). A response was provided to NTS Corp who provided further response also included at **Appendix 7**.

The recommendations of that report included strategies to mitigate potential impacts and disturbance of identified Aboriginal sites and objects if AHIPS were sought by the proponent. Given the Proposal will now avoid all identified Aboriginal sites and objects, the focus of the recommendations in this report have been revised from mitigating impact to managing the conservation of places during the development and operation of the Proposal. A copy of the original recommendations (On Site CHM 2013) has been provided at **Appendix 7** to provide context to the comments of the Registered Aboriginal Parties.

**Plate 10.1 (below): (from left) Aboriginal Representatives Lesly Ryan (Bogan Aboriginal Corporation), Sheila Couley (Nyngan Local Aboriginal Land Council), Kate Duca (OnSite CHM), Neville Merritt (Ngemba/Ngiyampaa Native Title claim group) discuss site protection with Paul Calvin (Tritton / Straits Resources) (On Site CHM 2013).**



### 10.3 MANAGEMENT OPTIONS

This assessment has identified five Aboriginal heritage places (Avoca Tank 1 to 5) within the Avoca Tank Project Site containing Aboriginal objects legally protected under the *National Parks and Wildlife Act* (NPW Act). Part 6 of the NPW Act provides specific protection for Aboriginal objects by establishing offences of *harm*. *Harm* is defined to mean destroying, defacing, damaging or moving an object from the land. There are a number of defences and exemptions to the offence of harming an Aboriginal object. One of these defences is that the *harm* was carried out under an Aboriginal Heritage Impact Permit (AHIP).

The Proposal has subsequently been developed to avoid all of the identified Aboriginal sites and objects within the Avoca Tank Project Site. None of the identified places (Avoca Tank 1 to 5 and associated AHIMS Sites) are proposed to be directly impacted upon or *harmed* during the development of this Proposal and AHIPs will therefore not be required.

The development of management strategies is therefore concerned with the prevention of *harm* through protection and conservation of these places during the development and operation of the Proposal. The main risks of *harm* to these places through accidental or indirect impacts are discussed below.

During the exploratory drilling program Tritton Resources implemented a series of management strategies to afford protection to these places. These strategies were implemented in accordance with the Straits Community and Heritage Policy and Straits Procedures - Heritage Management Planning (Australia). A copy of the recommendations from the internal memo and photographic evidence (see **Plate 10.1**) of implemented protection measures are provided in **Appendix 6**.

One of the protection measures implemented by Tritton included cordoning off and classifying these places as “no go zone areas” (**Appendix 6**). The continuity of the implemented ‘no go’ areas and avoidance strategy will ensure that many potential accidental risks for the conservation of these places will be mitigated (Avoca Tank 1 to 5).

Stone artefacts are, by their nature durable objects. The most common direct human induced *harm* to stone artefacts and scatters (Avoca Tank 1, 2, 3 and 5) is generally through vehicle movement and associated disturbance or casual collection. The adequate exclusion of these places and designation as ‘no go’ will generally mitigate these potential harms. NTS comments (**Appendix 7**) on the previous assessment requested the upgrade of this fencing from a temporary to more permanent nature and this has been considered within the below recommendations (**Section 10.4**).

Common indirect and inadvertent harm to stone artefacts and scatters may also occur through undertaking of earthworks and construction of infrastructure within their proximity. The modification of areas near stone artefacts scatters may alter the natural movement of

water and thereby increase the erosive effect of water movement on a stone artefact scatter. Considering this effect within the design and ensuring adequate buffers will also mitigate this effect (Avoca Tank 1, 2, 3 and 5).

In addition to the potential disturbances and mitigative strategies discussed above, the development of conservation management strategies for Avoca Tank 4 and the scar tree should also consider the threat of fire. The landscape of the Study Area is likely to have been previously burnt on occasions. The cessation of burning (due to the proposed operational mine), near the scarred tree may result in an increased fuel load developing and posing a fire threat to the scar tree. Similarly, the exclusion of the scar tree through fencing will also exclude animal grazing and trampling which may also result in an increased fuel load and threat by fire. Ongoing management should consider and mitigate these potential risks.

#### 10.4 RECOMMENDATIONS

On the basis that all of the identified places (Avoca Tank 1 to 5) and locations of previously recorded AHIMS Sites will be avoided and conserved during the development and operation of the Proposal, it is recommended that:

1. Avoca Tank sites (1 to 5) and locations of previously recorded AHIMS sites should continue to be designated as 'no go' areas in accordance with the Straits Community and Heritage Policy and Straits Procedures - Heritage Management Planning (Australia).
2. The existing fencing to demarcate these sites as 'no go' areas should be upgraded to steel pickets and wire sufficient to prevent unauthorised persons and animals prior to the development and operation of the Proposal. Fencing of these places does not require an Aboriginal Heritage Impact Permits (AHIPs).
3. The design and construction of Proposal components should consider the effect of water movement across the landscape and be sensitive to the possibility of creating indirect potential threats that may impact upon these places. This potential is perhaps most acute for the design of the haul road and location of drains. A buffer of at least 50 metres should be established and maintained between the 'no go' areas around identified places and proposed mine infrastructure.
4. Some specific conservation management planning is undertaken for Avoca Tank 4 to mitigate the potential increased risk of fire. The fencing of Avoca Tank 4 and shift in fire management across the Project Site may result in an increased fuel load and fire risk. Specific conservation management strategies may involve spraying / slashing of grass at appropriate intervals to suppress the fuel load or installation of a fire break outside fencing. The development of these management strategies should be informed by specialist advice.



5. The location of each place be accurately mapped as a polygon and incorporated into the relevant spatial management tool (GIS - Geographic Information System) during the development and operation of the Proposal. A buffer of at least 50 metres should be applied for these places.
6. Long term conservation management and monitoring strategies be developed and implemented for these places. These strategies should be developed as part of a specific Heritage Management Plan or incorporated into the relevant Environmental Management Plan as appropriate.
7. Information about the presence of these Aboriginal places, their values and management be incorporated into the induction materials and delivered to relevant personnel or contractors that may come into contact with these places.
8. Given the paucity of Aboriginal objects and sites across the Avoca Tank Study Area no further archaeological surveys of the Proposed Disturbance Footprint are considered warranted.

With regard to Recommendation 8, the previous assessment (On Site CHM 2013) prepared for Tritton Resources also recommended that no further archaeological surveys of the Avoca Tank Study Area were required should the project proceed to full scale mining.

The survey strategy employed by On Site CHM achieved coverage across 34% of the entire Avoca Tank Study Area and above 60% survey coverage of the Proposed Disturbance Footprint (See **Section 7.1.** and **Figure 6.2**). This level of coverage is considered sufficient to understand the potential for further Aboriginal objects and occupation evidence to occur across this landscape. This assessment has determined that Aboriginal objects and occupation evidence is sparsely distributed across the Avoca Tank Study Area.

Further archaeological surveys were not recommended due to the low density of Aboriginal objects and occupation evidence and low potential for further such evidence to occur. Subsequent and more intensive surveys are generally only considered warranted when a baseline survey identifies a moderate to high potential for further Aboriginal occupation evidence to occur. This is not the case within the Avoca Tank Project Site.

Two of the Registered Aboriginal Parties (Nyngan LALC and Bogan Aboriginal Corporation) provided their support for this recommendation. Native Title Services Corporation, on behalf of the Ngemba/Ngiyampaa Native Title claim group considered that further more intensive surveys of the Proposed Disturbance Footprint should be undertaken. A response was provided by On Site CHM to NTS Corp (**Appendix 7**) who provided a further response also included at **Appendix 7**.

A copy of this assessment report has also been distributed to the Registered Aboriginal Parties.

A summary of sites identified within the Avoca Tank Project Site, their significance, impacts of the proposed disturbance and recommendations is provided below in **Table 10.1**.

Table 10.1: Summary table for identified sites within Avoca Tank project area, assessed significance, impacts and recommendations

Sites	Previously recorded AHIMS Sites	Site type and comments	Aboriginal Significance	Archaeological Significance	Impacts (harm) of Proposed Disturbance	Summary of mitigation strategy
Avoca Tank 1	26-3-0034 / 26-3-0119 / 26-3-0149	Open artefact scatter –Low density scatter (11 x stone artefacts) with high raw material diversity and moderate artefact type diversity.	Moderate	Low to moderate	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
-	26-3-0070 / 26-3-0071	Hearth – unable to be relocated during this survey. Likely washed away and not extant	-	-	None	Location will be avoided. No further action warranted.
Avoca Tank 2	-	Isolated stone artefact	Low	Low	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
Avoca Tank 3	26-3-0067 / 26-3-0146 / 26-3-0068 / 26-3-0147 / 26-3-0066 / 26-3-0145	3 x hearths – no other cultural material in association.	Low to moderate	Low	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.
Avoca Tank 4	-	Historic scar tree and Aboriginal stockman's camp.	Moderate to high	Moderate	None	Upgrade existing fencing. Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents. Undertake specific conservation management planning to mitigate the risk of fire.
Avoca Tank 5	-	2 x Isolated stone artefacts	Low	Low	None	Upgrade existing fencing (if appropriate). Develop and implement appropriate conservation management strategies and incorporate into relevant management systems and documents.

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