TOMINGLEY
GOLD OPERATIONS PTY LTD
(A wholly owned subsidiary of Alkane Resources Ltd)
ABN 53 149 040 371

Tomingley Gold Extension Project

Aboriginal Cultural Heritage Assessment Report

Part 10a

Major Project Application No. PA 09_0155





Prepared by OzArk ENVIRONMENT & HERITAGE *OzArk Environment & Heritage Pty Ltd*

December 2021

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View of Bulldog Creek.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

TOMINGLEY GOLD EXTENSION PROJECT

TOMINGLEY, NSW

DECEMBER 2021

Report prepared by

OzArk Environment & Heritage

for Tomingley Gold Operations Pty Ltd

OzArk
Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

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ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT COVER SHEET

Report Title	Aboriginal Cultural Heritage Assessment Report: Tomingley Gold Extension Project, Tomingley, NSW.
Author(s) Name	Stephanie Rusden
Author(s)' Organisation Name (if applicable)	OzArk Environment & Heritage
Author(s) contact details	145 Wingewarra St DUBBO NSW 2830 Email: stephanie@ozarkehm.com.au Phone: 02 6882 0118
Address of Subject Area	Address: Tomingley Title Reference: various Local Government Area: Narromine
Report prepared for	Company Name: Tomingley Gold Operations Pty Ltd Company Contact: Mike Sutherland Email: msutherland@alkane.com.au Phone: (02) 6882 2866
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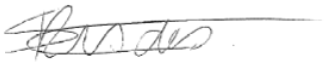

Stephanie Rusden, OzArk Environment & Heritage Senior Archaeologist

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Prepared for	Prepared by
Mike Sutherland Tomingley Gold Operations Pty Ltd P: 02 6882 2866 msutherland@alkane.com.au	Stephanie Rusden Senior Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 stephanie@ozarkehm.com.au

Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

ABBREVIATIONS AND GLOSSARY

ACHAR	Aboriginal Cultural Heritage Assessment Report. As set out in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, all developments where harm to Aboriginal objects is likely must be assessed in an ACHAR.
ACHCRs	*Aboriginal Cultural Heritage Consultation Requirements for Proponents.* Guidelines for conducting Aboriginal community consultation for developments where harm to Aboriginal objects is likely.
AHIMS	Aboriginal Heritage Information Management System. Administered by Department of Premier and Cabinet, AHIMS is the central register of all Aboriginal sites within NSW.
ASIRF	Aboriginal Site Impact Recording Form
Code of Practice	*Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* under Part 6 NPW Act. Issued by DECCW in 2010, the Code of Practice is a set of guidelines that govern archaeological practice in NSW.
DPIE	NSW Department of Planning, Industry and Environment
EIS	Environmental Impact Statement. A required document for major projects documenting all potential impacts to the environment, including heritage, that may arise due to the development.
GSE	Ground surface exposure. Refers to the amount of ground surface visible in an area.
GSV	Ground surface visibility. Refers to the amount of the ground surface that can be seen in exposures as portions of exposures may be obscured by factors such as leaf litter.
Heritage Act	*Heritage Act 1977.* Provides for the protection and conservation of historical places and objects of cultural heritage significance and the registration of such places and objects.
Heritage NSW	Government department tasked with ensuring compliance with the NPW and Heritage Acts. Heritage NSW is advised by the Aboriginal Cultural Heritage Advisory Committee (ACHAC) and is part of the Department of Premier and Cabinet.
NPW Act	*National Parks and Wildlife Act 1974*. Primary legislation governing Aboriginal cultural heritage within NSW.

PAD	Potential archaeological deposit. Indicates that a particular location has potential to contain subsurface archaeological deposits, although no Aboriginal objects are visible.
RAP	Registered Aboriginal Party. An individual or group who have indicated through the ACHCR process that they wish to be consulted regarding the project.
SEARs	Secretary's Environmental Assessment Requirements issued by the NSW Department of Planning and Environment.
SSD	State Significant Development.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by RW Corkery & Co Pty Limited on behalf of Tomingley Gold Operations Pty Ltd (the Applicant) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) for the proposed Tomingley Gold Extension Project (the Project) for the San Antonio Roswell deposits (SAR).

The Project is located immediately to the south of the village of Tomingley in central western NSW. The Project is located within the Narromine Local Government Area.

The purpose of the assessment is to form part of an *Environmental Impact Statement* (EIS) being prepared by RW Corkery & Co Pty Limited to accompany an application for development consent under Division 4.1 and 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project.

This ACHAR has been undertaken in accordance with the *Secretary's Environmental Assessment Requirements* (SEARs), the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, and the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (the Code of Practice). The Aboriginal cultural heritage assessment of the Project has followed the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

Assessment of the Study Area took place with the assistance of Registered Aboriginal Parties (RAPs). The fieldwork component of this assessment was undertaken on:

- 6 to 10 July 2020;
- 17 July 2020;
- 1 and 2 September 2020; and
- 26 February 2021.

As a result of the survey associated with the Project, 39 Aboriginal cultural heritage sites were recorded and three previously recorded culturally modified (scarred) trees were investigated. The newly recorded sites include two culturally modified trees, eight low-density artefact scatters, and 29 isolated finds.

The undertaking of the impact assessment (**Section 7.2.1**) concluded that there are 12 sites that would be impacted by the Project. The remaining 30 sites would be avoided; however, six sites would require temporary fencing to ensure they are not inadvertently impacted during the development of the Project.

Recommendations concerning Aboriginal cultural values within the Study Area are as follows:

1. Following development consent of the Project, the Applicant would develop an *Aboriginal Cultural Heritage Management Plan* (ACHMP) which is to be agreed to by the RAPs and the Department of Planning, Industry and Environment (DPIE) (with input from Heritage NSW) to manage Aboriginal cultural heritage associated with the Project. The ACHMP would also include an unanticipated finds protocol, unanticipated skeletal remains protocol, and long-term management of any Aboriginal objects within the Study Area.
2. Should development consent for the Project be granted, management strategies to manage and mitigate the impact of the Project would include:
    a. Group 1 sites listed in **Table 8-2** should be subject to the surface collection methodology outlined in **Section 8.2.1**
    b. Group 2 sites listed in **Table 8-3** should be subject to scarred tree relocation outlined in **Section 8.2.2**
    c. Group 3 sites listed in **Table 8-4** should be subject to fencing as outlined in **Section 8.2.3**.
3. All land-disturbing activities must be confined to within the Study Area or the approved TGO Mine Site. Should the parameters of the proposed work extend beyond this, then further archaeological assessment may be required.

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1 INTRODUCTION

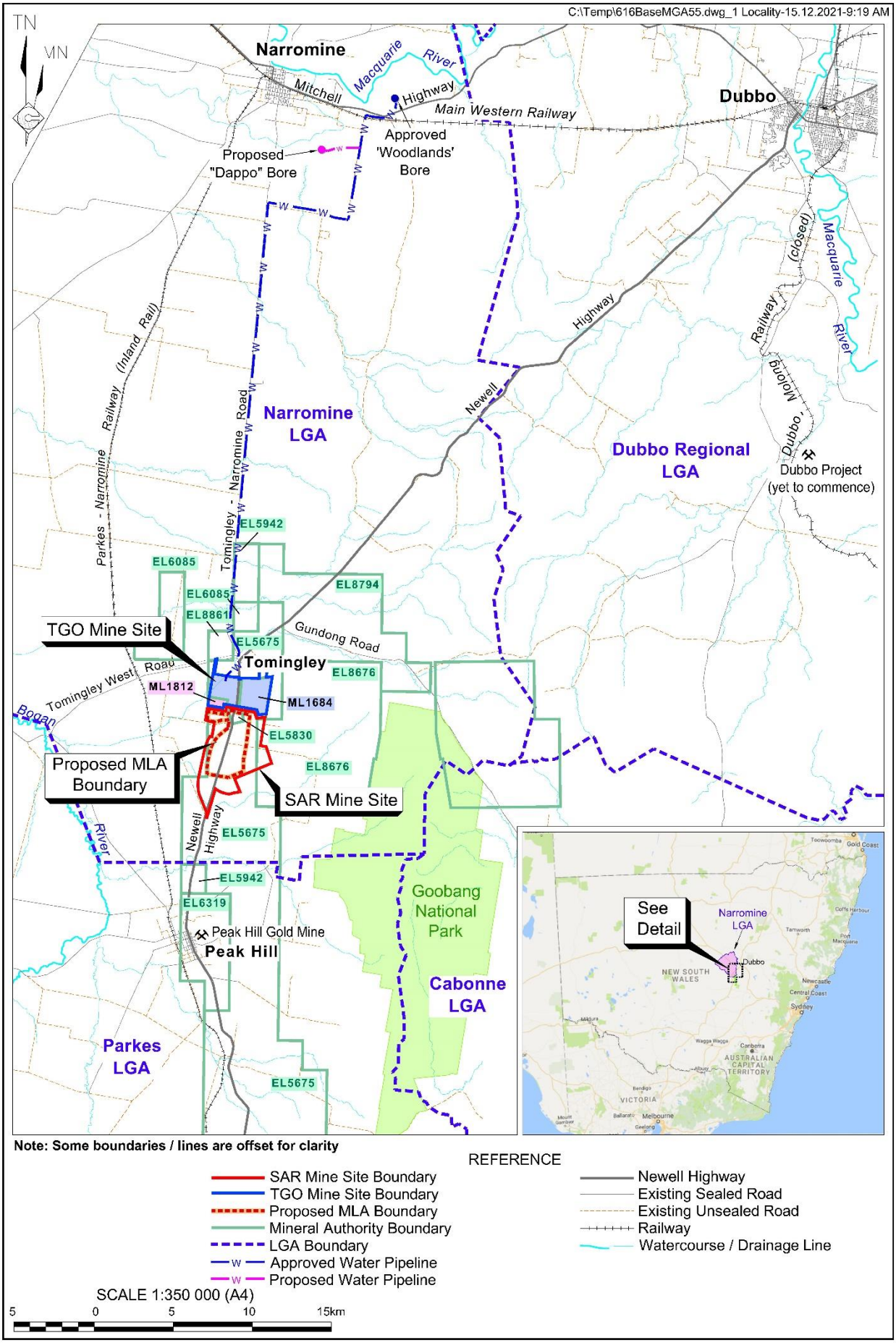
1.1 DESCRIPTION OF THE PROJECT

OzArk Environment & Heritage (OzArk) has been engaged by RW Corkery & Co Pty Limited on behalf of Tomingley Gold Operations Pty Ltd (the Applicant) to complete an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) for the proposed Tomingley Gold Extension Project (the Project) for the San Antonio and Roswell deposits (SAR).

The Project is located immediately south of the village of Tomingley in central western NSW (**Figure 1-1**). The Project is located within the Narromine Local Government Area on land zoned RU1 – Primary Production and SP2 – Infrastructure, under the *Narromine Local Environmental Plan 2011* (LEP).

The purpose of the assessment is to contribute to the *Environmental Impact Statement* (EIS) being prepared by RW Corkery & Co Pty Limited to accompany an application for development consent under Division 4.1 and 4.7 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the Project.

Figure 1-1: Map showing the location of the Project.



1.2 BACKGROUND

The Applicant is the operator of the approved Tomingley Gold Operations (TGO) and is a subsidiary company of Alkane Resources Ltd (Alkane). The TGO mine (TGO Mine Site) is located immediately south of the village of Tomingley and immediately north of the proposed SAR Mine Site (**Figure 1-1**).

TGO operates under State Significant Development (SSD) consent MP 09_0155 originally granted on 24 July 2012. MP 09_0155 has been modified five times, most recently on 5 May 2021. Approved TGO mining operations include:

- Mining of four open cuts, with underground mining under three of the approved open cuts, namely Wyoming 1, Caloma 1 and Caloma 2 Open Cuts, until 31 December 2025.
- Placement of waste rock into three out-of-pit waste rock emplacements and two in-pit waste rock emplacement, namely the Wyoming 3 and Caloma 2 Open Cuts. It is noted that Waste Rock Emplacements 2 and 3 are complete, and with the exception of a small area on the upper surface of Waste Rock Emplacement 3, are under rehabilitation.
- Construction and use of a carbon-in-leach processing plant and associated infrastructure, including:
    - a run-of-mine (ROM) pad;
    - a crushing and screening circuit:
    - a ball mill and grinding circuit; and
    - a cyanide leaching and gold extraction circuit.
- The approved processing plant also includes workshops, ablutions facilities, stores, office area and car parking. The maximum approved rate of processing is 1.5 million tonnes per annum (Mtpa).
- Construction and use of Residue Storage Facility 1 (to Cell 1, Stage 9) for the storage of process residues, with a maximum approved elevation of 291.5 metres (m) Australian Height Datum (AHD).
- Construction and use of Residue Storage Facility 2 (to Stage 2) for the storage of process residues, with a maximum approved elevation of 272.0 m Australian Height Datum (AHD).
- Construction and use of infrastructure required for the TGO Mine, including:
    - dewatering ponds;
    - a water pipeline, from a licensed bore located approximately 7 kilometres (km) to the east of Narromine;
    - various internal and external roads, including an underpass beneath the Newell Highway and upgrades to Tomingley West Road and associated intersections;
    - a transformer and electrical distribution network within the TGO Mine Site;

- various clean and dirty water management structures; and
- fenced biodiversity offsets and vegetated amenity bunds.

Construction of the TGO Mine commenced in February 2013 with open cut mining commencing in November 2013. Underground mining development from a portal in the Wyoming 1 Open Cut commenced in January 2019, with ore production from stopes commencing in December 2019.

Table 1-1 presents the publicly available production figures for the TGO Mine. In summary, approximately 7.5 Mt of ore has been mined and processed. The maximum annual rate of processing was 1.14 Mt in 2015, less than the approved maximum rate of processing of 1.5 Mtpa.

Table 1-1: Previous Production Statistics.

Production	Units	Financial Year								Total
		2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	
Waste rock mined	bcm	4 635 684	5 730 661	6 199 820	7 679 110	3 165 414	657 647	50 473	1 218 779	29 337 588
Ore mined	t	545 550	1 286 291	1 285 454	1 222 868	1 589 811	400 187	335 879	778 236	7 464 276
Ore milled	t	359 096	1,140 704	1 096 105	1 087 983	1 092 602	998 703	838 743	928 531	7 542 467
Gold produced	oz	20 711	69 612	67 812	68 836	78 533	48 969	33 507	56 958	444 938
Source: Alkane Resources Ltd – Annual Reports for each financial year										

The TGO Mine operates up to 365 days per year and 24 hours per day using two 12 hour shifts. As at December 2021, the TGO Mine employed 230 full time equivalent positions.

All TGO activities approved under MP 09_0155 would continue under any new development consent granted, with MP 09_0155 to be surrendered following receipt of the new development consent and all required approvals for the Project.

1.3 PROPOSED WORK

The Project comprises two components as follows:

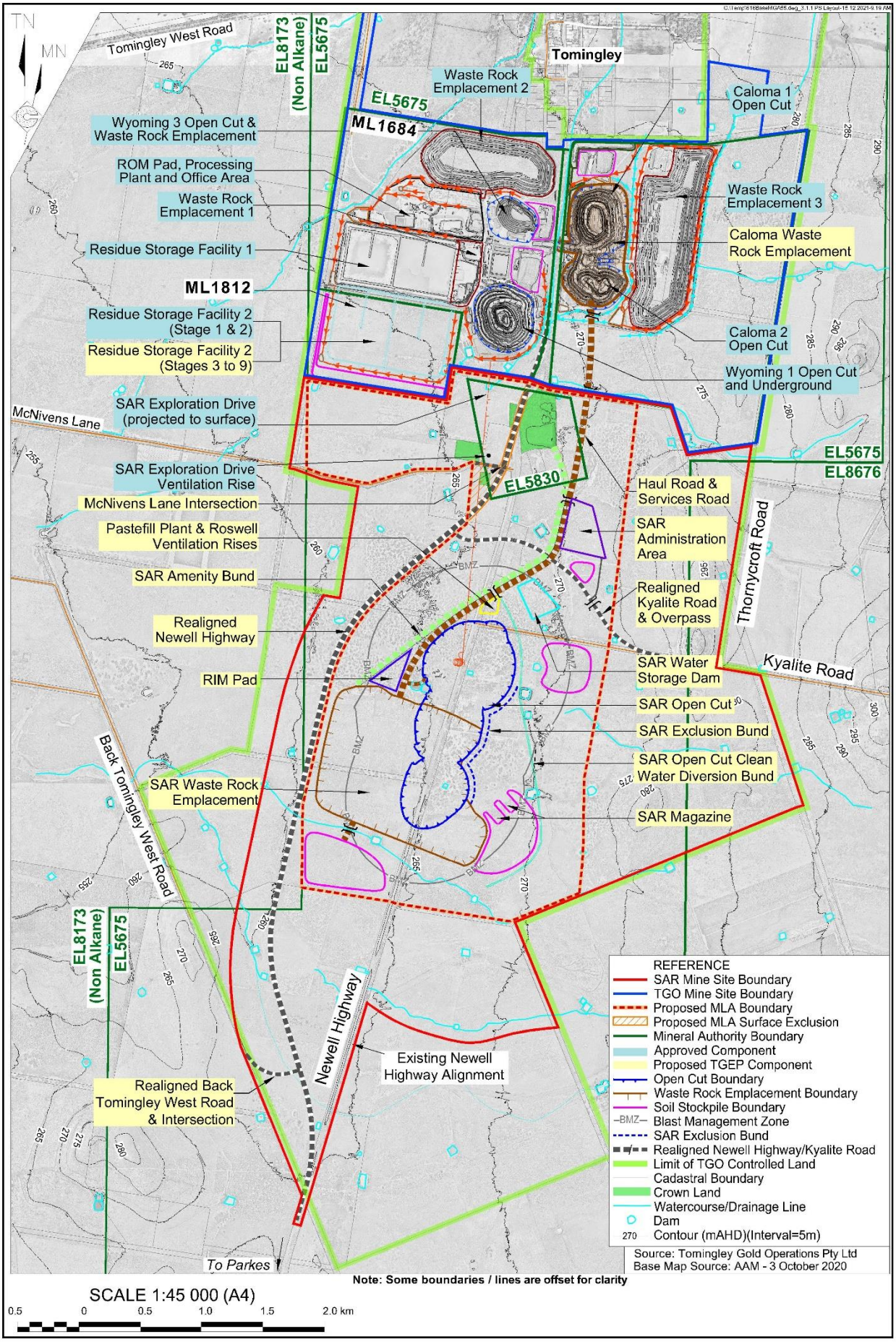
- Approved TGO mining operations (**Figure 1-2**). These activities are undertaken in accordance with development consent MP 09_0155. The approved activities would continue under any new development consent, with MP 09_0155 to be surrendered following receipt of the new development consent and all required approvals for the Project. The approved activities include the following.
  - Extraction of ore and waste rock from four open cuts, with underground mining beneath three of those open cuts.
  - Construction of three out-of-pit waste rock emplacements and one in-pit emplacement.
  - Construction and use of various haul roads, a ROM pad and associated stockpiles.

  - Construction and use of a Processing Plant to process up to 1.5 Mtpa.
  - Construction and use of two residue storage facilities comprising Residue Storage Facility 1 (to Stage 9 or a maximum elevation of 286.5 m AHD) and Residue Storage Facility 2 (to Stage 2 or a maximum elevation of 272 m AHD).
  - Construction and use of ancillary infrastructure.

- The proposed SAR operations and additional or modified TGO operations, including the following (**Figure 1-2**).
  - Realigned Newell Highway and Kyalite Road and associated intersections with Back Tomingley West Road and McNivens Lane and Kyalite Road overpass.
  - The SAR Open Cut and Underground Mine.
  - Construction of two waste rock emplacements, namely the Caloma and SAR Waste Rock Emplacement and backfilling of the associated open cuts.
  - The SAR Amenity Bund, Haul Road and Services Road between the SAR Open Cut and the Caloma 2 Open Cut.
  - Processing of ore from the SAR deposits using the approved Processing Plant at a maximum rate of 1.75 Mtpa.
  - Increased capacity for Residue Storage Facility 2, from Stage 2 to Stage 9, with a maximum elevation of 286 m AHD.
  - Associated surface and underground activities and infrastructure.

In addition, the Project would include an extension of the approved mine life, from 31 December 2025 to 31 December 2032.

Figure 1-2: Proposed work showing impact footprint.



1.4 STUDY AREA

The Study Area is located to the south of the village of Tomingley, approximately 7.5 km north of Peak Hill and 38 km south of Narromine.

The Study Area encompasses approximately 1,950 hectares (ha) of flat to gently undulating land located to the south of the TGO Mine Site, on either side of the Newell Highway (**Figure 1-3**).

The land is currently utilised for agricultural purposes as it has been since colonial settlement of the area. There is also a history of gold mining in the area associated with the former McPhail Mine and the current TGO Mine Site.

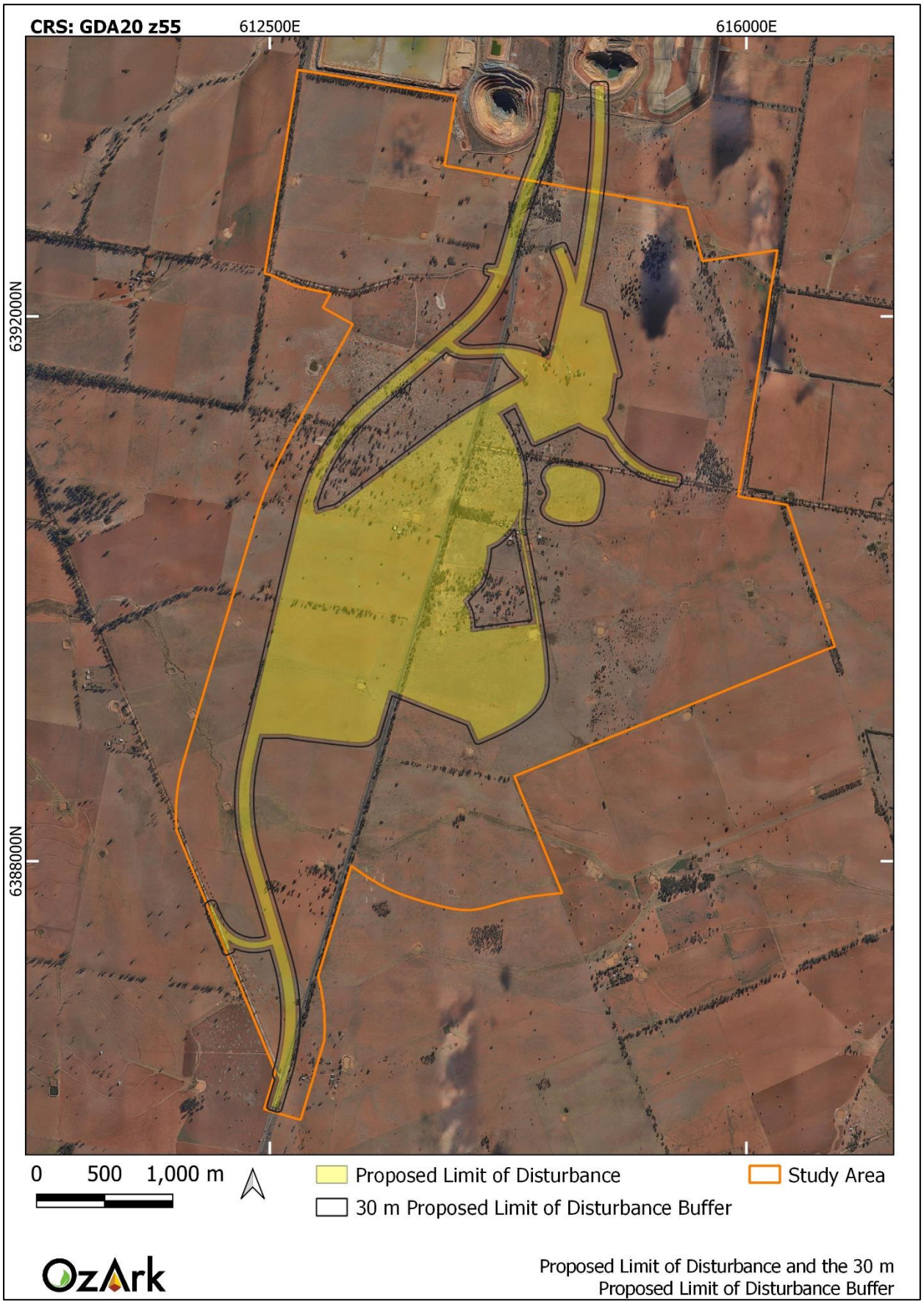
1.5 PROPOSED LIMIT OF DISTURBANCE

The Proposed Limit of Disturbance for the Project encompasses approximately 465 ha of land and is the area in which all Project impacts detailed in **Section 1.3** would be located. However, a 30 metre (m) buffer is also being applied to the Proposed Limit of Disturbance to allow for movement of heavy machinery for the construction of the Project.

The majority of the Proposed Limit of Disturbance is located within the Study Area, however, the northern end of the proposed Newell Highway realignment and a haul road extend outside of the Study Area into the existing approved TGO Mine Site Boundary (**Figure 1-4**).

Figure 1-3: Aerial showing the Study Area.

Figure 1-4: Proposed Limit of Disturbance.



2 ASSESSMENT INTRODUCTION

2.1 RELEVANT LEGISLATION

Cultural heritage is managed by several state and national Acts. Baseline principles for the conservation of heritage places and relics can be found in the *Burra Charter* (Burra Charter 2013). The *Burra Charter* has become the standard of best practice in the conservation of heritage places in Australia, and heritage organisations and local government authorities have incorporated the inherent principles and logic into guidelines and other conservation planning documents. The *Burra Charter* generally advocates a cautious approach to changing places of heritage significance. This conservative notion embodies the basic premise behind legislation designed to protect our heritage, which operates primarily at a state level.

Several Acts of parliament provide for the protection of heritage at various levels of government.

2.1.1 Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act, administered by the Commonwealth Department of Agriculture, Water and the Environment, provides a framework to protect nationally significant flora, fauna, ecological communities, and heritage places. The EPBC Act establishes both a National Heritage List and Commonwealth Heritage List of protected places. These lists may include Aboriginal cultural sites or sites in which Aboriginal people have interests. The assessment and permitting processes of the EPBC Act are triggered when a proposed activity or development could potentially have an impact on one of the matters of national environment significance listed by the Act. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to National/Commonwealth heritage places.

Applicability to the Project

It is noted there are no Commonwealth or National heritage listed places within the Study Area, and as such, the heritage provisions of the EPBC Act and other Commonwealth Acts do not apply.

2.1.2 State Legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act established requirements relating to land use and planning. The framework governing environmental and heritage assessment in NSW is contained within Part 4 of the EP&A Act:

- Part 4: Local government development assessments, including heritage. May include schedules of heritage items.

- Division 4.7: Approvals process for state significant development.

National Parks and Wildlife Act 1974 (NPW Act)

The NPW Act provides for the protection of Aboriginal objects (sites, objects, and cultural material) and Aboriginal places. Under the NPW Act (Part 6), an Aboriginal object is defined as: any deposit, object, or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises NSW, being habitation both prior to and concurrent with the occupation of that area by persons of European extraction and includes Aboriginal remains.

An Aboriginal place is defined under the NPW Act as an area which has been declared by the Minister administering the NPW Act as a place of special significance for Aboriginal culture. It may or may not contain physical Aboriginal objects.

It is an offence under Section 86 of the NPW Act to 'harm or desecrate an object the person knows is an Aboriginal object'. It is also a strict liability offence to 'harm an Aboriginal object' or to 'harm or desecrate an Aboriginal place', whether knowingly or unknowingly. Section 87 of the NPW Act provides a series of defences against the offences listed in Section 86, such as:

- The harm was authorised by and conducted in accordance with the requirements of an *Aboriginal Heritage Impact Permit* (AHIP) under Section 90 of the Act; or
- the defendant exercised 'due diligence' to determine whether the action would harm an Aboriginal object; or
- the harm to the Aboriginal object occurred during the undertaking of a 'low impact activity' (as defined in the regulations).

Applicability to the Project

As the Project is a SSD, if approved, Section 4.41 of the EP&A Act would apply and therefore an AHIP under section 90 of the NPW Act to harm Aboriginal objects would not be required. Instead, all management related to Aboriginal cultural heritage within the Proposed Limit of Disturbance would be governed by the policies within an approved *Aboriginal Cultural Heritage Management Plan* (ACHMP).

Under Section 89A of the NPW Act, it is a requirement to notify the Secretary of the Department of Planning, Industry and Environment (DPIE) of the location of an Aboriginal object. Identified Aboriginal items and sites are registered on Aboriginal Heritage Information Management System (AHIMS) that is administered by Heritage NSW.

Any Aboriginal sites within the Study Area are afforded legislative protection under the NPW Act.

Secretary's Environmental Assessment Requirements

The Secretary's Environmental Assessment Requirements (SEARs) for the Project (SSD-9176045) were issued on 22 July 2021.

The SEARs recognise heritage as a key issue to be examined in the EIS and state (in part):

> *"an assessment of the likely Aboriginal and historic heritage[1] (cultural and archaeological) impacts of the development, including adequate consultation with Aboriginal stakeholders having regard to the Aboriginal Cultural Heritage Consultation requirements (DECCW, 2010), and documented in an Aboriginal Cultural heritage Assessment Report (ACHAR) including the significance of cultural heritage values for Aboriginal people who have cultural association with the land;*
>
> *include results of a survey surface (and test excavation, if required) undertaken by a qualified archaeologist to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record; and*
>
> *demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes, including mitigation measures and procedures for accidental finds at any stage of the project."*

To inform the SEARs, Heritage NSW provided input regarding Aboriginal cultural heritage. Heritage NSW input is set out in **Table 2-1** along with a concordance of where Heritage NSW requirements are addressed in this ACHAR.

Table 2-1: Concordance between Heritage NSW input to the SEARs and this ACHAR.

Heritage NSW requirement	Where addressed in the ACHAR
The Environmental Impact Assessment (EIS) must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in the Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).	This ACHAR contains the results of the Aboriginal archaeological survey undertaken for the Project. It also assesses the cultural, scientific, aesthetic, and historic values scientific present within the Study Area.
Consultation with Aboriginal people must be undertaken and documented in accordance with the *Aboriginal cultural heritage consultation requirements for proponents* (DECCW 2010). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.	This requirement has been followed by the Project and is documented in **Section 3** of this ACHAR.
Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of	Impacts to Aboriginal cultural heritage within the 30 m Proposed Limit of Disturbance buffer are discussed in **Section 7.2**. Management of Aboriginal cultural heritage within the 30 m Proposed Limit of Disturbance buffer is discussed in **Section 8**.

[1] Historic heritage for the Project is addressed in *Historic Heritage Assessment Report: Tomingley Gold Extension Project, Tomingley NSW* (OzArk 2021).

Heritage NSW requirement	Where addressed in the ACHAR
the assessment must be documented and notified to Heritage NSW.	
The assessment of Aboriginal cultural heritage values must include a surface survey undertaken by a qualified archaeologist in areas with potential for subsurface Aboriginal deposits. The results of the surface survey are to inform the need for targeted test excavation to better assess the integrity, extent, distribution, nature and overall significance of the archaeological record. The results of the surface surveys and test excavations are to be documented in the ACHAR.	The results of the surface survey are documented in **Section 6.4.** Test excavation was not deemed warranted at any location within the Study Area.
The ACHAR must outline procedures to be followed if Aboriginal objects are found at any stage of the life of the project to formulate appropriate measures to manage unforeseen impacts.	Procedures related to any unanticipated Aboriginal objects found within 30 m Proposed Limit of Disturbance buffer is outlined in **Section 8.4**.
The ACHAR must outline procedures to be followed in the event Aboriginal burials or skeletal material is uncovered during construction to formulate appropriate measures to manage the impacts to this material.	A procedure for the discovery of skeletal material is outlined in **Section 8.5**.

Further, an agency letter received from Narromine Shire Council dated 7 July 2021 states:

> *The EIS shall address and identify cultural heritage sites, items or relics that are known or may become apparent in the area.*

This ACHAR has been prepared in accordance with the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010a) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs) (DECCW 2010b) to identify cultural heritage sites. The ACHAR addresses requirements of Narromine Shire Council and will contribute to the EIS for the Project.

2.2 PURPOSE AND OBJECTIVES

The purpose of this assessment is to identify and assess Aboriginal heritage constraints relevant to the Project.

2.2.1 Aboriginal Archaeological Assessment Objectives

The current assessment will apply the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010a) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs) (DECCW 2010b) to complete an Aboriginal cultural heritage assessment, to meet the following objectives:

Objective One: Undertake background research on the Study Area to formulate a predicative model for site location within the Study Area.

Objective Two: Identify and record Aboriginal objects or sites within the Study Area, as well as any landforms likely to contain further archaeological deposits.

Objective Three: To undertake an Aboriginal cultural values assessment in consultation with Registered Aboriginal Parties (RAPs) of tangible and intangible cultural heritage values that have potential to be impacted by the Project.

Objective Four: To assess the significance of any recorded Aboriginal sites, objects, or places likely to be impacted by the Project, in consultation with RAPs.

Objective Five: To assess the likely impacts of the Project to any recorded Aboriginal sites, objects, places, or intangible values and to develop management recommendations, in consultation with RAPs.

2.3 ASSESSMENT APPROACH

The field survey followed the Code of Practice (DECCW 2010a).

The Aboriginal cultural heritage assessment followed the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (the Guide; OEH 2011) and the ACHCRs (DECCW 2010b).

2.4 REPORT COMPLIANCE WITH THE CODE OF PRACTICE

The Code of Practice establishes requirements that should be followed by all archaeological investigations where harm to Aboriginal objects may be possible. **Table 2-2** tabulates the compliance of this report with the requirements established by the Code of Practice.

Table 2-2: Report compliance with the Code of Practice.

Code of Practice Requirement	Context of the Requirement	Concordance in this report
Requirement 1	Review previous archaeological work	*see subsections below*
Requirement 1a	Previous archaeological work	**Section 5**
Requirement 1b	AHIMS searches	**Section 5.4**
Requirement 2	Review the landscape context	**Section 4**
Requirement 3	Summarise and discuss the local and regional character of Aboriginal land use and its material traces	**Section 5**
Requirement 4	Predict the nature and distribution of evidence	*see subsections below*
Requirement 4a	Predictive model	**Section 5.6**
Requirement 4b	Predictive model results	**Section 5.6.3**
Requirement 5	Archaeological survey	*see subsections below*
Requirement 5a	Survey sampling strategy	**Section 6.1**
Requirement 5b	Survey requirements	This Requirement was fulfilled during the undertaking of the survey
Requirement 5c	Survey units	**Section 6.3**
Requirement 6	Site definition	**Section 5.6.3**
Requirement 7	Site recording	*see subsections below*
Requirement 7a	Information to be recorded	All sites were recorded in accordance with this Requirement.
Requirement 7b	Scales for photography	All artefact photographs employed a centimetre scale bar.
Requirement 8	Location information and geographic reporting	*see subsections below*
Requirement 8a	Geospatial information	All artefact locations were logged using a non-differential handheld GPS.
Requirement 8b	Datum and grid coordinates	All coordinates are provided in GDA Zone 55.
Requirement 9	Record survey coverage data	**Section 6.1** and **6.3**
Requirement 10	Analyse survey coverage	**Section 6.3**
Requirement 11	Archaeological Report content and format	This report adheres to this Requirement.
Requirement 12	Records	OzArk undertakes to maintain all survey records for at least five years.
Requirement 13	Notifying OEH and reporting	*see subsections below*
Requirement 13a	Notification of breaches	Not applicable
Requirement 13b	Provision of information	Not applicable
Requirement 14	Test excavation which is not excluded from the definition of harm	Not applicable as no test excavation took place.
Requirement 15	Pre-conditions to carrying out test excavation	*see subsections below*
Requirement 15a	Consultation	Not applicable
Requirement 15b	Test excavation sampling strategy	Not applicable
Requirement 15c	Notification	Not applicable
Requirement 16	Test excavation that can be carried out in accordance with this Code	*see subsections below*
Requirement 16a	Test excavations	Not applicable
Requirement 16b	Objects recovered during test excavations	Not applicable
Requirement 17	When to stop test excavations	Not applicable

2.5 OZARK PERSONNEL

2.5.1 Field Assessment

The fieldwork component of the heritage assessment was undertaken by:

- Fieldwork Director: Stephanie Rusden (OzArk Senior Archaeologist, BSc, University of Wollongong, BA, University of New England).
- Archaeologist: Ben Churcher (OzArk Principal Archaeologist, BA [Hons], University of Queensland; Dip Ed, University of Sydney).
- Archaeologist: Dr Alyce Cameron (OzArk Project Archaeologist, BA [Hons] and PhD [Archaeology & palaeoanthropology] Australian National University).

The fieldwork component of this assessment was undertaken by OzArk on the following days.

- 6 to 10 July 2020;
- 17 July 2020;
- 1 and 2 September 2020; and
- 26 February 2021.

2.5.2 Reporting

The reporting component of the heritage assessment was undertaken by:

- Report author: Stephanie Rusden.
- Reviewer: Ben Churcher.

3 ABORIGINAL COMMUNITY CONSULTATION

3.1 ABORIGINAL COMMUNITY CONSULTATION

The Aboriginal cultural heritage assessment of the Project has followed the ACHCRs (DECCW 2010b). A log and copies of correspondence with the RAPs is presented in **Appendix 1**.

The ACHCRs include four main stages, which are detailed in the following subsections.

3.1.1 ACHCRs Stage 1

The aim of Stage 1 is to identify the RAPs who wish to be consulted about the Project.

On 26 March 2020, an advertisement was placed in the *Daily Liberal* requesting expressions of interest in being consulted about the Project (**Appendix 1 Figure 1**). In addition, the following agencies were contacted to identify potential stakeholders for the area: Biodiversity and Conservation Division (BCD; now Heritage NSW); Peak Hill Local Aboriginal Land Council (PHLALC); Office of The Registrar, ALRA; National Native Title Tribunal; NTSCORP; Narromine Shire Council; and Central West Local Land Services (**Appendix 1 Figure 2**).

Letters were then sent to all potential stakeholders asking if they wished to be consulted about the Project (**Appendix 1 Figure 3**).

As a result, the following groups or individuals registered to be consulted about the Project.

- PHLALC;
- Corroboree Aboriginal Corporation;
- Tubba-Gah Aboriginal Corporation;
- Paul Brydon;
- Gunjeewong Cultural Heritage Corporation Heritage Preservation;
- Bogan River Peak Hill Wiradjuri Aboriginal Corporation; and
- Jay and Warren Daley.

3.1.2 ACHCRs Stages 2 & 3

The aim of Stages 2 and 3 is to provide information about the Project to the RAPs and to acquire information regarding Aboriginal cultural values associated with the Project either through consultation and/or field work. Often these two stages are run together, and the detailed Project information is provided in the assessment methodology that is issued to all RAPs for their consideration.

On 29 April 2020, all RAPs were sent information about the Project and a draft of the survey methodology (**Appendix 1 Figure 4**). RAPs were provided the stipulated 28 days in which to

review and comment on these documents as per Stage 3 of the ACHCRs. The closing date for comment was 27 May 2020.

A Project update letter and sampling strategy was distributed to all RAPs on 30 June 2020 following an increase to the Study Area (**Appendix 1 Figure 5**).

No comments were received from the RAPs during Stage 2 & 3 regarding the survey methodology or the provided Project information.

3.1.2.1 Project Updates

On 20 October 2020, all RAPs were sent a letter notifying them that the Applicant determined the Project was unlikely to be approved in time to allow the scheduled construction of Residue Facility Storage 2 which is required by July 2021 to ensure mining operations (**Appendix 1 Figure 6**). As such, the Residue Facility Storage 2 area would be assessed as part of a modification (Modification 5) to MP 09_0155.

On 10 February 2021, the RAPs were provided with a letter noting the inclusion of an additional potential realignment option for Kyalite Road and the requirement for further fieldwork (**Appendix 1 Figure 7**).

Further, on 9 August 2021, the RAPs were sent an email notifying them that they would be provided with a copy of the draft ACHAR in the near future for review as per Stage 4 of the ACHCRs.

3.1.3 ACHCRs Stage 4

Stage 4 involves the production of a draft ACHAR that is issued to all RAPs for their consideration. The ACHAR will document the results of the assessment, outline opportunities for the conservation of Aboriginal cultural values, and suggest recommendations for the management of Aboriginal objects should impacts to these objects be unavoidable.

A copy of the draft ACHAR was sent to all RAPs for review on 25 August 2021 with a closing date of 23 September 2021. No comments were received on the draft ACHAR.

3.2 ABORIGINAL COMMUNITY INVOLVEMENT IN THE ASSESSMENT

Table 3-1 provides a log of the RAPs and their representatives who participated in the fieldwork.

Table 3-1: Log of RAP involvement in the field survey.

Organisation	Representative	Fieldwork days								
		6/7/20	7/7/20	8/7/20	9/7/20	10/7/20 (half day)	17/7/20	1/9/20	2/9/20 (half day)	26/2/21
Tubba-Gah Aboriginal Corporation	Geoff Ryan	X	X	X	X	X				

Organisation	Representative	Fieldwork days								
Bogan River Peak Hill Wiradjuri Aboriginal Corporation	Karryn Keed	X	X	X	X	X	X	X	X	
Peak Hill Local Aboriginal Land Council	Lyn Bell Anthony Wilson (26/2/2021)	X	X	X	X	X	X	X	X	X
Jay and Warren Daley	Jay and Warren Daley	X	X	X	X	X	XX	XX	XX[1]	
Note 1: On the days marked 'XX', two site officers were present representing the same RAP group.										

3.2.1 Comments Arising from the Assessment

The following are summaries of comments provided by the RAP site representatives during the survey.

- No specific cultural values pertaining to the Study Area were received during the fieldwork, except for the observation that every site and artefact is important to Aboriginal people.
- Karryn Keed (Bogan River Peak Hill Wiradjuri Aboriginal Corporation) indicated that the gravelly mounds adjacent to the areas of gilgai may be burial locations. However, it was noted during the survey that the gravelly mounds are naturally formed in association with the gilgai.
- Karryn Keed (Bogan River Peak Hill Wiradjuri Aboriginal Corporation) also noted that cultural scars on trees can be present anywhere on a tree, including the roots when above ground and along branches. Further, scars high up on trees generally indicate burials.
- Geoff Ryan (Tubba-Gah Aboriginal Corporation) recommended that artefacts from any sites being impacted by the Project should be reburied at a nearby location.

4 LANDSCAPE CONTEXT

An understanding of the environmental contexts of a study area is requisite in any archaeological investigation (DECCW 2010a). It is a particularly important consideration in the development and implementation of survey strategies for the detection of archaeological sites. In addition, natural geomorphic processes of erosion and/or deposition, as well as humanly activated landscape processes, influence the degree to which these material culture remains are retained in the landscape as archaeological sites, and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

4.1 TOPOGRAPHY

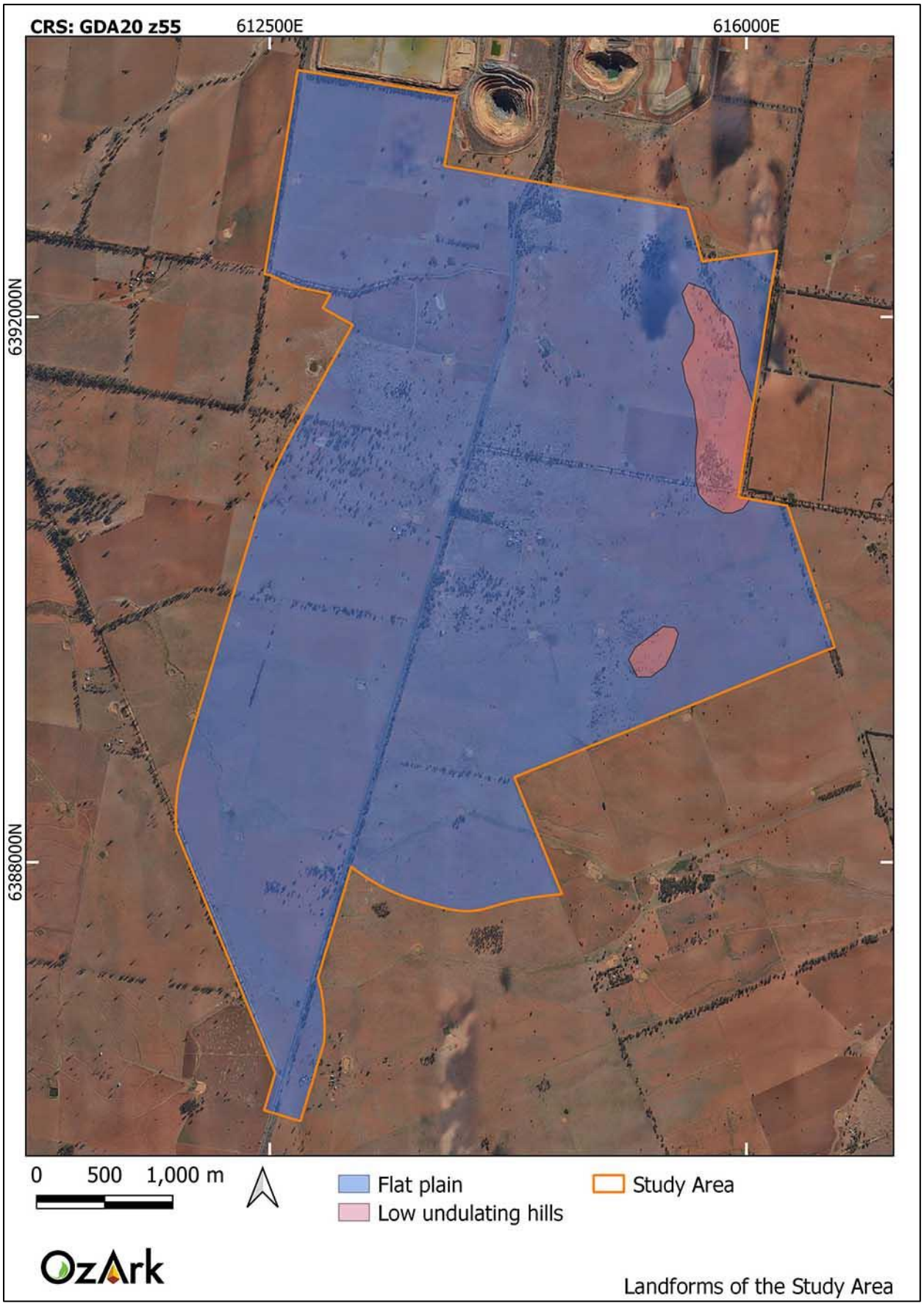
The Tomingley area is situated in the physiographic region known as the central-west slopes of New South Wales. It is located just west of the border between the Upper Macquarie River and the Western Plains which is a transitional zone between the Great Dividing Range to the east and the plains of the Darling River to the west (Koettig 1985: 12). The Study Area is located approximately 5 km west of the Herveys Range, located within Goobang National Park, on the western slopes of the Great Dividing Range.

The topography of the Study Area is typically flat to very gently undulating, with isolated low hills in the east (**Figure 4-1** and **Figure 4-2**). This type of terrain provides no physical barriers to movement across the landscape.

Figure 4-1: Topography of the Study Area.

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>1. View south across the flat landform in the south of the study area in an area with gilgai.</td><td>2. View west across a gently slope in the east of the Study Area.</td></tr>
</table>

Figure 4-2: Landforms within the Study Area.



4.2 GEOLOGY AND SOILS

Understanding land formation processes is an important part of assessing the availability of exploitable resources in the landscape and predicting the ability of that landscape to preserve archaeological material (DECCW 2010a).

The Study Area is mostly within the Darling Riverine Plains Bioregion, while the southernmost portion is within the South Western Slopes Bioregion. The geology of the Darling Riverine Plains Bioregion consists of sheets of alluvium deposited on older sedimentary rocks, with almost all bedrock buried in the sedimentary basin (NPWS 2003). The South Western Slopes Bioregion lies wholly in the eastern part of the Lachlan Fold Belt which consists of a complex series of north to north-westerly trending sedimentary and volcanic rocks (NPWS 2003). Within this bioregion, common materials include quartz and quartzite, basalt, and granites with generally softer rocks such as shale or slate in the valleys between ranges and occasional limestone outcrops.

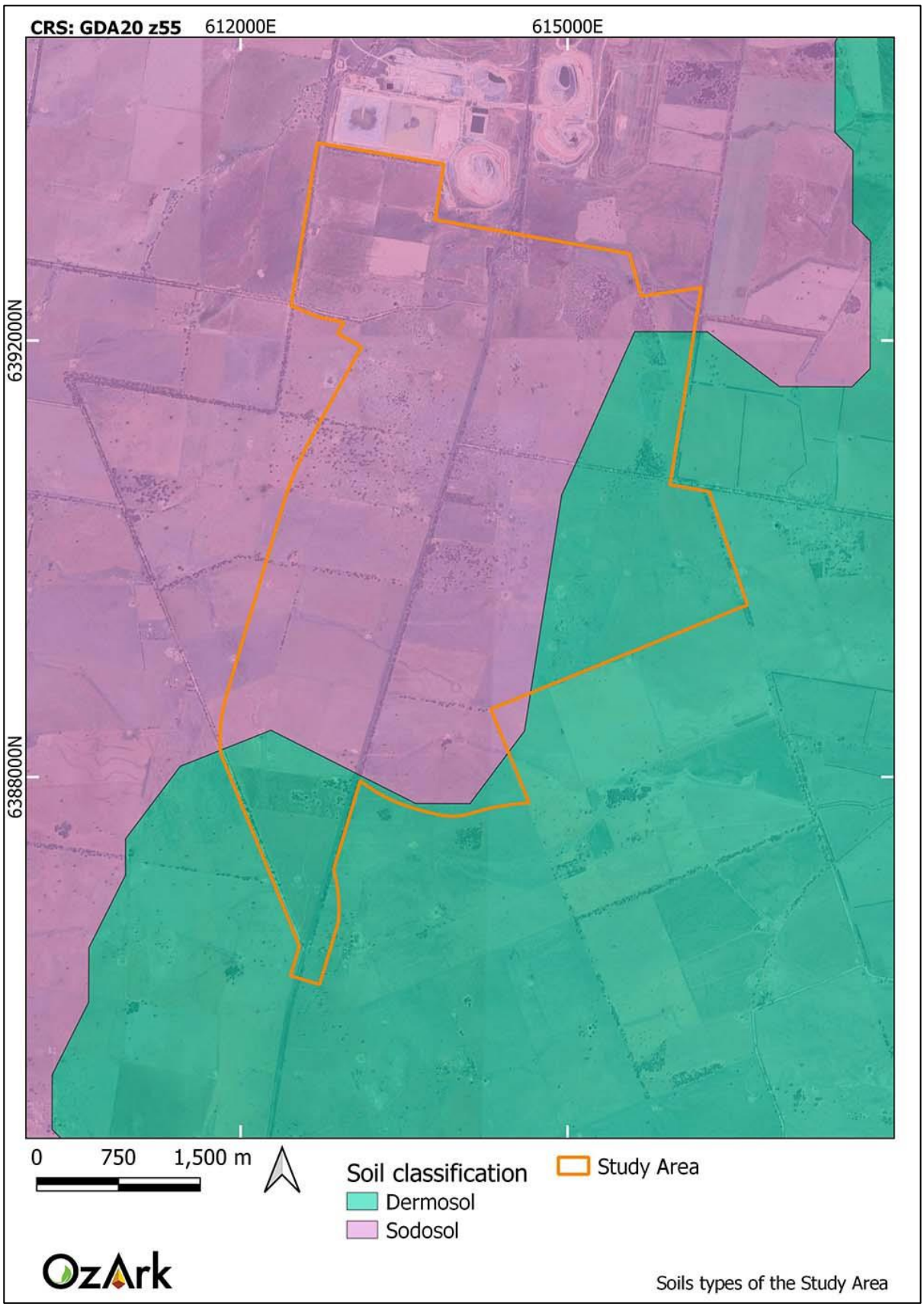
Soil analysis has important ramifications for archaeological research through the potential impact of different soils on human activity (such as agricultural exploitation) and the impact of the soils on archaeological evidence (such as post-depositional movement). The soils known to occur throughout the Study Area are identified below to delineate their nature and impact on the survival and location of archaeological material.

According to the Australian Soil Classification, the soils of the Study Area consist of Sodosols and Dermosols (**Figure 4-3**). Dermosols comprise the soils in the east and southern portions of the Study Area and consist of dark, porous, loamy soils associated with areas of dark cracking clays and sometimes areas of gravelly soils. Dermosols lack a strong texture contrast between the B1 and B2 horizon and have high agricultural potential because of its good structure, moderate to high chemical fertility, and water-holding capacity. This soil type preserves archaeological deposits, except in areas of cracking clays, and is in areas that are generally more favourable to past Aboriginal occupation. The Sodosols consist of hard setting, alkaline red soils and dark cracking clays in the relatively lower lying areas where there is some slight gilgai development. In contrast to Dermosols, Sodosols have a texture contrast between the A and B horizons but generally have a low-nutrient status, are very vulnerable to erosion and are susceptible to waterlogging. Due to their susceptibility to erosion, subsurface archaeological deposits may become exposed.

The Study Area also includes numerous gilgai formations (**Figure 4-4**). Gilgai forms in soil types containing a high percentage of swelling clay. They are characterised as circular to linear shaped depressions, often ringed by stone deposits which undergo dynamic seasonal changes. In dry seasons, when there is little to no moisture remaining in the soil, gilgai surfaces crack deeply creating large voids extending through the B horizon. In contrast, after rain events the clay soils

swell, closing the cracks and uplifting and expelling subsurface rocks and other materials (Mabbut 1977).

Figure 4-3. Soil types of the Study Area.

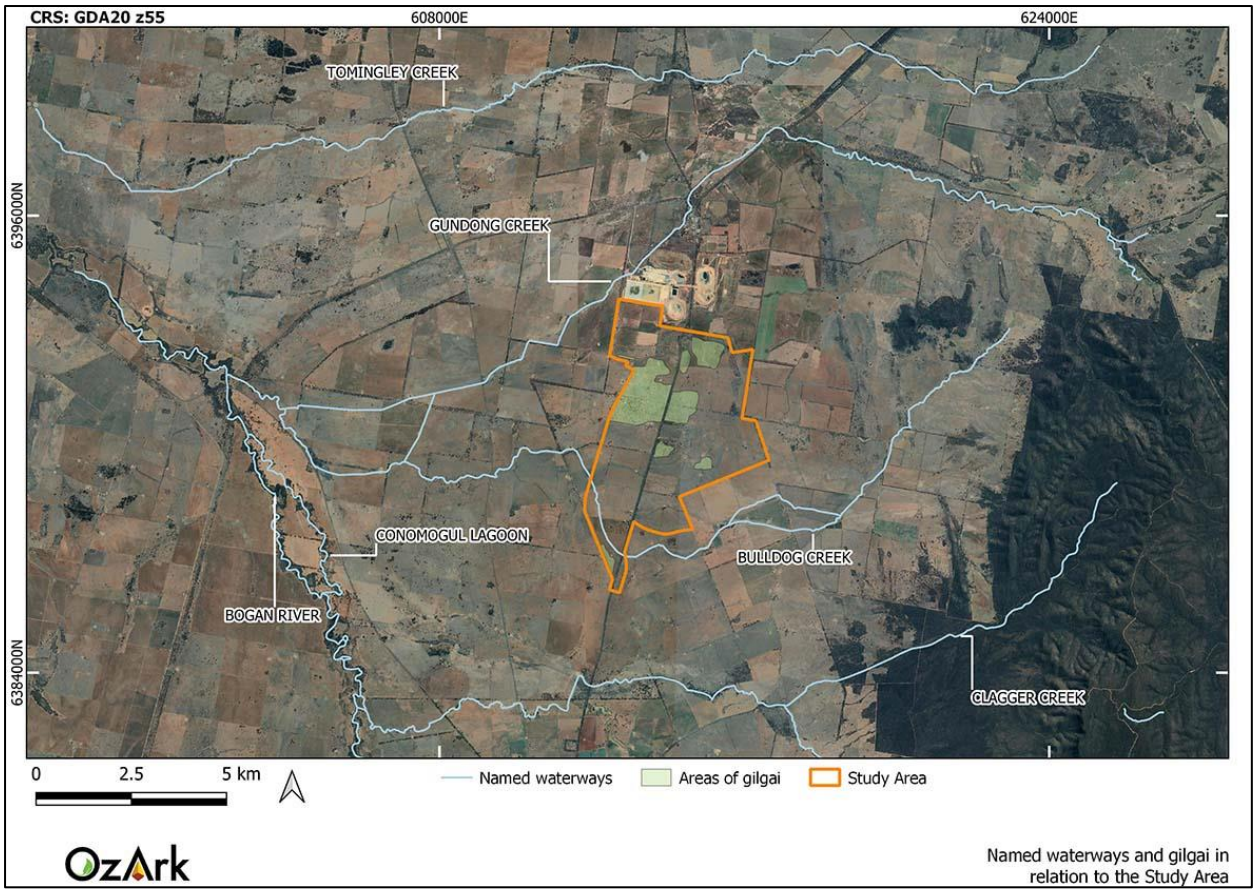


4.3 HYDROLOGY

Bulldog Creek, an ephemeral drainage line, traverses the southern portion of the Study Area (**Figure 4-4** and cover photograph). Bulldog Creek is a tributary of Gundong Creek, located at its closest 330 metres (m) west of the north-western portion of the Study Area. Gundong Creek historically terminated in the vicinity of Tomingley as undefined overland flow but was diverted through channelling in the nineteenth century. A section of the diverted Gundong Creek flows through the TGO Mine Site, located to the north of the Study Area (OzArk 2011). Both Bulldog Creek and Gundong Creek flow to the west and southwest and merge with the Bogan River approximately 11 km to the west of the Study Area. The Bogan River flows in a generally north-westerly direction before merging with the Darling River approximately 80 km upstream of Brewarrina.

Areas of gilgai are present across the Study Area. These were seasonal sources of water for Aboriginal people (Bayly 1999), holding moisture within saturated clays, long after shallow surface sources would have evaporated (Neyland 2016) (**Figure 4-4**).

Figure 4-4. Hydrology of the Study Area and surrounds.



4.4 FLORA AND FAUNA

Native vegetation in the Study Area is highly disturbed due to previous land clearing for agricultural purposes. Most of the Study Area is currently used for intensive cropping. There are,

however, several areas with remnant trees across the Study Area generally along transport routes, along drainage lines, and on the low hills.

Prior to historic clearance, vegetation within the Study Area and surrounds would have been consistent with the Floodplains Transitional Woodlands vegetative formation as described by Keith (2004). Tree species included *Eucalyptus microcarpa* (Grey Box) and *E. populnea* subsp. *bimbil* (Bimble Box) throughout with *E. melliodora* (Yellow Box) and *E. conica* (Fuzzy Box) occurring in the 'damper areas', and *E. camaldulensis* (River Red Gum) occurring on creek banks. Elevated red soiled gravel ridges supported *E. dwyeri* (Dwyer's Red Gum), whilst drier soils may support an occasional *Brachychiton populneus* (Kurrajong), *Allocasuarina cristata* (Belah) or *Allocasuarina luehmannii* (Bulloak) but are mostly dominated by *Callitris glaucophylla* (White Cypress Pine).

Numerous fauna species suitable for subsistence by Aboriginal people would have been present throughout the Study Area. These species include native birds, possums, wallabies, and various species of freshwater fish such as the Regent Honeyeater (*Anthochaera phrygia*), the Swift Parrot (*Lathamus discolor*) and Superb Parrot (*Lathamus discolor*), Eastern Pigmy-possum (*Cercartetus nanus*), Squirrel Glider (*Petaurus norfolcensis*) (NPWS 2003).

4.5 CLIMATE

Climate statistics from the Peak Hill Post Office (Station Number #050031) show the area experiences warm to very warm (hot) summers, with an average rainfall of 562 millimetres[2] (mm), predominately occurring in summer. The average summer maximum temperature is 33.4˚C and maximum winter temperature 15.4˚C[3] (BoM 2021).

4.6 LAND USE HISTORY AND EXISTING LEVELS OF DISTURBANCE

The level to which an archaeological record remains intact is heavily affected by the levels of disturbance in a given area. Disturbance can be from natural activity, such as the erosion of a landform over time, or through human activity, such as the ploughing of fields or clearing of land. Disturbance of the archaeological record can also be either direct, such as via land clearance, or indirect, such as the increased erosion of the landscape due to the removal of vegetation.

The Study Area has been subject to a variety of impacts primarily related to the surrounding area's historical and current agricultural land use. Disturbances across the Study Area are summarised below.

[2] Climate statistics from Station Number #050031 for average rainfall is based on data gathered between 1890 to 2021.
[3] Climate statistics from Station Number #050031 for average temperatures is based on data gathered between 1965 to 2021.

Agriculture and Pastoralism

Cropping and grazing are fundamental to the local economy and dominate land use throughout the surrounding area. The Study Area is wholly contained within cropping and grazing areas which has had the following impacts.

- Vegetation removal: The Study Area has been subject to significant levels of vegetation removal. Culturally modified trees may have been removed during the land clearance phase in the Study Area, thereby distorting the archaeological landscape by removing this site type.
- Cultivation: the majority of the Study Area has been subjected to repeated cultivation. Repeated cultivation since the commencement of colonial settlement will have altered soil profiles and potentially disturbed the integrity of sites and any potential subsurface archaeological deposits. Cultivation acts to redistribute artefacts both horizontally and vertically within the soil profile and ultimately destroys the integrity of artefact assemblages within the top 20 to 50 centimetres (cm) of the soil profile. Research into the impacts on archaeological sites as a result of agricultural practices, termed plough zone archaeology, has demonstrated that artefacts can move in excess of 8 m per season of cultivation (Frink 1984; Gaynor 2001).
- Grazing: The Study Area has been used historically and is currently used for low-intensity livestock grazing. The presence of hoofed livestock is likely to have resulted in trampling and compaction of the ground surface which accelerates soil loss.
- Farm Infrastructure and remediation works: The Study Area has an overall low level of disturbance generated by the construction of dams, contour banks, agricultural buildings, and fencing. Earthworks associated with contour banking and dams can reveal lithic artefacts which may have been otherwise concealed by low ground surface visibility (GSV).

Dwellings

A low level of disturbance is present from the construction of dwellings and associated farming structures located on properties across the Study Area and in association with the former village McPhail.

Mining

The former McPhail gold mine is located within the Study Area. The overall area of impact associated with the former mine is low in relation to the entire Study Area.

Transport

The Newell Highway traverses the central portion of the Study Area. Additional graded roads which traverse the Study Area include McNivens Lane, Back Tomingley West Road and Kyalite Road. A limited number of farm tracks also intersect the Study Area. In the case of unsealed tracks, this disturbance tends to provide exposures, thus enabling the identification of otherwise obscured artefacts.

Erosion

Erosion includes occasional gully erosion and sheet wash erosion, primarily near waterways. Erosion has the capacity to completely remove archaeological sites; however, in the process of erosion, many archaeological sites can become freshly exposed.

4.7 CONCLUSION

The review of the environmental factors associated with the Study Area allows the following conclusions to be drawn in terms past Aboriginal occupation.

- Topography and hydrology: The flat landforms which dominate the Study Area would not have hindered Aboriginal occupation in the past; however, relative to surrounding landscapes it does not contain key features such as a permanent water supply (the Bogan River) or shelter (Hervey Ranges) that are most likely to encourage long-term Aboriginal occupation. As such, the size and density of sites located within the Study Area are likely to be smaller and more sparse than those to the west and south, which are in closer proximity to the Bogan River and to the east around the Hervey Ranges.

- Geology: Landforms which typically comprise outcropping rock, i.e., hills, are limited within the Study Area and therefore sources of stone procurement for tool manufacture will be limited. Of the raw materials common in the region (quartz, quartzite, basalt, granites, shale, and slate), the only materials suitable for stone tool manufacture are quartz, quartzite, and basalt.

- Soils: The fertile soils of the region would have supported various resources allowing Aboriginal occupation in the area. However, colonial use of the fertile soil has resulted in long-term impacts to the environment, including the clearing of vegetation to provide open spaces for intensive agriculture. These impacts may have removed certain site types (such as culturally modified trees) or disturbed artefact sites through soil loss, ploughing, and stock trampling.

- Vegetation: Mature specimens of native species which would have been present within the Study Area in the past would have provided resources for Aboriginal people; however, resources likely to have supported a large population would have been present closer to more permanent water sources, including the Bogan River. Given the presence of mature native vegetation, it is possible that some site types such as culturally modified trees may exist within the Study Area; however, broad-scale vegetation clearance reduces the likelihood that any culturally modified trees remain present.

- Climate: The climate would not have been an impediment to year-round occupation.

- Land use: Activities such as vegetation clearance, cultivation, and grazing are the dominant types of disturbance to have taken place across the Study Area. These activities are likely to have displaced Aboriginal objects or sites and reduce the potential for intact subsurface archaeological material to remain.

5 ABORIGINAL ARCHAEOLOGY BACKGROUND

5.1 ETHNO-HISTORIC SOURCES OF REGIONAL ABORIGINAL CULTURE

At the time of colonial settlement, the Study Area was within the territory of people belonging to the Wiradjuri tribal and linguistic group (Tindale 1974 and Horton 1994). The Wiradjuri tribal area is situated within the Murray Darling Basin, covering three primary physiographic divisions: the riverine plains in the west, the transitional western slopes in between and the highlands or central tablelands in the east (White 1986).

The Study Area falls within the central division, being the transitional western slopes into the central tablelands, the heart of Wiradjuri territory. More specifically, the local landscape of the Study Area is considered to be that of the Bogan River Wiradjuri people, whose range included Tomingley and was bounded to the east by the Hervey Ranges (as named by Oxley) located within Goobang National Park.

While it is most likely that the name—Tomingley—was a variant on the name Tom Inglis, who was a stagecoach driver between Dubbo and Parkes, it is also possible it was a local Aboriginal word. Garnsey, an ethnographer, who recorded extensive details about Aboriginal people in Dubbo, noted the word Tomingley is an Aboriginal word for death adder, although he had never seen or heard anyone refer to a death adder in the region (Garnsey 1942: 62).

Episodes of early contact between Aboriginal and colonial cultures from the nearby Lachlan Valley (around 30 km south) were documented by the explorers Oxley and Cunningham in May 1817. On the return journey from exploration of the Lachlan, the explorers tracked north of Lake Cargelligo and Condobolin to the west of Parkes before bearing more northeast towards Peak Hill and Tomingley (Whitehead 2003: 290–296). On the 10 and 11 August 1817, the group set up camp west of the Bogan River near Gobundry Mountains along Genaren Creek and had almost reached the Bogan River by 12 August 1817. They arrived to what is now just north of Tomingley on 13 August 1817.

Relating to the travels on 10 August, Oxley writes:

> *"We have hitherto seen no other signs of this being inhabited country than the marks usually made by the natives in ascending the trees, and none of these were very recent. It is probable that they may see us without discovering themselves…"*
>
> (Whitehead 2003: 298)

While Cunningham (1817) reported that:

> *"…we halted and pitched our tent on the site of an old native encampment. Here we saw quantities of horse-mussel shells with which the creek had furnished them and some stones on which they had been sharpening some weapons or instruments, perhaps their mogos or stone hatchets."*

(Whitehead 2003: 299)

Heading east from Genaren Creek on 11 August 1817, Oxley notes that they came across many transitory encampments associated with mussel shell scatters that the 'natives' that did not appear to have been used for four to six months.

13 August 1817 was spent traversing the landscape from Genaren Creek to Tomingley, hoping to intersect with the Macquarie River (although they were further from it than they realised). It appears that it had rained in the preceding days and water still lay in creeks of the area and they camped just north of Gundong Creek near Tomingley Creek, where they noted the presence of a spring. Oxley writes of their approach to the area that:

> *"On the banks of that burn* (Scottish for creek)*, many heaps of the pearl muscle-shells were found, and marks of flood about eight feet. We have for several days past seen no signs of any natives being recently in this part of the country; the marks on the trees, which were the only marks we saw, being several months old, and never seen except in the vicinity of water. Marks of the natives' tomahawks were to us certain signs of approaching water…"*
>
> (Whitehead 2003: 303)

To the south of the Study Area are later accounts of contact with native groups by the Mitchell expedition, which had set out to explore the Bogan River in 1835 (Unger undated: 3; Kass 2003: 6). In April 1835, Mitchell's party encountered a group of natives on the eastern outskirts of what is today the town of Parkes. From this meeting, Mitchell learned that what had been named the Hervey Range by Oxley in 1817 was in fact known to the locals as 'Goobang', which derived from the Aboriginal word *Coleong Coobung*, which meant place of many wattles (Kass 2003: 9). Mitchell's group camped within earshot of the Aboriginal camp and his account is quoted by Unger (nd: 4):

> *"The natives who we met here were fine looking men, enjoying contentment and happiness within the precincts of their native woods. Their enjoyment seemed so derived from nature, that it almost excited a feeling of regret, that civilised men, enervated by luxury and all its concomitant diseases, should ever disturb the haunts of these rude happy beings. The countenance of the first man who came up to me, was a fine specimen of man in an independent state of nature. He had nothing artificial about him, save the badge of mourning for the dead, a white band (his was very white), round his brow. His manner was grave, his eye keen and intelligent, and, as our people were encamping, he seemed to watch the moment when they wanted fire, when he took a burning stick, which one of the natives had brought, and presented it in a manner expressive or welcome, and an unaffected wish to contribute to our*

wants. Sat a distance, their gins sat at fires, and we heard the domestic sounds of squalling children."

When Mitchell's party left their camping spot, several natives reportedly followed them, one of whom speared a large kangaroo, while others used tomahawks to extract honey from tree branches. It is recorded that the natives accompanied the expedition for four days before retreating upon the appearance of further natives. This was interpreted by Mitchell as the original group of natives having reached their tribal boundary (Unger nd: 5).

Upon reaching the headwaters of the Bogan (southwest of Peak Hill), Mitchell records encountering the tribe of 'Bultje', said to be composed of up to 120 natives of considerable intelligence who could speak some English. He describes that this tribe removed one of the two front teeth of males aged over 14 (Unger nd: 5). Mitchell's accounts of the 'Bogan blacks' provide excellent detail on subsistence, describing this tribe to be reliant more on possums, kangaroo, and emus than the lower Darling Aboriginal groups, but with a significant input from freshwater mussels. The root of the 'tao' plant are said to have comprised much of the children's diet.

Anthropological or ethnographic research ceased in the Peak Hill and Tomingley region during the 20th century.

5.2 REGIONAL ARCHAEOLOGICAL CONTEXT

The most relevant research-based studies over the central west and Lachlan Valley were undertaken by Kelton (1996), English et al. (1998), and OzArk (2016). These studies provide baseline data for placing past Aboriginal sites within a regional landscape context. The following is a summary of the salient points of these studies.

5.2.1 Aboriginal Archaeological Sites in the Lachlan Valley

In 1996, Kelton completed research-based assessment of Aboriginal scarred trees and other archaeological sites in the Lachlan Valley region. Kelton highlighted that sites found within the Lachlan Valley reflected diversity and different levels of past Aboriginal occupation, hunter-gatherer lifestyle, and technology, as well as varying forms of resource extraction. Research into site registrations in the Lachlan Valley displayed that those with the greatest frequency are open campsites and scarred trees. Around 220 Aboriginal scarred and carved trees were recorded in the Lachlan Valley by 1996, commonly found on Yellow Box, Grey Box, River Red Gum, Fuzzy Box, and Bimble Box (Kelton 1996). According to Kelton, scarred trees can be expected to occur over almost all landform units, however, frequency tends to increase near water. Kelton also noted differences in the types of culturally modified trees concluding that scars resulted from what may be considered 'normal' routine domestic purposes associated with the hunter-gatherer lifestyle, and carving which results from more culturally complex traditions, including the marking of burials and or ceremonial sites (also known as Bora Grounds). The second most numerous

site type, the open campsite, was noted at 210 locations in 1996 (Kelton 1996). Within the Lachlan Valley, open campsites tend to be near reliable water sources such as rivers, creeks, billabongs, lakes, gilgai formations, playa lakes, and ephemeral drainages, and usually within elevated terrace landforms, or along non-flood prone, elevated ground near these formations.

5.2.2 Goobang National Park

In 1998, English et al. undertook survey of Goobang National Park (including the Hervey Ranges), located approximately 8 km east of the Study Area, describing a settlement pattern similar to the ones described by Kelton (1996) (English et al. 1998: 196). Results of this assessment recorded 30 open camp sites representing both short- and long-term occupation sites. Nine hundred and twenty-eight artefacts from these sites were recorded, predominantly made from volcanic stone and quartz. Twenty-eight modified trees were also recorded. However, these recordings were thought a sample of those present considering the wooded nature of Goobang National Park and therefore the results reflected the amount of coverage feasible over such a large area (42,080 ha). One large axe grinding groove site in good condition was also recorded. This site comprised 13 elongated grinding grooves over three outcropping boulders and was assessed as a significant site as it is the only one of its type recorded in the Goobang National Park. A quarry site for extracting volcanic rhyolite was also recorded. A 2001 report issued by the NSW National Parks and Wildlife Service (NPWS) details the findings of this survey, shedding some insight to the nature of settlement patterns in the region and noting the importance of the Hervey Ranges. These investigations note a widespread use of the resources in the Hervey Ranges with the watercourses of the lower slopes and undulating plains having the most extended and repeated occupation. It also records the importance of the Hervey Ranges to the Wiradjuri as a travelling route, landmark, and its possibility of having important ceremonial value.

5.2.3 Central West Local Land Services Travelling Stock Reserves

OzArk was engaged by the Central West Local Land Services (CWLLS) to formulate and test a predictive model for Aboriginal site location within Travelling Stock Reserves (TSRs) across the CWLLS area (OzArk 2016). The current Study Area is located in the southern portion of the CWLLS area.

In formulating a predictive model for site location, Mitchell (2002) landscapes were used by OzArk to understand the underlying landform type. Landscapes were divided into the following types.

- Channels and Floodplains;
- Alluvial Plains;
- Slopes;
- Plateaus;

- Uplands; and
- Downs.

Previously recorded AHIMS sites were plotted against these landscape types and the following observations made.

- The highest density of sites is within Channels and Floodplains landscapes (n=927);
- a high number of sites (n=876) were located within Slopes landscapes; however, this result could be due to the fact that Dubbo is located within a Slopes landscape and the highest number of sites in the CWLLS area is recorded in and around Dubbo;
- Alluvial Plains landscapes have the third highest density of sites (n=770);
- a moderate number of sites are recorded in Downs landscapes (n=255). Three or four clusters of previously recorded sites exist in Downs landscapes, which may have skewed the number of recordings for this landscape. If the veracity of all site recordings in this category could be verified, it is suspected that the actual number of sites in Downs landscapes would be lower; and
- relatively small numbers of sites are recorded in Uplands (n=5) and Plateau (n=34) landscapes.

OzArk (2016) also divided the CWLLS area into two stream orders—major watercourses (normally named rivers) and minor watercourses (normally named creeks and their larger tributaries)—and buffers were established for each watercourse type as follows.

- Drainage 1 buffer: 200 m either side of a major watercourse; and
- Drainage 2 buffer: 100 m either side of a minor watercourse.

As such, the OzArk (2016) CWLLS predictive model made predictions based on the landscape type and distance to watercourses. The predictive model was tested by assessing 32 TSRs within the CWLLS area located in a variety of landscape types with variable distances to water. As a result of the assessment, 59 sites were recorded, including twenty-six modified trees (44%), 22 artefact scatters (37%) and 11 isolated finds (19%).

Table 5-1 demonstrates that the most archaeologically sensitive landscape in the CWLLS area is Channels and Floodplains recording 36 sites of 61% of all sites, followed by Slopes landscapes recording 14 sites or 23% and Alluvial Plains recording six sites. Other landscape types have a low representation but demonstrate that low densities of sites exist in other landscape types.

Table 5-1: Association of all recorded sites to landscape units (OzArk 2016).

Landscape unit	Number of sites	Percentage of total (n=59)
Channels and Floodplains	36	61
Alluvial Plains	6	10
Slopes	14	23
Downs	1	2

Uplands	2	4
Plateau	0	0
Total	**59**	**100**

Site types associated with the landscapes most-frequently recording sites (Channels and Floodplains and Slopes) are shown in **Table 5-2**. **Table 5-2** shows that Channels and Floodplains landscapes are more likely to contain modified trees and that Slopes and Alluvial Plains landscapes are more likely to contain artefact scatters and isolated finds.

Table 5-2: Frequency of site types in association with the Channels and Floodplains, Slopes and Alluvial Plains landscape types (OzArk 2016).

Site type	Channels and Floodplains	Slopes	Alluvial Plains
Artefact scatter	11 (30.5%)	7 (50%)	3 (50%)
Isolated finds	4 (11%)	3 (21%)	3 (50%)
Modified trees	21 (58.5%)	4 (29%)	0 (0%)
Total	**36**	**14**	**10**

In terms of drainage buffers, OzArk (2016) found that 27 sites (or 46% of all sites) were recorded with the Drainage 1 buffer and 10 sites (or 17% of all sites) were recorded within the Drainage 2 buffer. Therefore, more than 63% of all sites were recorded within the two drainage buffers, with a clear bias toward Drainage 1 buffers.

5.3 PREVIOUS ASSESSMENTS NEAR THE STUDY AREA

Wiradjuri heritage in the Parkes–Peak Hill–Narromine region has been documented through many development-related heritage assessment projects. The following review of studies undertaken over this region help to provide a backdrop for the type of sites likely to occur within the Study Area.

5.3.1 McPhail Mine

An EIS was prepared in 1995 for the proposed reprocessing of tailings from the original McPhail Mine (Cook 1995), immediately north of the Study Area. No field-based heritage assessment was undertaken in the face of this proposal due to the conclusion that the tailings area had already been substantially disturbed during original mining operations hence leaving a low likelihood for the presence of archaeological remains (Cook 1995: 21). The fact that the McPhail project location contained no surface water and no evidence of ‘native activity’ (Cook 1995: 21) was also mentioned.

5.3.2 Northparkes Mine

A large development within the local region is Northparkes Mine (NPM), situated 24 km southwest of the Study Area, close to the headwaters of the Bogan River. Assessment of this area began in 1986 with a survey over the Goonumbla Mining Lease as it was then known (Stone 1986). A total

of 16 sites were recorded as a result of this assessment consisting of 14 artefact scatters, of which one was associated with a modified tree, and one further isolated find. Overall, these sites were noted as being small and in poor condition, either disturbed by ploughing or erosion. Fifteen of these sites were located along the Bogan River or one of the two tributaries assessed during the study. Seven of the sites were within 1 km of the confluence of Goonumbla Creek and the Bogan River.

Subsequent survey at NPM was undertaken (Nicholson 1990) to assess new proposed impacts to an area not previously assessed by Stone (1986). The Study Area comprised flat to gently undulating land at the north-eastern boundary of the mining lease over previously cleared paddocks that had been either ploughed or grazed. Dense grass reduced visibility and hence site detection, and as a result, the survey was focussed on fence lines and the areas around dams which provided limited windows of visibility and resulted in coverage of around 4% of the impact area. No archaeological sites were recorded during this assessment. The lack of sites was not considered surprising due to the distance from permanent water and the type of landscape assessed.

Again, to facilitate continuation of operations at NPM, an Aboriginal heritage assessment was required over areas proposed as extensions to the existing mining operations, predominantly over portions of Limestone National Forest and nearby agricultural lands (Appleton 1996). The study area was noted as comprising about 60 per cent cypress pine, although it was likely to have been box dominated dry sclerophyll open woodland in prehistory. The area contained an elevated depression in the northern portion and undifferentiated gentle slopes down towards Goonumbla Creek in the southern portion. Prior land use impacts within the study area were noted as including logging, grazing, and in some locations, ploughing. Survey effort was focussed on areas around such features as erosion scalds and tracks, and despite the variable visibility, survey coverage was assessed as effective. Four archaeological sites were recorded during this assessment: three isolated finds and one possible modified tree. The overall paucity of recordings was interpreted as being due to the fact that the study area was formerly dry sclerophyll woodland with no specific water source or other resources that would concentrate Wiradjuri occupation, although the area was likely used for transitory activities such as foraging.

In 2006 reinvestigation was again required (Paton 2006). The aims of this assessment included locating and assessing previously recorded sites, survey of areas to be impacted by the proposal, and the delineation of zones of potential archaeological sensitivity within the study area. The study area was noted as being highly modified with the only area not completely cleared and disturbed being that of the Limestone National Forest, despite it having been logged in the past. Surveying was undertaken in transects which targeted the various zones. Overall survey coverage of the proposed impact areas was determined as high (45–50%). Three sites were

recorded because of this assessment: one small open site and two isolated finds. In terms of zones of archaeological sensitivity, Paton divided the mine site into four zones:

- Zone 1 — medium sensitivity (Goonumbla Creek – 5% of the study area);
- Zone 2 — low sensitivity (Limestone National Forest – 10% of the study area);
- Zone 3 — very low sensitivity (flat waterless terrain – 35% of the study area); and
- Zone 4 — zero sensitivity (disturbed by mining impacts).

It was noted that Zone 1 provided potential for sites close to watercourses on flat, elevated terrain. These were assessed as most likely to be surface scatters with a low potential for stratified subsurface archaeological deposits.

In 2008, OzArk carried out archaeological test and salvage excavations in Zone 1 where a new conveyor was planned (OzArk 2008). The aim of the excavation program was to determine the presence and nature of archaeological deposits in this part of Zone 1 so that management recommendations concerning the building of the conveyor could be made. The research methodology stated that if results of the test program warranted, limited salvage was to be undertaken. As part of the excavation program, a spoil heap that had been created when a pad for a drilling rig was accidentally cleared in 2007 was sieved to retrieve cultural material. As this area was located within Zone 1, the sieving of the stockpiled soil was included in the research design of the excavation program as the Wiradjuri community wished to retrieve artefacts potentially within it.

The results of the excavation program and accompanying geomorphological assessment indicated that Zone 1 was impacted in the past by both agricultural land use and mining infrastructure and was assessed as being disturbed over most of the area investigated by the excavation program. These disturbances included the building of roads, installation of overhead electricity lines, underground water mains, and ploughing for crops. In addition, the area has been cleared of native vegetation. This disturbance was noted in the excavation squares which were shallow (around 10–20 cm before the B horizon [clay] was reached) and the shallow topsoils were impregnated with intrusive rock (brought in as road surfaces). No archaeological stratigraphy was noted in any excavation square and recent charcoal (from vegetation clearing) was noted. Artefact densities across the area were low, and although artefacts were recorded, it was extremely difficult to determine if any of these were from *in situ* deposits, although it was assessed to be unlikely. Artefacts recovered from the excavations were typical of the region and consisted mostly of unmodified flakes.

5.3.3 Marsden-Parkes Natural Gas Pipeline

A series of 11 sites recorded by Navin Officer (1997) extend along the Marsden to Dubbo natural gas pipeline, which follows the Narromine to Parkes rail line. These sites comprised six isolated

finds and five artefact scatters. One of the artefacts scatters, 35-6-0070, was recorded in association with a possible hearth. Recorded materials included quartz, silcrete, and chert. All artefact scatters were recorded within 200 m of a creek line, including Gundong and Burrabadine Creeks.

5.3.4 Newell Highway Pavement Rehabilitation at Tomingley

OzArk (2003) completed an archaeological assessment for the Roads and Traffic Authority (now Transport for NSW) along a 4.5 km section of the Newell Highway immediately south of Tomingley. Approximately 2.5 km of this assessment area was located within the Study Area. The assessment area was over 500 m from a permanent water source and was flat and low-lying with no hydrological features. Four Aboriginal sites were located during the survey. All sites included scarred trees on Grey Box located on the eastern side of the Newell Highway. The recording of scarred trees within flat plains approximately 0.5 km to 1 km from reliable water was unexpected as they were outside of landforms where they were predicted to occur (i.e. close to creek lines).

5.3.5 Tomingley Gold Project

OzArk (2011) completed an archaeological assessment for the Tomingley Gold Project. The assessment area encompassed 776 ha of land to the north of the Study Area (referred to as the Mine Site Study Area), as well as a 46 km pipeline extending from mine site to Narromine (the TNWP Study Area), and a 20 km electricity transmission line extending to Peak Hill (the PHTETL Study Area). The landforms of the three assessment areas are flat and relatively low-lying. Creeks of the area tend to be seasonal and either flow west into the Bogan catchment (from the southern portions of the Mine Site Study Area) or north / northeast into the Macquarie catchment (from the TNWP Study Area). Overlaying site locations with the general landform unit divisions across the broader region shows that most open sites are associated with the alluvial valley floors (close to a drainage features) and the gentle toe slopes of the adjacent flat to undulating plains. Sites are generally located close to drainage lines and, where distant to water, are more likely to be smaller camp sites or one-off activity sites.

Survey results

A total of 60 Aboriginal sites were recorded during survey including 54 culturally modified trees (43 scarred, nine possibly scarred, one resource gathering, and one carved), three artefact scatters (one with associated potential archaeological deposit [PAD]), two isolated finds, and one ceremonial / dreaming site (**Table 5-3**).

Table 5-3: Summary of the survey results within the three assessment areas (OzArk 2011).

	Culturally modified trees	Artefact scatter	Isolated find	Ceremonial and dreaming site
Mine Site Study Area	16 (11 scarred, three possibly scarred, one resource gathering, and one carved).	2	2	0
TNWP Study Area	37 (29 scarred, six possibly scarred, one scarred tree, and possible ceremonial and dreaming site)	1 (with PAD)	0	1
PHTETL Study Area	Three scarred trees	0	0	0

Test excavation

A test excavation program was completed on 1–2 February 2011 consisting of six excavation squares within site TNWP-OS1 with PAD where impacts from the TGP water pipeline were proposed.

During the survey, TWNP-OS1 with PAD was identified on a river terrace / aeolian dune landform 50 m south of an abandoned channel of the Macquarie River. Aboriginal artefacts were found on the eroding edge of this landform closest to the abandoned channel and included flakes, cores, and scrapers manufactured from quartz, indurated mudstone, chert, and granite. The uniform appearance of the sands suggested that the crest of the terrace may have been an aeolian, source bordering sand sheet, that may have been active when the climate was drier during the last glacial period.

Major findings of the archaeological test program were as follows.

- The lithic assemblage of the excavation consisted of a total of 121 artefacts. One hammer stone was recorded, along with several cores.
- No archaeological stratification was noted in any of the excavation squares.
- Artefact densities ranged from medium to very low across the excavation area with maximum densities of 27.2 artefacts per cubic metre of excavated material.
- The excavation assemblage was dominated by quartz with 71.1% of all excavated artefacts of this material. The other dominant raw material used was chert with 14% of the artefacts being from this material. The remaining 14.9% of material came from a mix of silcrete, rhyolite, mudstone, and other fine-grained siliceous materials.
- In most cases, the artefacts recorded in the excavations came from Spit 1 (0–20 cm) with a few artefacts from spits 2 and 3. Therefore it is evident that most of the material was concentrated close to the surface.
- None of the test excavation squares excavated at site TWNP-OS1 displayed evidence of a complex site features. No archaeological features (i.e. hearths) were recorded during the excavations.
- The test excavation program established that site TWNP-OS1 with PAD has, at its eastern margins where excavation took place, a low artefact density, shallow deposits and a high likelihood of prior disturbance.

- As such, in the area where the TGP water pipeline was proposed to be located, it was assessed that the site had low scientific significance and that further archaeological investigation was unwarranted.

The test excavation results concluded that there was a likelihood of further Aboriginal artefacts in the top 20 cm of soil at TNWP-OS1 with PAD beyond those areas that were test excavated, including the alignment of the proposed water pipeline (i.e. between the test excavation squares).

Discussion

The sites recorded during the survey were consistent with the predictive model developed in OzArk 2011. The largest open site (TNWP-OS1 with PAD), which displayed a diversity of raw material and artefact types, was identified close to an abandoned channel of the Macquarie River, while smaller sites (TGP-OS1 and OS2) were identified adjacent to the area thought to have been a spring at Tomingley in prehistory. Aboriginal modified trees were most prevalent at locations close to drainage features, with between 60% and 63% recorded within 100 m of drainage features or water sources.

The lack of artefact scatters in the Mine Site Study Area close to more permanent water sources, such as the northern portion of Gundong Creek, was attributed to the fact that most of this creek within the Mine Site Study Area was constructed in the historic period and bears no relevance to traditional Aboriginal settlement patterns. It was considered likely that the northern portion of this creek may be close to its original alignment as scarred trees were clustered in that area.

The high frequency of scarred trees was somewhat unexpected, comprising 90% of recorded sites. This predominance was thought to reflect the practise of maintaining remnant, almost unmodified, roadside vegetation corridors and wind breaks along property fence lines. The frequency of modified trees (scarred, carved, boundary markers, and women's birthing trees) indicated both the widespread use of scarring, as well as providing evidence that the area was frequently visited, at least in the last 500 years.

5.3.6 HW17 Newell Highway, Trewilga Realignment

OzArk (2012) was commissioned by Roads and Maritime (now Transport for NSW) to conduct an Aboriginal heritage assessment of several sections of the Newell Highway between Parkes and Peak Hill, immediately west of Trewilga and 33 km north of the Study Area. One Aboriginal site (Trewilga–Open Site 1 [T-OS1] with PAD) was re-recorded as part of the 2012 assessment and was noted as extending the full width of the proposed impact corridor, both north and south of Ten Mile Creek. The PAD associated with this site was thought to include the presence of further archaeological deposits, even though the site was assessed as being disturbed by ploughing. The PAD was subject to a three day test excavation program from 26–28 March 2013. No *in situ* archaeological deposits were recorded during the excavation, with the three artefacts retrieved

(two quartz flakes and a silcrete flake) coming from disturbed contexts. As such, no further investigation or subsurface salvage program was recommended. The findings of the investigation indicated that there was a very low-density artefact scatter at T-OS1 with PAD.

5.3.7 Parkes to Narromine Inland Rail Project

Umwelt Australia Pty Limited (Umwelt 2017) completed the Aboriginal cultural heritage assessment for the Parkes to Narromine Inland Rail project. The assessed area was 106 km long with a 40 m wide rail corridor.

As a result of previous archaeological investigations undertaken in the region, a total of 19 archaeological sites had been recorded within 50 m of the Umwelt 2017 study area. Most of the sites contain stone artefacts manufactured from quartz. In general terms, the numbers of artefacts identified within these sites are low and typically contain less than five artefacts. The two largest sites (in terms of quantity of artefacts) are associated with Ten Mile Creek and Burrabadine Creek, both of which are relatively major watercourses in the area. An artefact scatter at Ten Mile Creek was also assessed as having the potential to contain additional artefacts in a subsurface context. Other sites including three scarred trees and a potential quarry for basalt were located outside the Umwelt 2017 study area.

During the survey, it was noted that the current rail corridor has been subject to extensive disturbance and areas within the rail corridor were assessed as having low archaeological potential. However, eight areas within the sections of the study area outside the rail corridor were identified as having moderate or higher archaeological potential. These areas included four of the previously recorded archaeological sites within the Umwelt 2017 study area.

5.4 LOCAL ARCHAEOLOGICAL CONTEXT

5.4.1 Desktop Database Searches Conducted

A desktop search was conducted on the following databases to identify any potential previously recorded heritage within the Study Area. The results of this search are summarised in **Table 5-4** and presented in detail in **Appendix 3**.

Table 5-4: Aboriginal cultural heritage: desktop-database search results.

Name of Database Searched	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	1/7/2020	Narromine LGA	No places listed on either the National or Commonwealth heritage lists are located within the Study Area.
National Native Title Claims Search	1/7/2020	NSW	No Native Title Claims cover the Study Area.
AHIMS	14/4/20	30 x 30 km centred on the Study Area	98 sites were returned in the designated search. Two of these sites plot to within the Study Area.
Local Environmental Plan (LEP)	1/7/2020	Narromine LEP of 2011	None of the Aboriginal places noted occur near the Study Area.

A search of the AHIMS database on 14 April 2020 returned 98 records for Aboriginal heritage sites within a 30 km x 30 km search area over the Study Area (GDA Zone 55 Eastings: 599493–629493; Northings: 6378338–6408338 with no buffer) (see **Table 5-5** and **Figure 5-1**).

Of the 98 sites in the search area, two are located within the Study Area based on the coordinates provided by AHIMS. However, site 31-6-0036 (an artefact scatter) has been erroneously registered with AHIMS as plotting within the Study Area when it is in fact in the Menindee Lakes area[4]. This site will be omitted from further analysis, and it will be considered that the search area contains a total of 97 previously recorded sites.

Based on the above, only one previously recorded site is located within the Study Area: site 35-6-0142 (NHT-ST4), a scarred tree recorded by OzArk in 2003 located in the north of the Study Area at the South Tomingley Rest Area, east of the Newell Highway. However, two additional scarred trees (35-6-0184 and 35-6-0185) are located to the north of the Study Area within the Proposed Limit of Disturbance. These scarred trees were recorded as part of the TGP (OzArk 2011) and are located within the western corridor of the Newell Highway (**Figure 5-2**).

As shown in **Table 5-5**, culturally modified trees are the dominant recorded site type in the local area. Of the culturally modified trees, 66 are scarred trees and seven are carved trees. Two of the carved trees have been recorded in association with potential burials.

Table 5-5: Site types and frequencies of AHIMS sites near the Study Area.

Site Type	Number	Frequency (%)
Culturally modified trees (scarred or carved)	73	75.3
Stone artefact scatter	12	12.4
Isolated finds	8	8.2
Culturally modified trees; burial	2	2.1

[4] OzArk has contacted AHIMS to ensure the coordinates of this site are corrected on the database.

Site Type	Number	Frequency (%)
Stone artefact scatter with PAD	1	1.0
Stone quarry with artefacts	1	1.0
Total	**97**	**100**

Figure 5-1: Location of previously recorded AHIMS sites in relation to the Study Area.

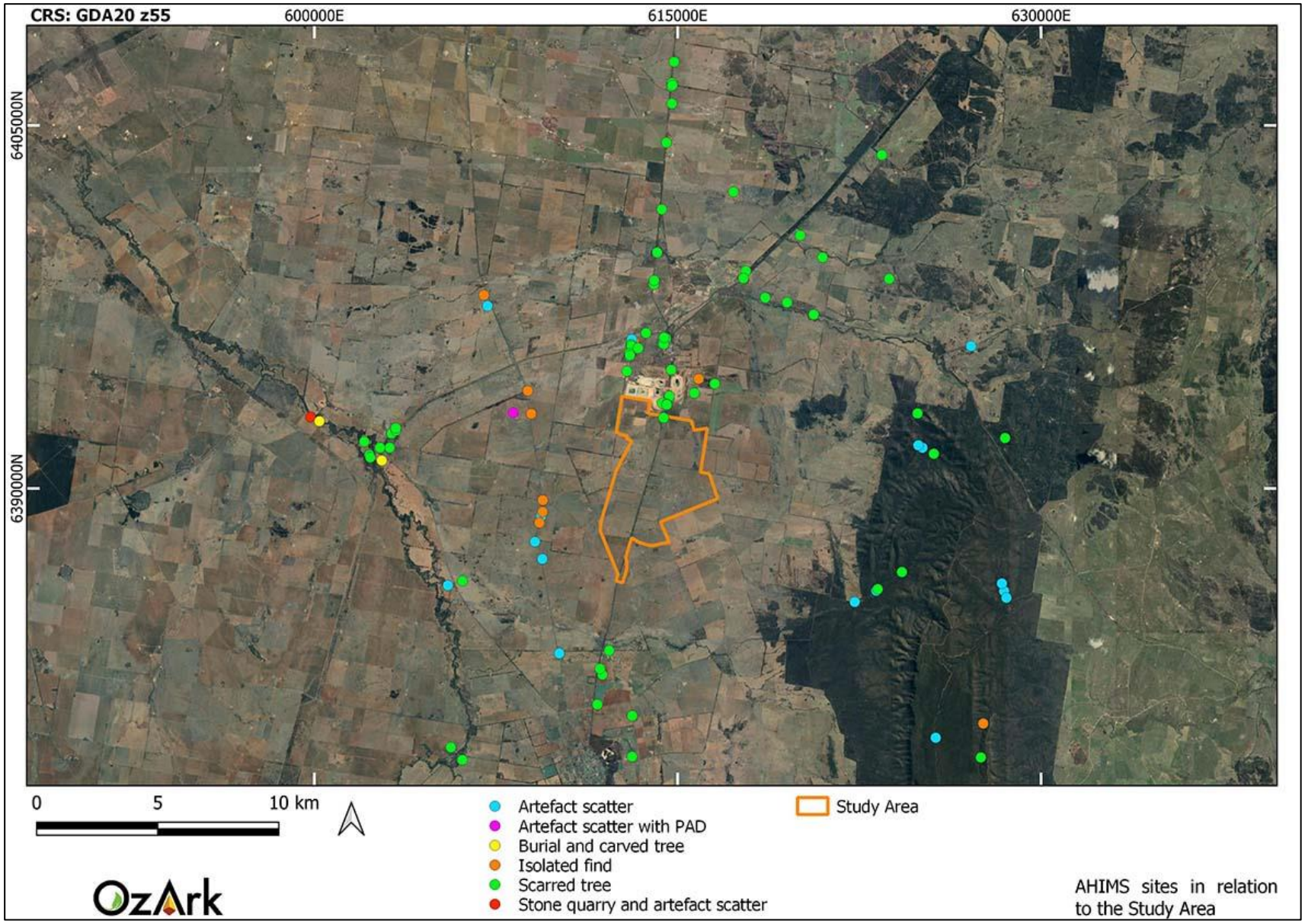
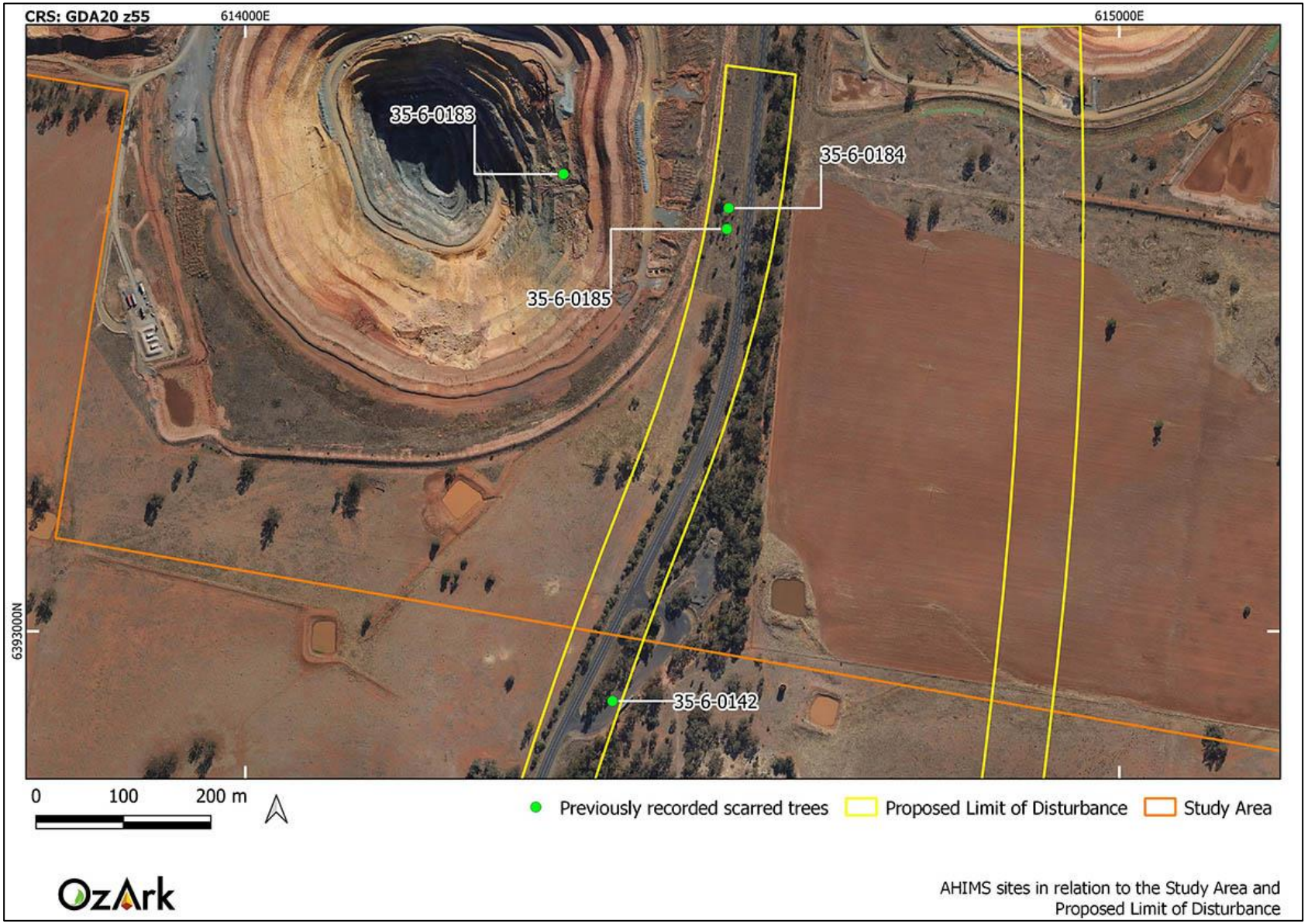


Figure 5-2: Location of previously recorded AHIMS sites 35-5-0142, 35-6-0184 and 35-6-0185 in relation to the Study Area and Proposed Limit of Disturbance.



5.5 ARCHAEOLOGICAL CONTEXT: CONCLUSION

Due to the history of archaeological investigation near the Study Area, there have been a number of sites recorded in the Tomingley area (**Figure 5-1**). These research and development driven studies show that the region's most frequently occurring evidence of Aboriginal activity are culturally modified trees: particularly scarred trees. To a lesser extent, several carved trees have also been recorded. The previous studies have shown in a number of cases that culturally modified trees are more likely to be located closer to substantial watercourses and drainage lines; however, as noted by Kelton (1996) and confirmed by OzArk 2003 and 2011, they can be recorded over almost all landform units, even those distant from water.

Artefact scatters are more likely to be located near permanent and semi-permanent watercourses, particularly on flat or gently sloping landforms, terraces, or on the crests, saddles, and benches of ridge and spur landforms. Artefact scatters in the area range considerably in size and density from manifestations of several artefacts through to sites containing more than 50 artefacts. Larger, more complex scatters are more common within 200 m of the Bogan River, while low-density sites are more common within 100 m of semi-permanent creeks. Scatters found on landforms similar to the Study Area are generally low-density with 10 or less artefacts and consist largely of un-modified flakes.

To date, the dominant raw lithic material at identified sites is quartz, with additional materials recorded including sandstone, silcrete, chert, volcanic, and fine-grained siliceous materials.

Quarries for the procurement of raw materials used to manufacture stone tools are possible if suitable sources of outcropping stone exist; however, this site type is recorded in a low frequency in the region. Quarries in this area are more likely to be basalt quarries.

5.6 PREDICTIVE MODEL FOR SITE LOCATION

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shells, and some bones that remain preserved in the current

landscape. Even these, however, may not be found in their original depositional context since these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of European farming practices including grazing and cropping, land degradation, and farm related infrastructure. Scarred trees, due to their nature, may survive for up to several hundred years but rarely beyond.

5.6.1 Landform Modelling

5.6.1.1 Aboriginal Sites Decision Support Tool

Aboriginal site features occur across the entire landscape; however, some parts of the landscape have a greater capacity to contain certain site features or features of different types. The variation in site feature likelihood across the landscape is useful for planning assessments of potential site impacts. The Aboriginal Site Decision Support Tool (ASDST) has been developed to support the assessment Aboriginal sites issues in NSW at the landscape-scale. The tool extends the AHIMS by illustrating the potential distribution of site features recorded in the database.

The maps of site feature predictions made by the ASDST are based on the application of site predictive modelling. This is a technique used to correlate site information in AHIMS with landscape patterns such as proximity to water, vegetation, terrain, soils, etc. The maps provide a regional overview about site feature distribution and related issues about the level of accumulated impacts they have experienced. In addition, an accumulated impacts model has been prepared which models the level of historical loss of site likelihood as the result of land use since European settlement. This model is based on the land use data prepared for the NSW Interim Native Vegetation Extent project (see DECC 2008).

The ASDST has been developed to meet the needs of regional planning. For this reason, it is designed to be used at scales of 1:100,000 and above. Application at finer scales is possible, but it should be borne in mind that the datasets used to derive the products were themselves derived at a scale of 1:100,000 or coarser, and therefore the inaccuracies of those layers at finer scales will be carried through to the ASDST models. In short, The ASDST is a good tool to give a general prediction of certain site types, but it is not accurate at scales less than a square hectare.

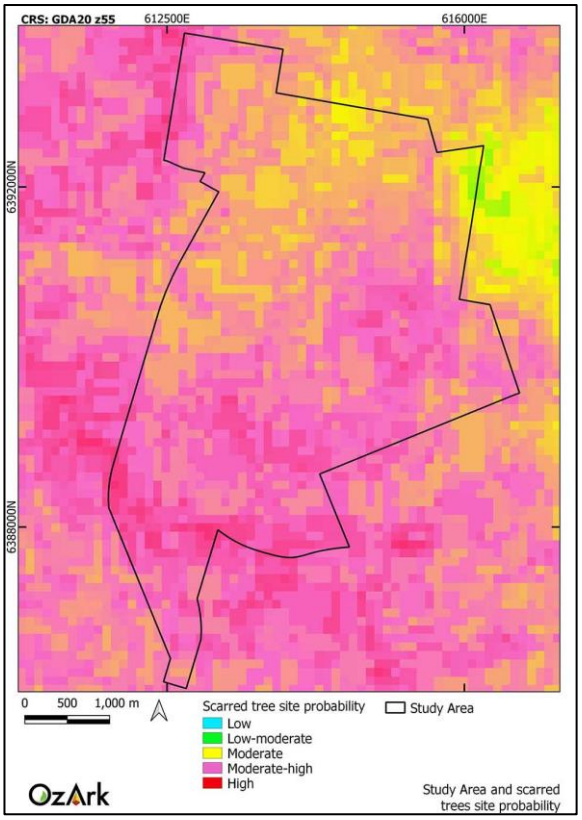
The four site probability models chosen to be mapped for this assessment are based on the results of the AHIMS site search (**Table 5-5**) which lists the different site types recorded in the local area. These include scarred tree site probability, artefact site probability, quarry site probability and burial site probability (**Figure 5-3**; image 1 to 4). Further the ASDST model of accumulated impacts has also been mapped (**Figure 5-3**; image 5).

These models show:

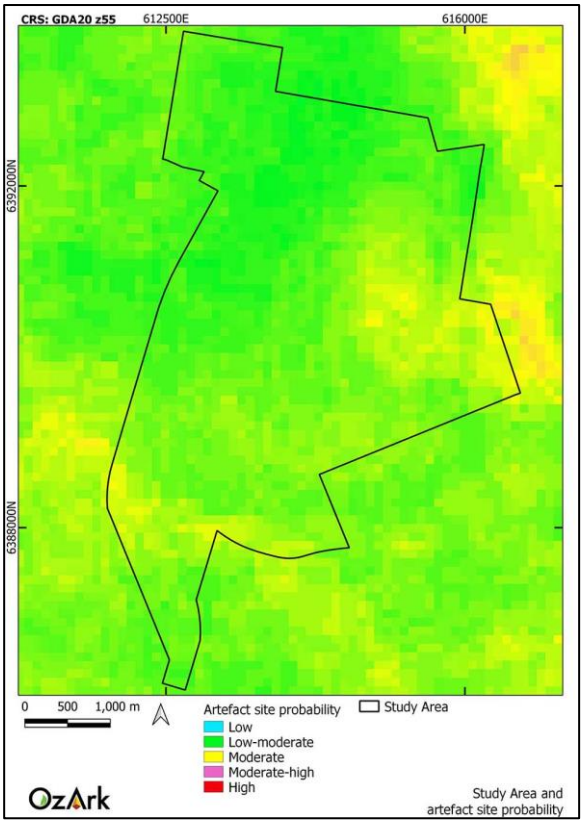
- Modified (scarred) trees are the most likely site to be located within the Study Area.

- The Study Area models as an area with low to moderate potential to contain stone artefact sites. Similarly with hearths, these have increased potential to be located along Bulldog Creek and its tributaries.
- Stone quarries have a generally low potential to occur within the Study Area, although a small portion in the east of the Study Area holds some potential for identifying this site type.
- The Study Area models as a low to moderate potential to contain burial sites. Potential for this site type is increased in the south around Bulldog Creek.
- The ASDST accumulated impacts model indicates very low to moderate levels of disturbance throughout the Study Area, indicating that sites have an increased likelihood of being in their original context.

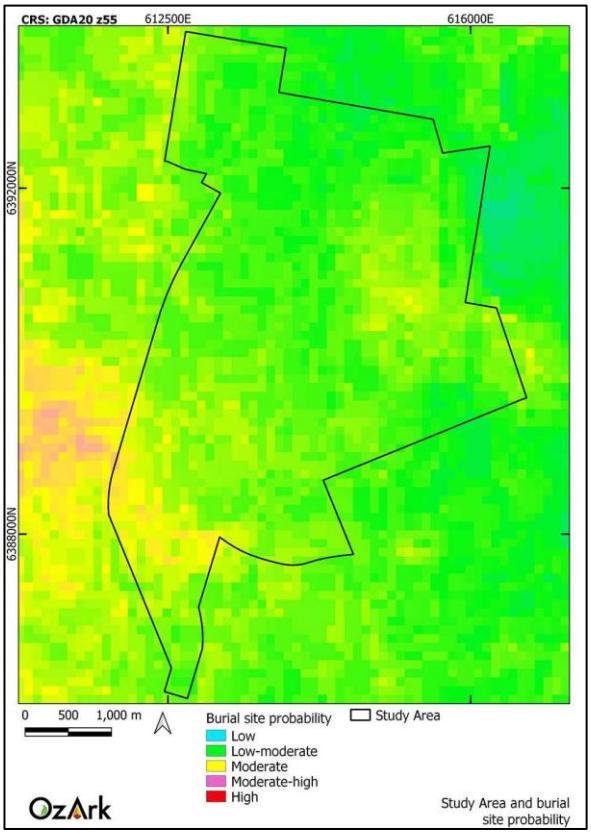
Figure 5-3: ASDST models and the Study Area.



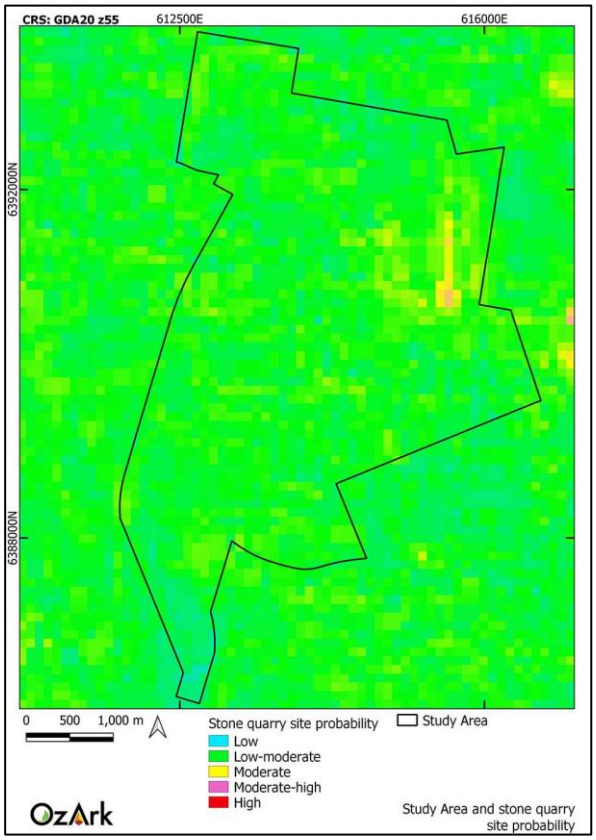
1. ASDST model of scarred tree probability.



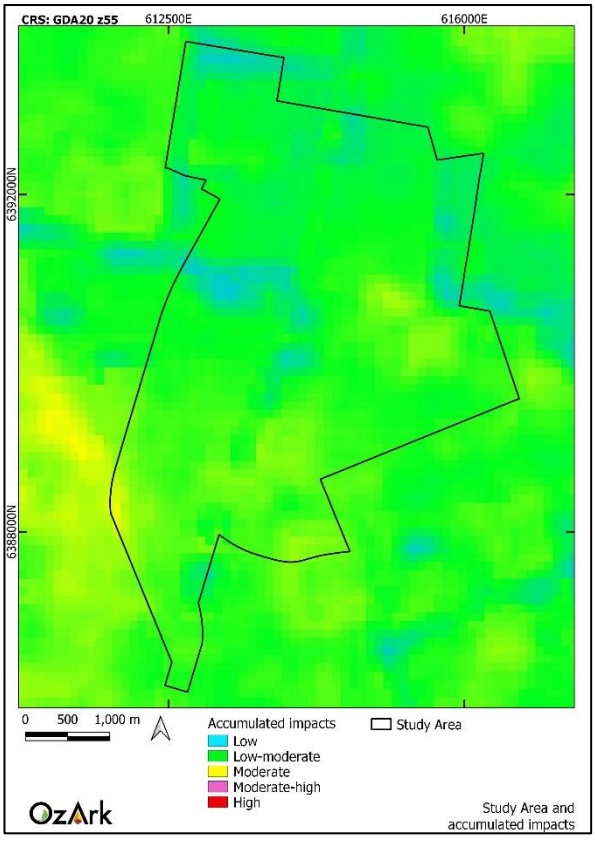
2. ASDST model of artefact site probability.



3. ASDST model of burial probability.



4. ASDST model of quarry site probability.



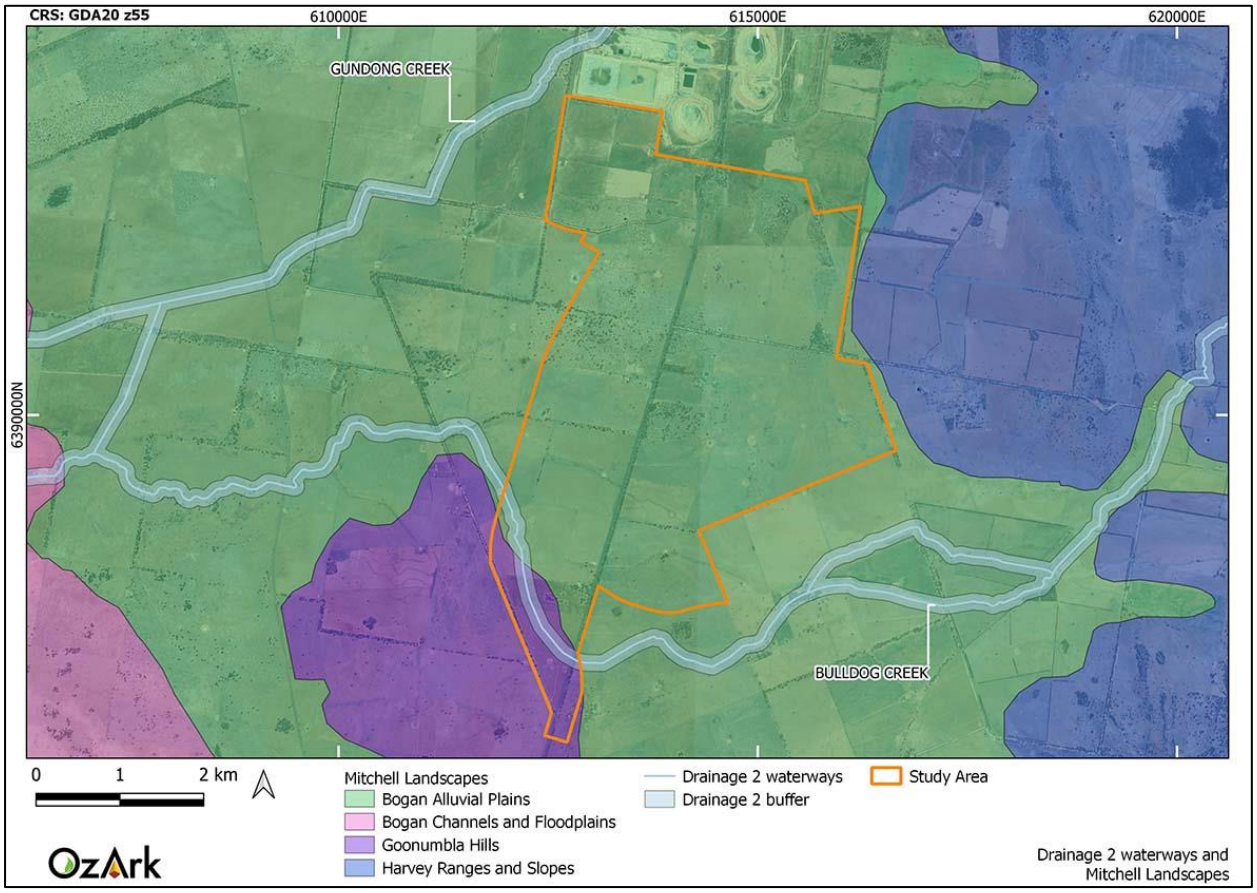
5. ASDST model of accumulated impacts.

5.6.1.2 CWLLS Predictive Model

The OzArk (2016) CWLLS predictive model is most relevant to the Study Area in determining its archaeological potential (**Section 5.2**).

A small portion of the Study Area includes a Drainage 2 buffer area (**Figure 5-4**), in the vicinity of a minor watercourse, Bulldog Creek. In terms of landscape types, the Study Area is composed of Slopes landscapes (Goonumbla Hills) and Alluvial Plains landscapes (Bogan Alluvial Plains) (**Figure 5-4**). The CWLLS predictive model predicts higher numbers of sites within the Slopes landscapes when compared to Alluvial Plains landscapes, particularly within Drainage 2 buffers. Artefact sites (including isolated finds and artefact scatters) are the most likely site types to be encountered within the Study Area and are more likely within the Slopes landscapes, although they are also predicted to occur in lower numbers within the Alluvial Plains landscapes. The likelihood of recording scarred trees is significantly lower within the Slopes and Alluvial Plains landscapes (**Table 5-2**).

Figure 5-4. Areas of the Study Area within 100 m of a Drainage 2 buffer and Mitchell Landscapes.



5.6.2 Past Land Use

The preservation of archaeological sites and deposits is dependent on past land use of an area. The Study Area and adjacent land has been predominately used for agricultural purposes with the main associated impacts including vegetation clearance, ploughing/cropping and grazing.

These impacts are likely to have resulted in direct and indirect impacts to archaeological sites across the Study Area (**Section 4.6**).

The clearing of vegetation inside the Study Area is widespread and typical of a highly modified agricultural landscape. Remnant trees remain throughout the Study Area in areas such as along fence lines, property boundaries or near waterways. The extent of vegetation clearance across the Study Area increases the likelihood that modified trees have been removed.

The majority of the Study Area has been subject to cropping and/or grazing. Cropping involves ploughing the ground surface, which ultimately affects the integrity of archaeological Aboriginal sites, in particular open camp sites, within the 'plough zone' by moving deposits both horizontally and vertically. The grazing of hoofed livestock significantly shuffles or compacts the ground surface.

The directs impacts to the ground surface through vegetation clearance, cropping and grazing ultimately results in indirect impacts to Aboriginal sites as they ultimately accelerate soil loss. Based on the direct and indirect impacts which have affected the Study Area, sites such as artefact scatters or isolated finds present within the Study Area are likely to be in a secondary context and not associated with intact subsurface deposits.

5.6.3 Conclusion

Based on knowledge of the environmental contexts of the Study Area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded within the Study Area:

Isolated finds may be indicative of random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.

- As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Study Area. A low number of isolated finds were recorded in the assessment for the Tomingley Gold Project located immediately north of the Study Area (**Table 5-3**).

Open artefact scatters are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas.

Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of a background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

- Artefact scatters comprise only 14% of recorded sites within 15 km of the Study Area; however, according to the predictive modelling presented in OzArk 2016, this site type is the most likely site to be recorded, particularly within 100 m of Bulldog Creek on eroded exposures and adjacent flat and lower slope landforms.

  Findings from the historical documents, largely the journals of early explorers including Oxley, describe larger camps of up to 100 Aboriginal people along the Bogan River, and 'transitory encampments' along semi-permanent creek lines (**Section 5.1**). As the Study Area only contains a semi-permanent waterway, the ethnographic information suggests that only small, less-complex artefact scatters will be recorded.

  Previous studies near the Study Area (**Section 5.5**) note that stone artefact sites (scatters or isolated finds) range in complexity which is generally dependent on their proximity to water sources. Scatters found on landforms similar to the Study Area are generally low-density with 10 or less artefacts and consist largely of un-modified flakes as the sites are either one-off events or only infrequently used due to the lack of a permanent or semi-permanent water source and the undifferentiated landforms present. Of the stone artefact sites recorded during previous assessments, quartz is the predominant material, while smaller quantities of artefacts are manufactured from sandstone, silcrete, chert, volcanic, and fine-grained siliceous materials.

  Artefact scatters are likely to be in a secondary context from disturbances such as erosion and ploughing (**Section 4.6**).

Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed because of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some

forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

- Vegetation within the Study Area includes remnant eucalypt species. These stands of native vegetation may include trees of a type, age and size well suited to scar-producing activities. While the likelihood of recording this site type increases with proximity to water, Kelton (1996) found that modified trees can be found within all landforms. This site type therefore may be recorded, and it is also noted that this site type was the predominant site type recorded in landforms immediately north of the Study Area that are distant from water (OzArk 2003, OzArk 2011, see **Section 5.3.5**).

Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.

- This site type could be recorded within the Study Area should suitable rock outcroppings be available. Outcropping rock present within the Study Area is likely to be quartz or volcanics (basalt) and is likely to be present on the isolated hills within the Study Area.

Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.

- Potential burials have been identified in the local area in association with carved trees along the banks of the Bogan River. These sites are more likely to be found on elevated sandy contexts or in association with rivers and major creeks. No such landscape features exist with the Study Area and therefore burials are unlikely to occur.

Bora/Ceremonial sites are places which have ceremonial or spiritual connections. Ceremonial sites may comprise of natural landscapes or have archaeological material. Bora sites are ceremonial sites which consist of a cleared area and earthen rings.

- This site type does not necessarily follow landform predictability and are, overall, a rare site type with a low likelihood of being present and remaining extant.

5.7 RESEARCH QUESTIONS

Several research questions can meaningfully be applied to the investigation of the Study Area. These research questions include:

- What resources were available to the Aboriginal people within the Study Area (food, stone and water)? And what resources were transported into the Study Area?

- What tasks were Aboriginal people undertaking at the sites?
- Are there hearths in the area? And if so, do they contain remains (animal/plant) that may indicate what people were cooking/eating? Can dates be obtained from hearths for the Aboriginal use of the area?
- Are there burials in the area?
- Do the survey results correlate with the ASDST models shown on **Figure 5-3** and the predictive model set out in **Section 5.6.3**?

6 RESULTS OF ABORIGINAL ARCHAEOLOGICAL ASSESSMENT

6.1 SAMPLING STRATEGY AND FIELD METHODS

The archaeological methods utilised in the Aboriginal archaeological assessment followed the Code of Practice. Standard archaeological field survey and recording methods were employed (Burke and Smith 2004).

It should be noted that the aim of any archaeological survey is not to locate each artefact in a landscape but to undertake investigations so that the archaeological potential and archaeological characteristics of all landforms within the Study Area are known. Therefore, the aims of the survey were to:

- Conduct pedestrian transects across all landforms in the Study Area so that their archaeological potential could be determined;
- evaluate whether the predictive model set out in **Section 5.6** is valid;
- evaluate whether the research questions posed in **Section 5.7** can be answered; and
- determine if any portions of the Study Area require test excavation to understand the archaeological potential at a particular location.

Variable levels of pedestrian survey were completed across the Study Area as set out in the survey methodology (**Appendix 2**). The survey methodology also describes the zoning of the Study Area into two zones that predicated the methodology of the survey, namely:

- Full Survey Areas: These areas include those with minimal disturbance and good ground surface visibility within landforms possessing Aboriginal archaeological potential, i.e., areas within 200 m of Bulldog Creek, elevated landforms and areas with remnant vegetation and areas of gilgai.
- Sample Landform Surveys: These areas include land more than 200 m from watercourses, areas with poor visibility, landforms with low archaeological potential and areas with significant prior disturbance.

Figure 6-1 shows the survey tracks of the OzArk archaeologists during the survey. As well as the archaeologists, there were four Aboriginal site officers undertaking the survey on each day, so the actual area of survey coverage was greater than is indicated on this figure.

Figure 6-1: Pedestrian coverage of the Study Area.

6.2 PROJECT CONSTRAINTS

All portions of the Study Area were able to be accessed and as the Study Area is primarily grass paddocks across a flat plain, there were no physical impediments to the survey within the Study Area.

The survey was unable to be completed during the first mobilisation in July 2020 due to significant rain making parts of the Study Area inaccessible.

6.3 EFFECTIVE SURVEY COVERAGE

Two of the key factors influencing the effectiveness of archaeological survey are GSV and ground surface exposure (GSE). These factors are quantified to ensure that the survey data provides adequate evidence for the evaluation of the archaeological materials across the landscape. For the purposes of the current assessment, these terms are used in accordance with the definitions provided in the Code of Practice.

GSV is defined as:

> *"… the amount of bare ground (or visibility) on the exposures which might reveal artefacts or other archaeological materials. It is important to note that visibility, on its own, is not a reliable indicator of the detectability of buried archaeological material. Things like vegetation, plant or leaf litter, loose sand, stone ground or introduced materials will affect the visibility. Put another way, visibility refers to 'what conceals'"* (DECCW 2010a: 39).

GSE is defined as:

> *"… different to visibility because it estimates the area with a likelihood of revealing buried artefacts or deposits rather than just being an observation of the amount of bare ground. It is the percentage of land for which erosion and exposure was sufficient to reveal archaeological evidence on the surface of the ground. Put another way, exposure refers to 'what reveals'"* (DECCW 2010a: 37).

Table 6-1 calculates the effective survey coverage within the Study Area. In general, **Table 6-1** presents an approximation of the amount of ground surface able to be seen at any location within particular landform units. For example, at any one location within the flat landforms of the Study Area approximately 28% of the ground surface could be seen. Exposures in these landforms were afforded by mounds adjacent to gilgai, ploughing, erosions scalds, farm and animal tracks, and around fences and gates. The amount of visible ground increased across the low hills due to increased levels of erosion.

Table 6-1: Effective survey coverage within the Study Area.

Survey Unit	Landform	Survey Unit Area (sq m)	Visibility %	Exposure %	Effective Coverage Area (sq m) (= Survey Unit Area x Visibility % x Exposure %)	Effective Coverage % (= Effective Coverage Area / Survey Unit Area x 100)
1	Flat plain	18825000	70	40	5271000	28
2	Undulating low hills	652900	80	60	313392	48

Table 6-2 demonstrates that although the survey efficacy within flat plain landforms was the lowest at 28 per cent, this did not hamper the recording of sites as the greatest number of sites were identified across these landforms.

Table 6-2: Effective survey coverage and incidences of site recording.

Landform	Landform area (sq m)	Area Effectively Surveyed (sq m) (= Effective Coverage Area)	% of Landform Effectively Surveyed (= Area Effectively Surveyed / Landform x 100)	Number of Sites	Number of Artefacts or Features
Flat plain	18825000	5271000	28	37	61
Undulating low hills	652900	313392	48	2	3

6.4 ABORIGINAL SITES RECORDED

The survey recorded 39 Aboriginal cultural heritage sites including:

- Two scarred trees;
- eight artefact scatters; and
- 29 isolated finds.

Table 6-3 summarises the Aboriginal cultural heritage sites recorded during the survey of the Study Area. Further details on each site are provided in the following subsections.

It is noted that all sites recorded are open sites; however, the site name differentiates 'IF' (isolated find) sites, from 'OS' sites (artefact scatters) and 'ST' site (scarred trees).

Table 6-3: Aboriginal cultural heritage sites recorded during the survey.

ID	AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Feature(s)	Landform
Isolated finds						
1	35-6-0259	Tomingley IF-1	612493	6386989	Isolated find	Flat plain
2	35-6-0258	Tomingley IF-2	612333	6387144	Isolated find	Flat plain
3	35-6-0260	Tomingley IF-3	612315	6387251	Isolated find	Flat plain
4	35-6-0261	Tomingley IF-4	612253	6387268	Isolated find	Flat plain
5	35-6-0262	Tomingley IF-5	612495	6387230	Isolated find	Flat plain
6	35-6-0263	Tomingley IF-6	612527	6387090	Isolated find	Flat plain
7	35-6-0264	Tomingley IF-7	612826	6387433	Isolated find	Flat plain
8	35-6-0265	Tomingley IF-8	613106	6388262	Isolated find	Flat plain

ID	AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Feature(s)	Landform
9	35-6-0266	Tomingley IF-9	612908	6388329	Isolated find	Flat plain
10	35-6-0267	Tomingley IF-10	612647	6388151	Isolated find	Flat plain
11	35-6-0268	Tomingley IF-11	612588	6388093	Isolated find	Flat plain
12	35-6-0269	Tomingley IF-12	612363	6388152	Isolated find	Flat plain
13	35-6-0270	Tomingley IF-13	612258	6388399	Isolated find	Flat plain
14	35-6-0271	Tomingley IF-14	613610	6387913	Isolated find	Flat plain
15	35-6-0272	Tomingley IF-15	613741	6388206	Isolated find	Flat plain
16	35-6-0273	Tomingley IF-16	613870	6388399	Isolated find	Flat plain
17	35-6-0274	Tomingley IF-17	613685	6388908	Isolated find	Flat plain
18	35-6-0275	Tomingley IF-18	613090	6389598	Isolated find	Flat plain
19	35-6-0276	Tomingley IF-19	612039	6389254	Isolated find	Flat plain
20	35-6-0277	Tomingley IF-20	612427	6390167	Isolated find	Flat plain
21	35-6-0278	Tomingley IF-21	614894	6389181	Isolated find	Flat plain
22	35-6-0279	Tomingley IF-22	615585	6390053	Isolated find	Flat plain
23	35-6-0280	Tomingley IF-23	615211	6390176	Isolated find	Flat plain
24	35-6-0281	Tomingley IF-24	614208	6390562	Isolated find	Flat plain
25	35-6-0282	Tomingley IF-25	614379	6390908	Isolated find	Flat plain
26	35-6-0283	Tomingley IF-26	614539	6391052	Isolated find	Flat plain
27	35-6-0284	Tomingley IF-27	614459	6391138	Isolated find	Flat plain
28	35-6-0285	Tomingley IF-28	615830	6391255	Isolated find	Undulating low hills
29	35-6-0286	Tomingley IF-29	612664	6391109	Isolated find	Flat plain
Artefact scatters						
30	35-6-0287	Tomingley OS-1	612599	6386886	Artefact scatter	Flat plain
31	35-6-0288	Tomingley OS-2	612443	6387095	Artefact scatter	Flat plain
32	35-6-0289	Tomingley OS-3	612280	6389665	Artefact scatter	Flat plain
33	35-6-0290	Tomingley OS-4	615319	6389550	Artefact scatter	Undulating low hills
34	35-6-0291	Tomingley OS-5	613973	6390612	Artefact scatter	Flat plain
35	35-6-0292	Tomingley OS-6	613425	6391413	Artefact scatter	Flat plain
36	35-6-0293	Tomingley OS-7	613004	6390638	Artefact scatter	Flat plain
37	35-6-0294	Tomingley OS-8	612962	6390569	Artefact scatter	Flat plain
Scarred trees						
38	35-6-0296	Tomingley ST-1	614286	6391009	Scarred tree	Flat plain
39	35-6-0295	Tomingley ST-2	612816	6387967	Scarred tree	Flat plain

6.4.1 Isolated Finds

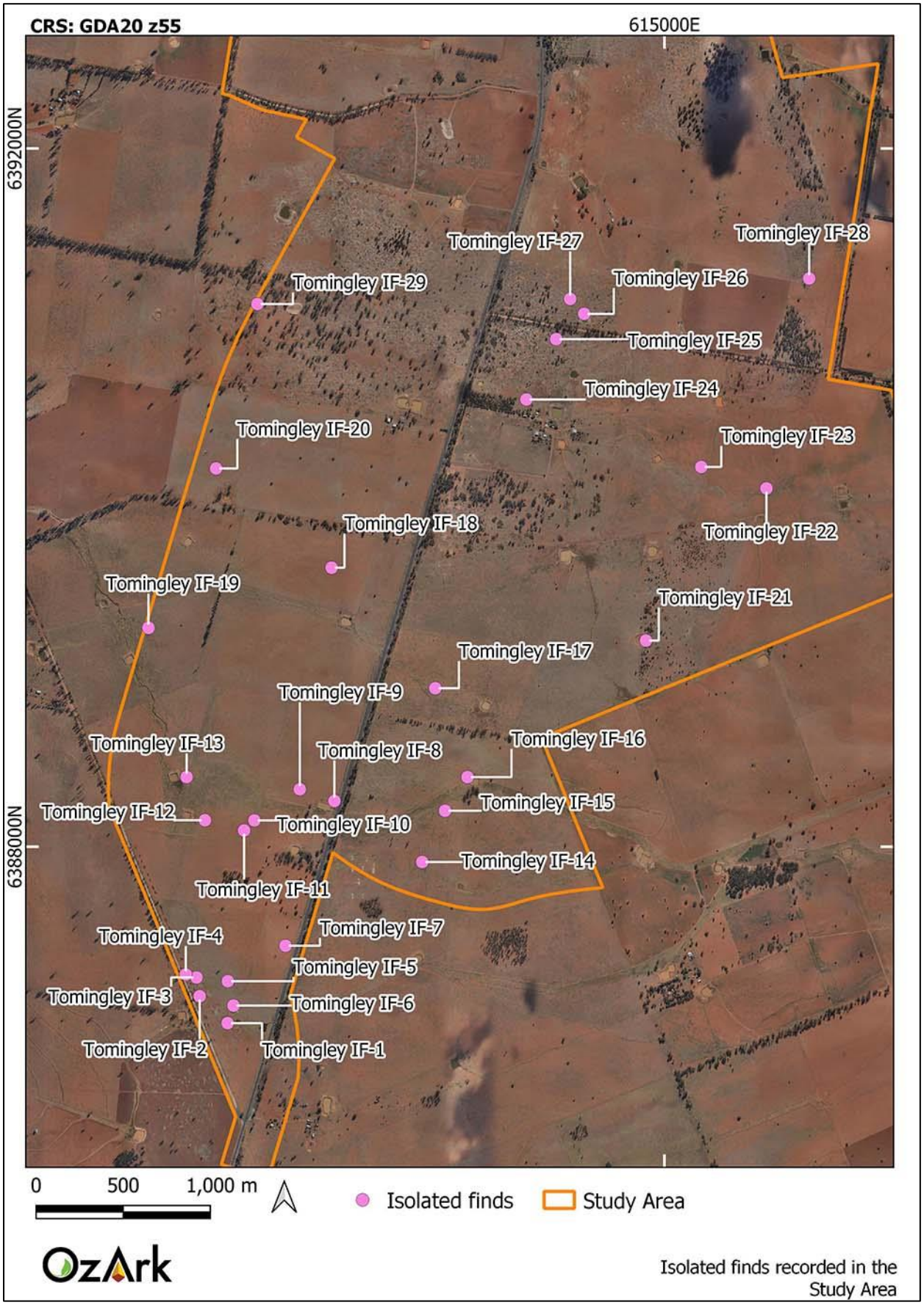
29 isolated finds were recorded during the survey. These are listed in **Table 6-4** and shown on **Figure 6-2**. Full details of each isolated find follow.

Table 6-4: Isolated finds recorded during the survey: artefact attributes.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm	Additional detail
35-6-0259	Tomingley IF-1	612493	6386989	Flake	Volcanic	Complete	Tertiary	15x20x4 mm	
35-6-0258	Tomingley IF-2	612333	6387144	Flake	Chert	Complete	Tertiary	22x15x5 mm	
35-6-0260	Tomingley IF-3	612315	6387251	Flake	Quartz	Complete	Tertiary	34x28x10 mm	
35-6-0261	Tomingley IF-4	612253	6387268	Knapped glass	Glass	N/A	N/A	22x18x12 mm	Green glass
35-6-0262	Tomingley IF-5	612495	6387230	Side scraper	Volcanic	N/A	Tertiary	32x21x15 mm	
35-6-0263	Tomingley IF-6	612527	6387090	Grinding plate	Sandstone	N/A	N/A	138x125x40 mm	Broken on one end
35-6-0264	Tomingley IF-7	612826	6387433	Ground edge hatchet	Volcanic	Complete	N/A	135x55x35 mm	
35-6-0265	Tomingley IF-8	613106	6388262	Flake	Chert	Complete	Tertiary	23x20x5 mm	
35-6-0266	Tomingley IF-9	612908	6388329	Scraper	Fine-grained siliceous	N/A	Tertiary	52x35x21 mm	Retouch on margin and distal end
35-6-0267	Tomingley IF-10	612647	6388151	Flake	Quartz	Complete	Tertiary	15x12x4 mm	
35-6-0268	Tomingley IF-11	612588	6388093	Flake	Quartzite	Complete	Tertiary	32x36x15 mm	
35-6-0269	Tomingley IF-12	612363	6388152	Flake	Quartzite	Distal fragment	Tertiary	28x32x10 mm	
35-6-0270	Tomingley IF-13	612258	6388399	Flake	Quartz	Complete	Tertiary	15x21x4 mm	
35-6-0271	Tomingley IF-14	613610	6387913	Flake	Quartz	Complete	Tertiary	23x20x6 mm	
35-6-0272	Tomingley IF-15	613741	6388206	Flake	Quartzite	Complete	Tertiary	38x40x8 mm	
35-6-0273	Tomingley IF-16	613870	6388399	Flake	Quartzite	Longitudinal break	Tertiary	39x36x11 mm	
35-6-0274	Tomingley IF-17	613685	6388908	Flake	Quartzite	Longitudinal break	Tertiary	33x16x6 mm	
35-6-0275	Tomingley IF-18	613090	6389598	Flake	Quartzite	Complete	Primary	50x70x45 mm	
35-6-0276	Tomingley IF-19	612039	6389254	Core	Silcrete	N/A	N/A	100x70x40 mm	Opportunistic; 1 flake scar; 50% cortex
35-6-0277	Tomingley IF-20	612427	6390167	Flake	Chert	Complete	Primary	90x50x30 mm	
35-6-0278	Tomingley IF-21	614894	6389181	Flake	Chert	Distal fragment	Tertiary	12x13x7 mm	
35-6-0279	Tomingley IF-22	615585	6390053	Flake	Quartzite	Complete	Tertiary	33x28x15 mm	
35-6-0280	Tomingley IF-23	615211	6390176	Flake	Volcanic	Complete	Tertiary	45x28x10 mm	

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm	Additional detail
35-6-0281	Tomingley IF-24	614208	6390562	Flake	Volcanic	Complete	Tertiary	26x30x10 mm	
35-6-0282	Tomingley IF-25	614379	6390908	Flake	Chert	Proximal fragment	Tertiary	12x10x5 mm	
35-6-0283	Tomingley IF-26	614539	6391052	Flake	Quartz	Complete	Tertiary	31x30x8 mm	
35-6-0284	Tomingley IF-27	614459	6391138	Flake	Volcanic	Longitudinal break	Tertiary	60x44x15 mm	
35-6-0285	Tomingley IF-28	615830	6391255	Flake	Volcanic	Complete	Tertiary	34x40x25 mm	
35-6-0286	Tomingley IF-29	612664	391109	Side scraper	Volcanic	N/A	Secondary	65x55x20 mm	

Figure 6-2: Overview of the location of all recorded isolated finds within the Study Area.



Tomingley IF-1

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612493E 6386989N

Location of Site: Tomingley IF-1 is located within the southern portion of Lot 168 DP755093, approximately 8.6 km south of the village of Tomingley. The site is at its closest, 130 m east of Back Tomingley West Road and 253 m west of the Newell Highway (**Figure 6-2** and **Figure 6-3**).

Description of Site: Tomingley IF-1 is a single volcanic flake located on a plain in an area surrounded by gilgai (**Figure 6-4**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was moderate (50%) with a GSV of 70% within the area of exposure. Identified disturbances include grazing and ploughing.

Tomingley IF-1 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-3: Location of Tomingley IF-1, IF-2, IF-6, and Tomingley OS-2.

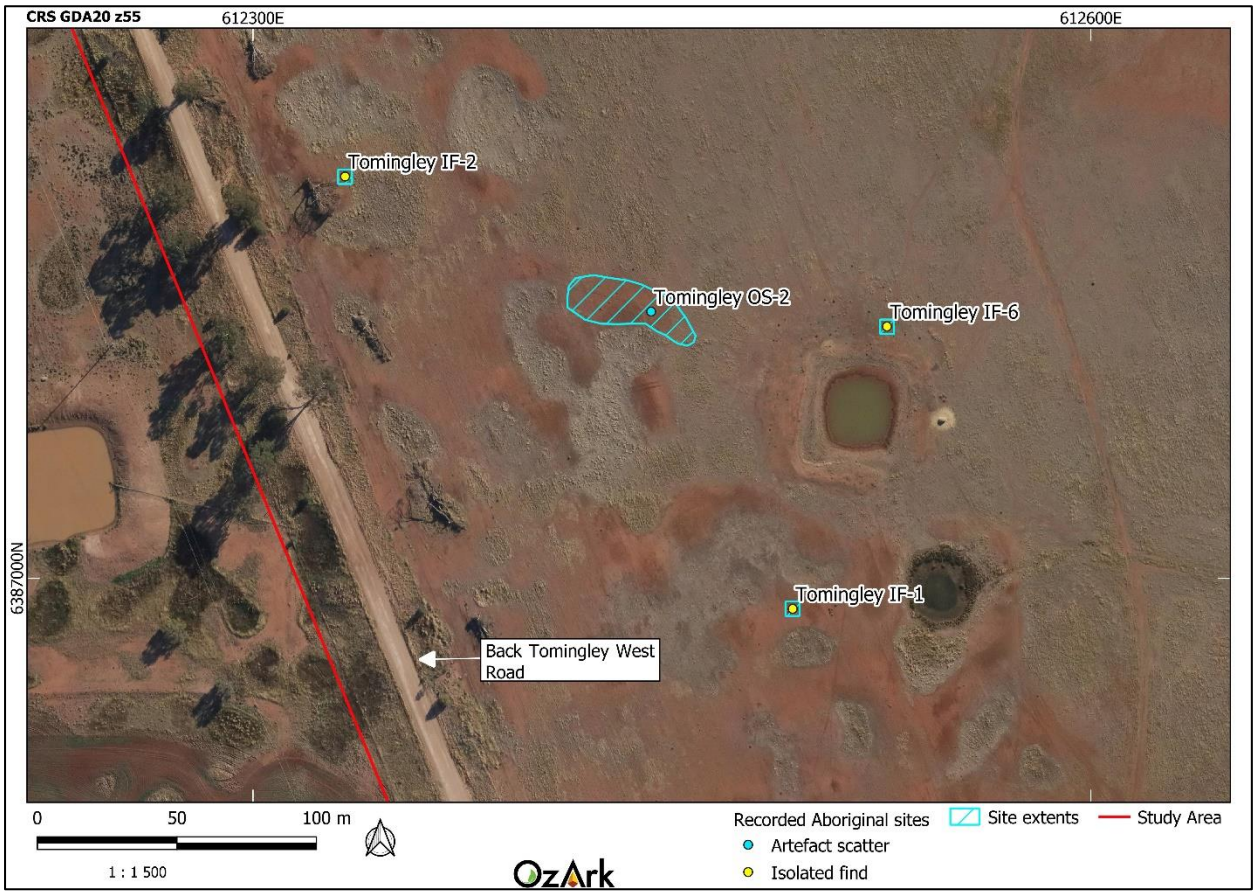


Figure 6-4: Tomingley IF-1. View of site and recorded artefact.

	
1. View east to the location of Tomingley IF-1 located within a ploughed paddock surrounded by gilgai.	2. Tomingley IF-1 artefact: a volcanic flake.

Tomingley IF-2

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612333E 6387144N

Location of Site: Tomingley IF-2 is located within the southern portion of Lot 168 DP755093, approximately 8.6 km south of the village of Tomingley. The site is 44 m east of Back Tomingley West Road and 547 m directly west of the Newell Highway (**Figure 6-2** and **Figure 6-3**).

Description of Site: Tomingley IF-2 is a single chert flake located on a plain in an area surrounded by gilgai (**Figure 6-5**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low (30%) with a GSV of 70% within the area of exposure. Identified disturbances include grazing and ploughing.

Tomingley IF-2 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-5: Tomingley IF-2. View of site and recorded artefact.

	
1. View southeast to the location of Tomingley IF-2 located within a ploughed paddock surrounded by gilgai.	2. Tomingley IF-2 artefact: a chert flake.

Tomingley IF-3

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612315E 6387251N

Location of Site: Tomingley IF-3 is located within the southern portion of Lot 168 DP755093, approximately 8.4 km south of the village of Tomingley. The site is 70 m east of Back Tomingley West Road and 516 m directly west of the Newell Highway (**Figure 6-2** and **Figure 6-6**).

Description of Site: Tomingley IF-3 is a single quartz flake located on a plain in an area surrounded by gilgai (**Figure 6-7**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low (20%) with a GSV of 60% within the area of exposure. Identified disturbances include grazing and ploughing.

Tomingley IF-3 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-6: Location of Tomingley IF-2, IF-3, IF-4, and IF-5.

Figure 6-7: Tomingley IF-3. View of site and recorded artefact.

1. View southwest to the location of Tomingley IF-3 located within a ploughed paddock surrounded by gilgai.

2. Tomingley IF-3 artefact: a quartz flake.

Tomingley IF-4

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612253E 6387268N

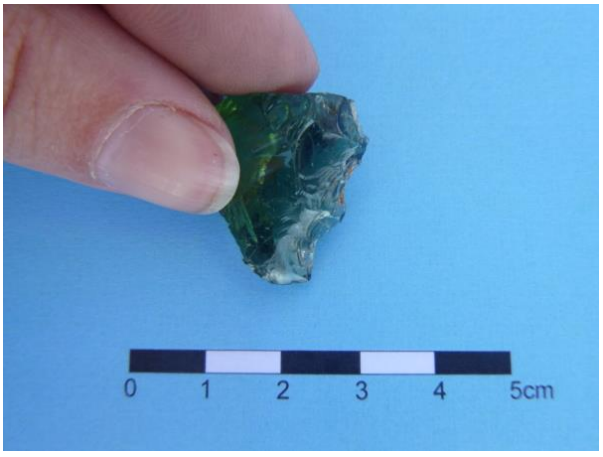
Location of Site: Tomingley IF-4 is located within eastern corridor of Back Tomingley West Road, approximately 8.4 km south of the village of Tomingley. The site is 907 m from the intersection of Back Tomingley West Road and the Newell Highway (**Figure 6-2** and **Figure 6-6**).

Description of Site: Tomingley IF-4 is a single piece of flaked glass located on a plain in an area surrounded by gilgai (**Figure 6-8**). The piece of glass displays retouch with three pressure flakes along one edge. The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was moderate (60%) with a GSV of 80% within the area of exposure. Identified disturbances include fencing and road construction.

Tomingley IF-4 is not considered to be associated with subsurface archaeological deposits as it is located on an undifferentiated landform with low archaeological sensitivity.

Figure 6-8: Tomingley IF-4. View of site and recorded artefact.

1. View north to the location of Tomingley IF-4 within the corridor of Back Tomingley West Road.



2. Tomingley IF-4 artefact: a piece of knapped glass.

Tomingley IF-5

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612495E 6387230N

Location of Site: Tomingley IF-5 is located within the southern portion of Lot 168 DP755093, approximately 8.4 km south of the village of Tomingley. The site is 240 m east of Back Tomingley West Road; 320 m directly west of the Newell Highway; and 93 m southwest of the former alignment of Bulldog Creek (**Figure 6-2** and **Figure 6-6**).

Description of Site: Tomingley IF-5 is a volcanic side scraper located on a plain in a ploughed paddock (**Figure 6-9**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low (<5%) with a GSV of 50%. Identified disturbances include grazing and ploughing.

Tomingley IF-5 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-9: Tomingley IF-5. View of site and recorded artefact.

<table>
<tr><td>  </td><td> 
</td></tr>
<tr><td>1. View northwest to the location of Tomingley IF-5 within a cleared, ploughed paddock.</td><td>2. Tomingley IF-5 artefact: a volcanic side scraper.</td></tr>
</table>

Tomingley IF-6

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612527E 6387090N

Location of Site: Tomingley IF-6 is located within the southern portion of Lot 168 DP755093, approximately 8.5 km south of the village of Tomingley. The site is 218 m east of Back Tomingley West Road; 256 m directly west of the Newell Highway; and 156 m southwest of the former alignment of Bulldog Creek (**Figure 6-2** and **Figure 6-6**).

Description of Site: Tomingley IF-6 is a grinding plate located on a plain in a ploughed paddock, to the north of a dam surrounded by gilgai (**Figure 6-10**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was moderate (60%) with a GSV of 80%. Identified disturbances include grazing, ploughing and the construction of the dam.

Tomingley IF-6 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-10: Tomingley IF-6. View of site and recorded artefact.

	
1. View east to the location of Tomingley IF-6 located within a ploughed paddock to the north of a dam.	2. Tomingley IF-6 artefact: a grinding plate.

Tomingley IF-7

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612826E 6387433N

Location of Site: Tomingley IF-7 is located within the southern portion of Lot 168 DP755093, approximately 7.9 km south of the village of Tomingley. The site is 59 m west of the Newell Highway; 657 m directly east of Back Tomingley West Road; and 290 m northeast of the former alignment of Bulldog Creek (**Figure 6-2** and **Figure 6-11**).

Description of Site: Tomingley IF-7 is a volcanic ground-edge hatchet located on a plain in a ploughed paddock (**Figure 6-12**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (40%) with a GSV of 70%. Identified disturbances include grazing and ploughing.

Tomingley IF-7 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-11: Location of Tomingley IF-7.

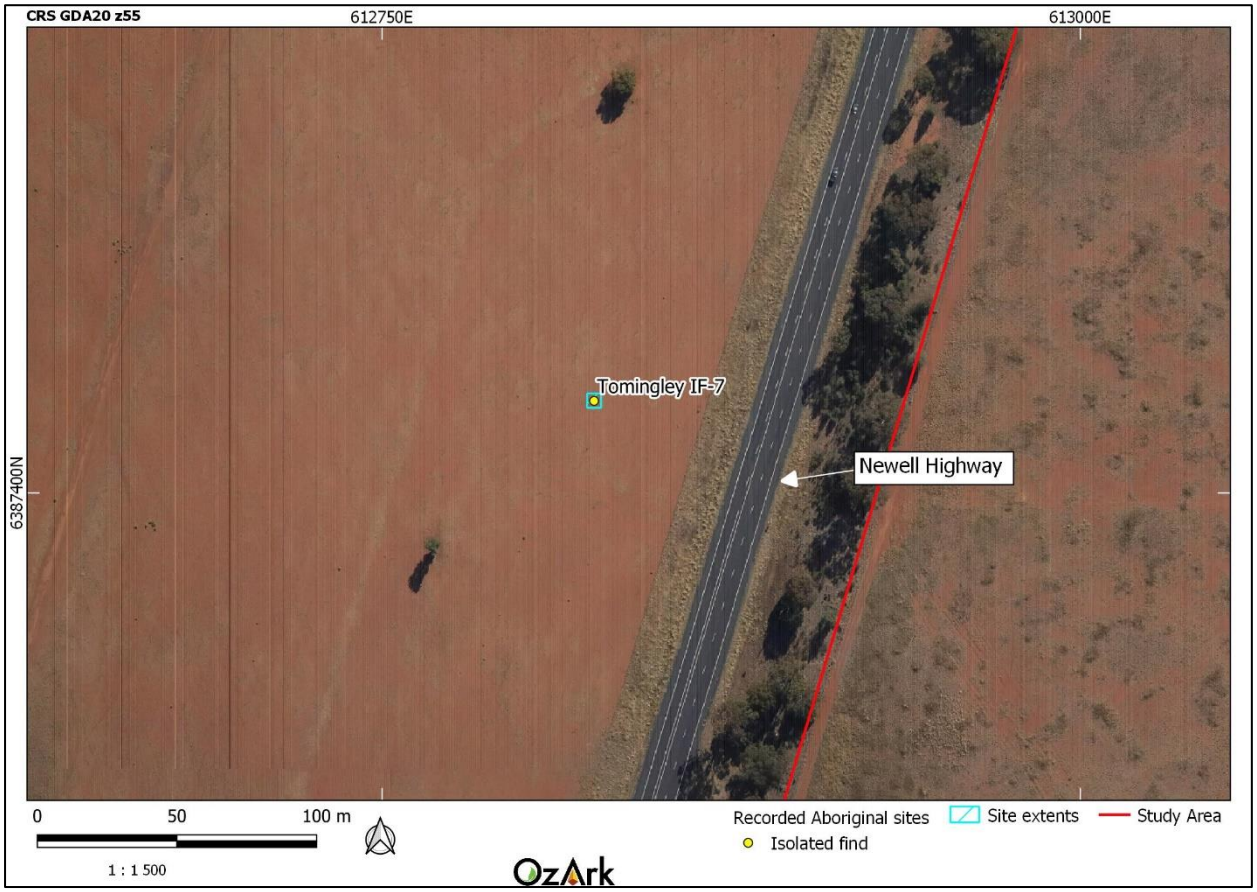


Figure 6-12: Tomingley IF-7. View of site and recorded artefact.

1. View east to the location of Tomingley IF-7 located within a ploughed paddock, showing the Newell Highway in the background (tree line).

2. Tomingley IF-7 artefact: a ground edge hatchet.

	
3. Side view of the ground-edge hatchet.	4. Close up detail of the grounded edge.

Tomingley IF-8

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613106E 6388262N

Location of Site: Tomingley IF-8 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 20 m west of the Newell Highway; 1.2 km directly east of Back Tomingley West Road; and 914 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-13**).

Description of Site: Tomingley IF-8 is a chert flake located on a plain in a ploughed paddock (**Figure 6-14**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was moderate (60%) with a GSV of 70%. Identified disturbances include grazing and ploughing.

Tomingley IF-8 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-13: Location of Tomingley IF-8 and IF-9.

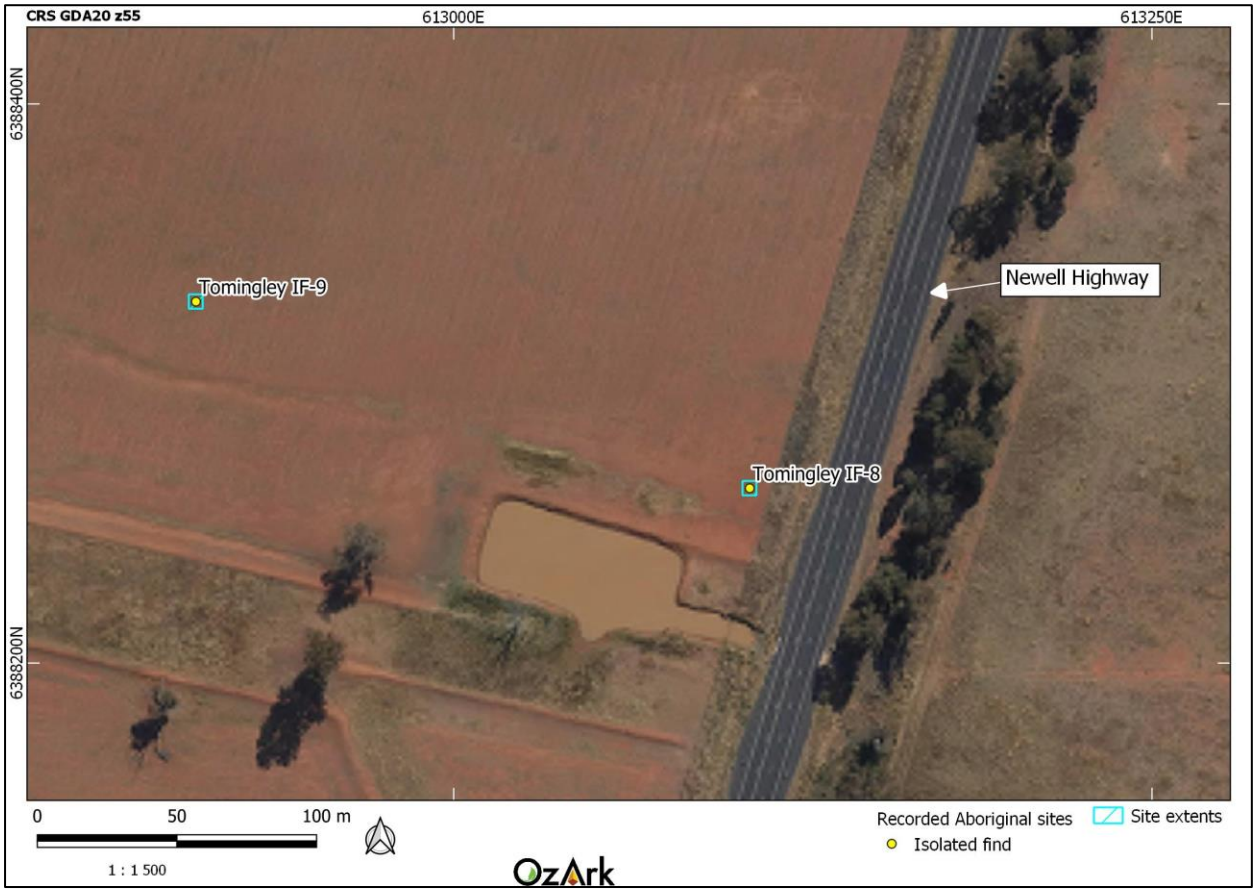


Figure 6-14: Tomingley IF-8. View of site and recorded artefact.

1. View east to the location of Tomingley IF-8 located within a ploughed paddock showing the Newell Highway in the background (tree line).

2. Tomingley IF-8 artefact: a chert flake.

Tomingley IF-9

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612908E 6388329N

Location of Site: Tomingley IF-9 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 240 m west of the Newell Highway; 1.1 km directly east of Back Tomingley West Road; and 723 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-13**).

Description of Site: Tomingley IF-9 is a mudstone end scraper located on a plain in a ploughed paddock (**Figure 6-15**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (40%) with a GSV of 70%. Identified disturbances include grazing and ploughing.

Tomingley IF-9 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-15: Tomingley IF-9. View of site and recorded artefact.

1. View south to the location of Tomingley IF-9 located within a ploughed paddock.

2. Tomingley IF-9 artefact: a mudstone scraper flake.

Tomingley IF-10

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612647E 6388151N

Location of Site: Tomingley IF-10 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 440 m west of the Newell Highway; 755 m east of Back Tomingley West Road; and 442 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-16**).

Description of Site: Tomingley IF-10 is a quartz flake located on a plain in a ploughed paddock, along a farm track (**Figure 6-17**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (60%) with a GSV of 80%. Identified disturbances include grazing, ploughing and construction of a fence line.

Tomingley IF-10 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-16: Location of Tomingley IF-10 to IF-13.

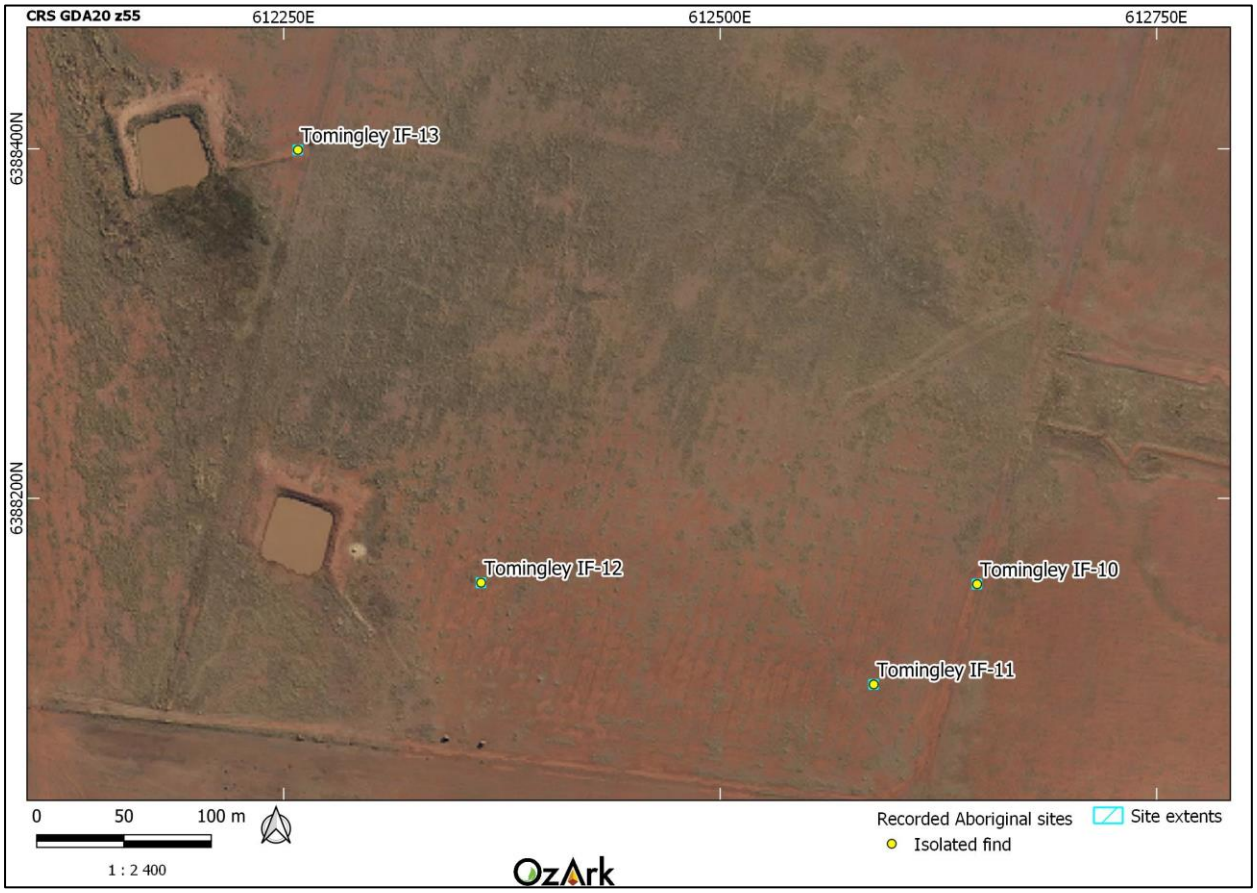


Figure 6-17: Tomingley IF-10. View of site and recorded artefact.

1. View south to the location of Tomingley IF-10 located on a farm track adjacent to a fence line.

2. Tomingley IF-10 artefact: a quartz flake.

Tomingley IF-11

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612588E 6388093N

Location of Site: Tomingley IF-11 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 490 m west of the Newell Highway; 680 m east of Back Tomingley West Road; and 380 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-16**).

Description of Site: Tomingley IF-11 is a quartzite flake located on a plain in a cleared paddock (**Figure 6-18**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (60%) with a GSV of 80%. Identified disturbances include grazing, ploughing and construction of a fence line.

Tomingley IF-11 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-18: Tomingley IF-11. View of site and recorded artefact.

1. View south to the location of Tomingley IF-11 located within a cleared paddock.

2. Tomingley IF-11 artefact: a quartzite flake.

Tomingley IF-12

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612363E 6388152N

Location of Site: Tomingley IF-12 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 728 m west of the Newell Highway; 475 m east of Back Tomingley West Road; and 165 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-16**).

Description of Site: Tomingley IF-12 is a quartzite flake located on a plain in a cleared paddock (**Figure 6-19**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was high (80%) with a GSV of 90%. Identified disturbances include grazing and ploughing.

Tomingley IF-12 is not considered to be associated with subsurface archaeological deposits.

Figure 6-19: Tomingley IF-12. View of site and recorded artefact.

1. View south to the location of Tomingley IF-12 within a large area of exposure.

2. Tomingley IF-12 artefact: a quartzite flake.

Tomingley IF-13

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612258E 6388399N

Location of Site: Tomingley IF-13 is located within the northern portion of Lot 168 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 911 m west of the Newell Highway; 482 m east of Back Tomingley West Road; and 68 m east of Bulldog Creek (**Figure 6-2** and **Figure 6-16**).

Description of Site: Tomingley IF-13 is a quartz flake located on a contour bank to the east of a dam on a plain landform (**Figure 6-20**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was high (70%) with a GSV of 80%. Identified disturbances include the construction of a contour bank and dam, grazing and ploughing.

Tomingley IF-13 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-20: Tomingley IF-13. View of site and recorded artefact.

1. View west to the location of Tomingley IF-13 located on a contour bank.

2. Tomingley IF-13 artefact: a quartz flake.

Tomingley IF-14

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613610E 6387913N

Location of Site: Tomingley IF-14 is located within the northern portion of Lot 44 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 545 m east and 3.1 km south of Kyalite Road (**Figure 6-2** and **Figure 6-21**).

Description of Site: Tomingley IF-14 is a quartz flake located on a located on a plain in a cleared paddock (**Figure 6-22**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low (30%) with a GSV of 70%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-14 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-21: Location of Tomingley IF-14 to IF-16.

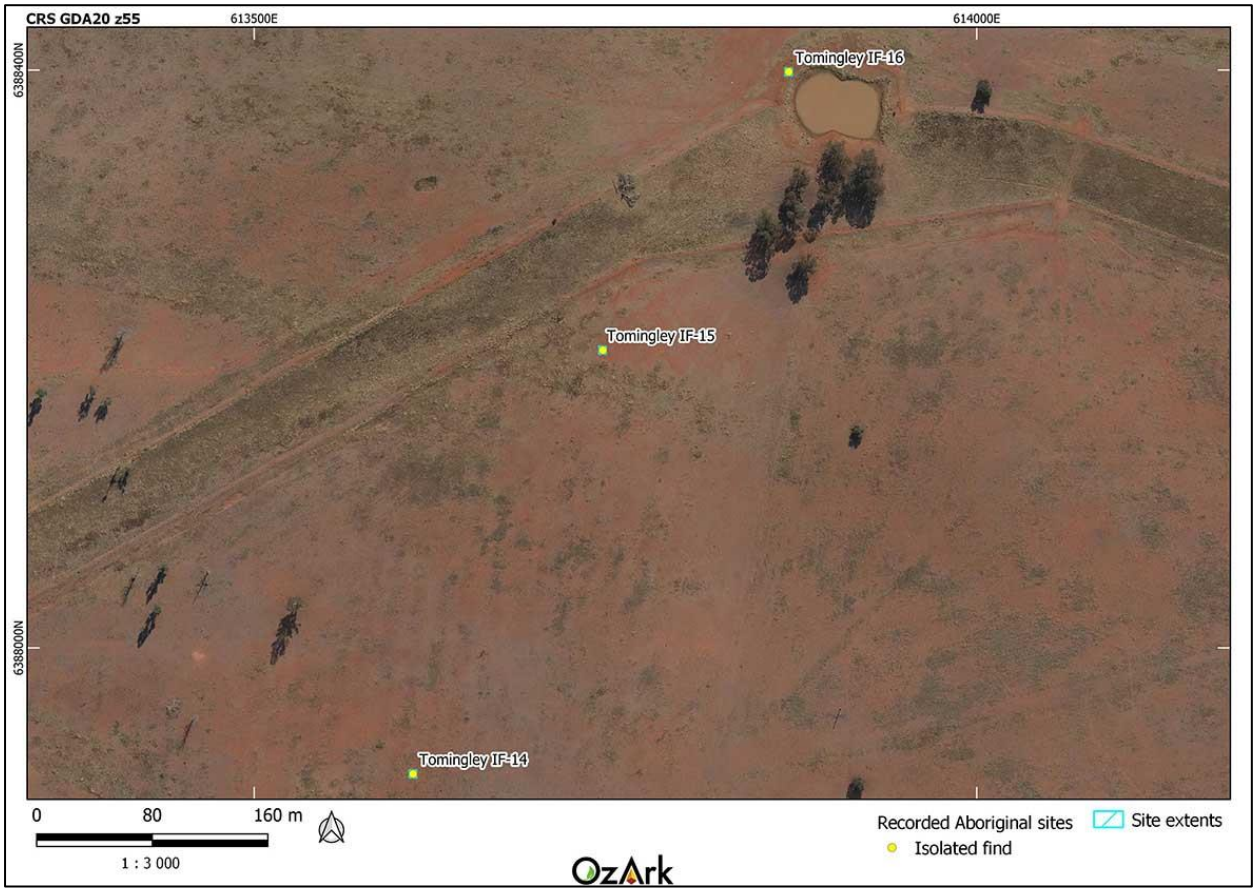


Figure 6-22: Tomingley IF-14. View of site and recorded artefact.

1. View south to the location of Tomingley IF-14 within a cleared paddock.

2. Tomingley IF-14 artefact: a quartz flake.

Tomingley IF-15

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613741E 6388206N

Location of Site: Tomingley IF-15 is located within the northern portion of Lot 44 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 588 m east and 2.8 km south of Kyalite Road (**Figure 6-2** and **Figure 6-21**).

Description of Site: Tomingley IF-15 is a quartzite flake located on a located on a plain in a cleared paddock (**Figure 6-23**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (40%) with a GSV of 70%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-15 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-23: Tomingley IF-15. View of site and recorded artefact.

1. View north to the location of Tomingley IF-15 located within a cleared paddock.

2. Tomingley IF-15 artefact: a quartzite flake.

Tomingley IF-16

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613870E 6388399N

Location of Site: Tomingley IF-16 is located within the northern portion of Lot 44 DP755093, approximately 6.8 km south of the village of Tomingley. The site is 670 m east and 2.6 km south of Kyalite Road (**Figure 6-2** and **Figure 6-21**).

Description of Site: Tomingley IF-16 is a quartzite flake located on a located on a plain in a cleared paddock on the western wall of a dam (**Figure 6-24**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels

on the surface. The GSE at the time of recording was moderate (60%) with a GSV of 80%. Identified disturbances include the construction of a dam, grazing and ploughing.

Tomingley IF-16 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-24: Tomingley IF-16. View of site and recorded artefact.

	
1. View north to the location of Tomingley IF-16 located on the western wall of a dam.	2. Tomingley IF-16 artefact: a quartzite flake.

Tomingley IF-17

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613685E 6388908N

Location of Site: Tomingley IF-17 is located within the southwest portion of Lot 43 DP755093, approximately 6.6 km south of the village of Tomingley. The site is 337 m east of the Newell Highway and 76 m south of a drainage line (**Figure 6-2** and **Figure 6-25**).

Description of Site: Tomingley IF-17 is a quartzite flake located on a located on a plain in a ploughed paddock (**Figure 6-26**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with few gravels on the surface. The GSE at the time of recording was low to moderate (40%) with a GSV of 70%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-17 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-25: Location of Tomingley IF-17.

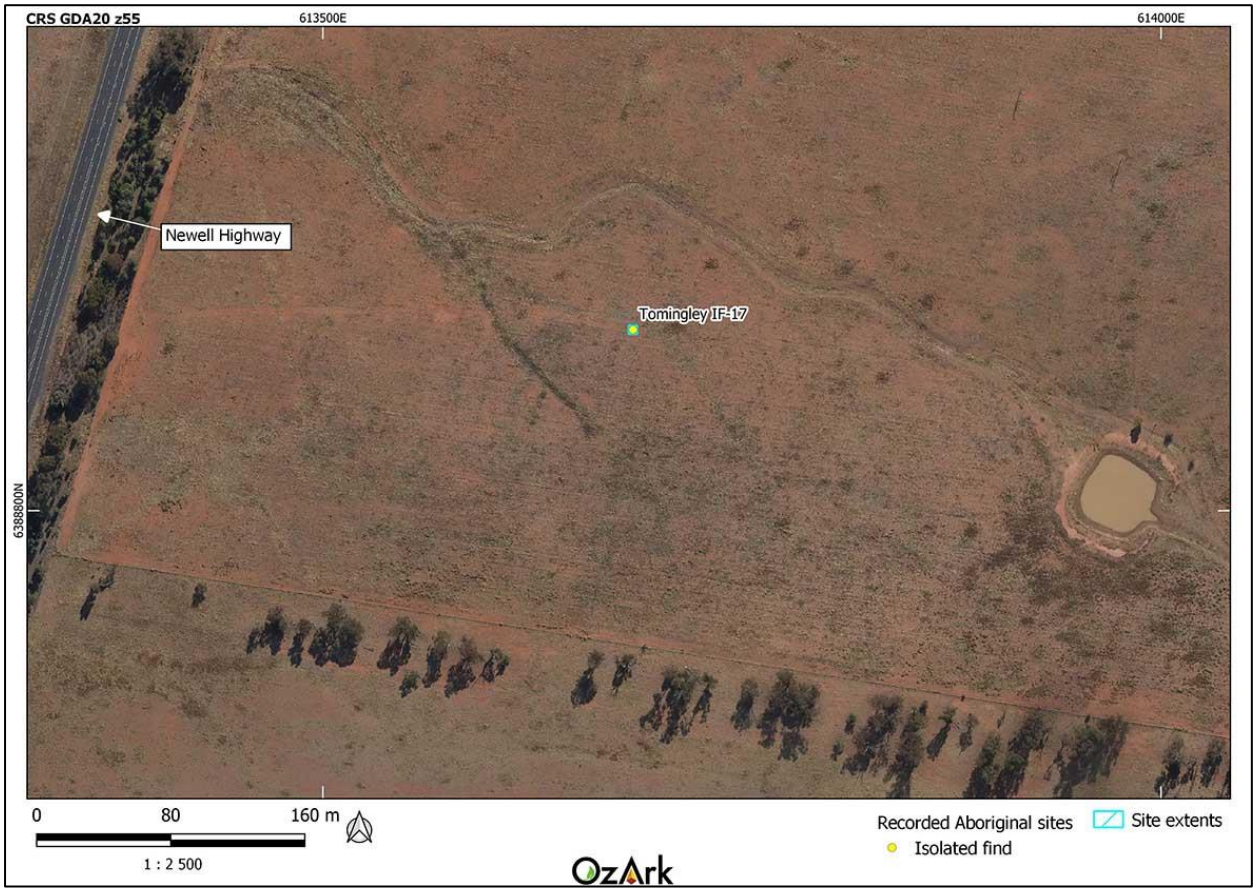


Figure 6-26: Tomingley IF-17. View of site and recorded artefact.

1. View east to the location of Tomingley IF-17 located within a ploughed paddock.

2. Tomingley IF-17 artefact: a quartzite flake.

Tomingley IF-18

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 613090E 6389598N

Location of Site: Tomingley IF-18 is located within the central portion of Lot 4 DP1213503, approximately 5.9 km south of the village of Tomingley. The site is 430 m west of the Newell Highway and 2.5 km directly south of McNivens Lane (**Figure 6-2** and **Figure 6-27**).

Description of Site: Tomingley IF-18 is a large quartzite flake located on a located on a plain in a cleared paddock (**Figure 6-28**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with few gravels on the surface. The GSE at the time of recording was low to moderate (30%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-18 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-27: Location of Tomingley IF-18.

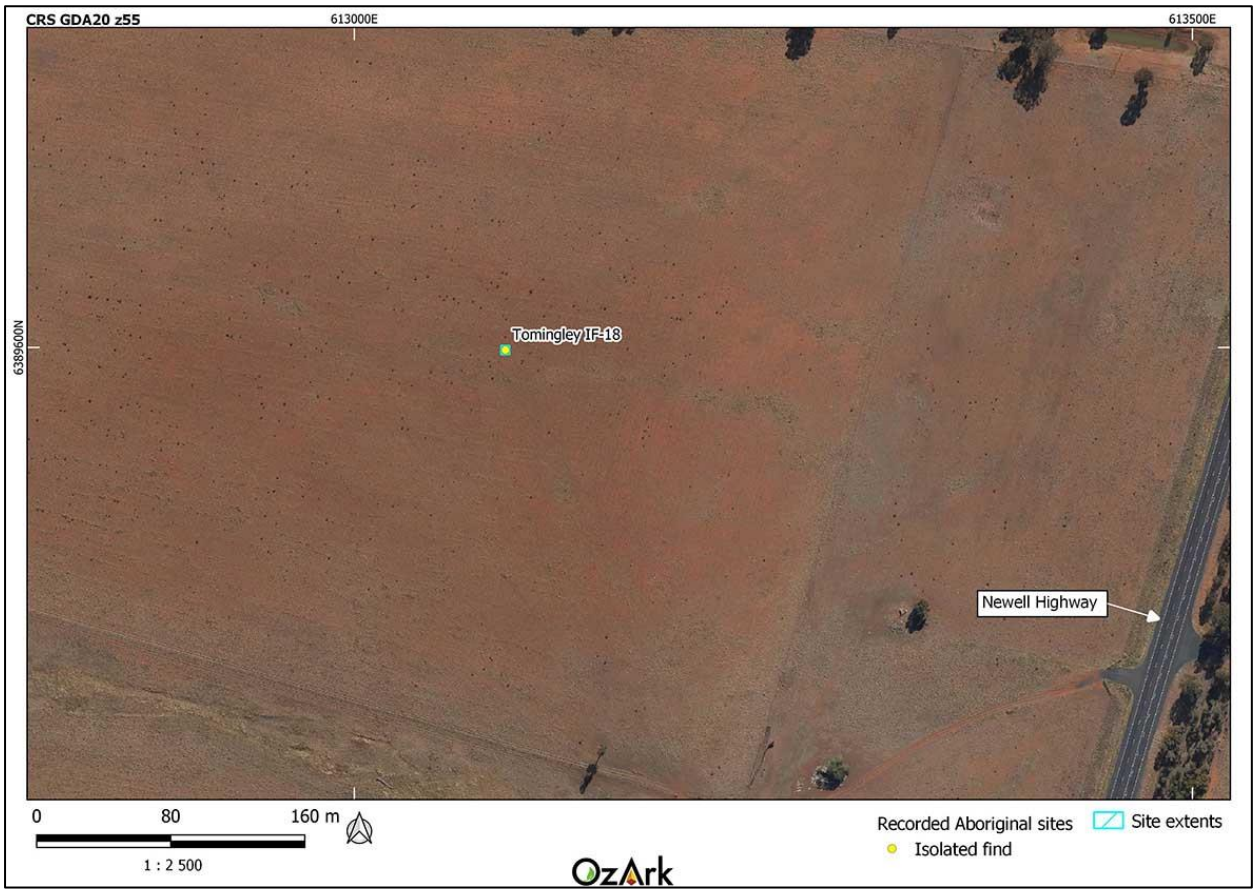


Figure 6-28: Tomingley IF-18. View of site and recorded artefact.

	
1. View north to the location of Tomingley IF-18 located within a cleared paddock.	2. Tomingley IF-18 artefact: a quartzite flake.

Tomingley IF-19

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612039E 6389254N

Location of Site: Tomingley IF-19 is located within the central portion of Lot 4 DP1213503, approximately 7 km south of the village of Tomingley. The site is 115 m east of Bulldog Creek, 605 m east of Back Tomingley Road and 1.3 km west of the Newell Highway (**Figure 6-2** and **Figure 6-29**).

Description of Site: Tomingley IF-19 is a silcrete core located on a located on a plain in a cleared paddock (**Figure 6-30**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was low (20%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-19 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-29: Location of Tomingley IF-19.

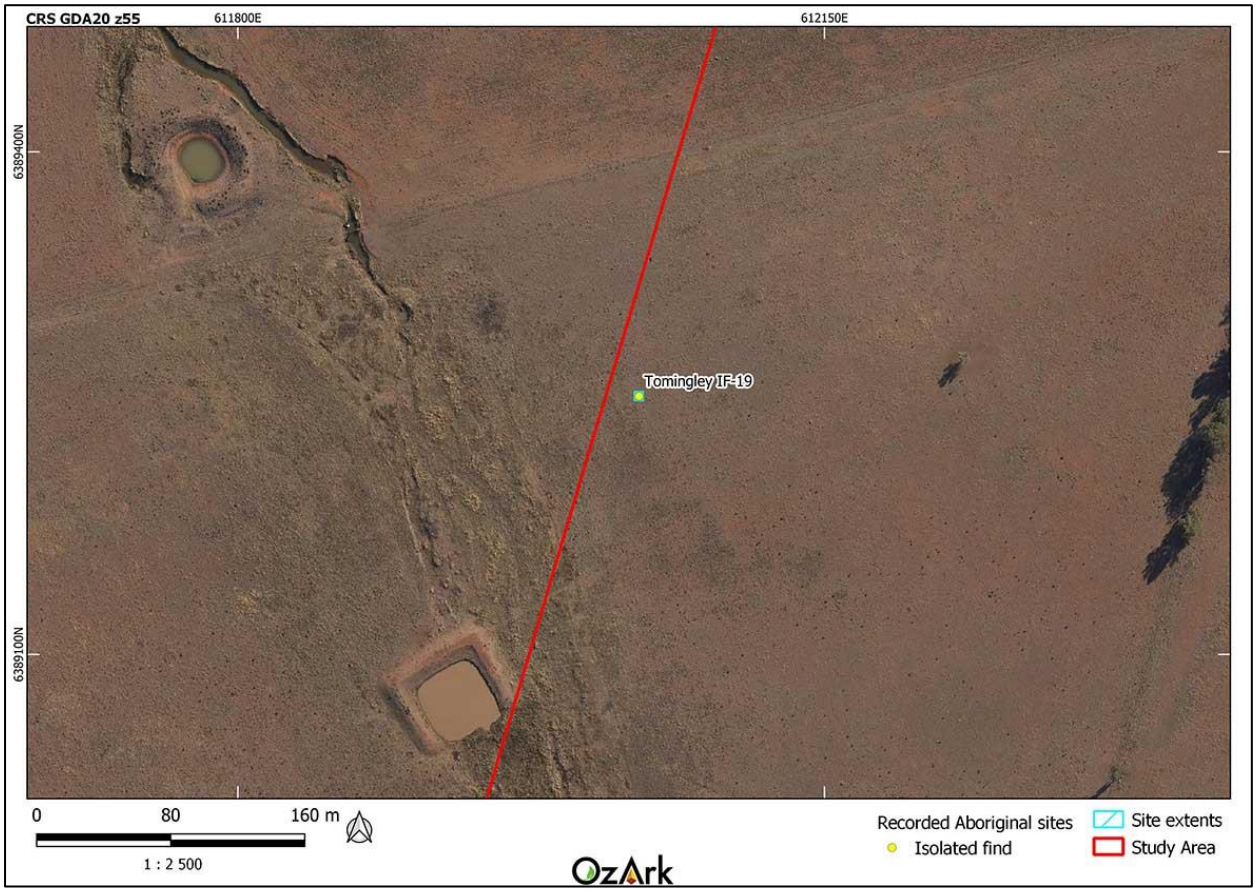


Figure 6-30: Tomingley IF-19. View of site and recorded artefact.

1. View west to the location of Tomingley IF-19 located within a ploughed paddock.

2. Tomingley IF-19 artefact: a silcrete core.

Tomingley IF-20

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612427E 6390167N

Location of Site: Tomingley IF-20 is located within the southern portion of Lot 5 DP1213503, approximately 5.8 km south of the village of Tomingley. The site is 1.3 km east of Back Tomingley Road and 1.2 km west of the Newell Highway (**Figure 6-2** and **Figure 6-31**).

Description of Site: Tomingley IF-20 is a large chert flake located on a located on a plain in a cleared paddock (**Figure 6-32**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was low (20%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-20 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-31: Location of Tomingley IF-20.

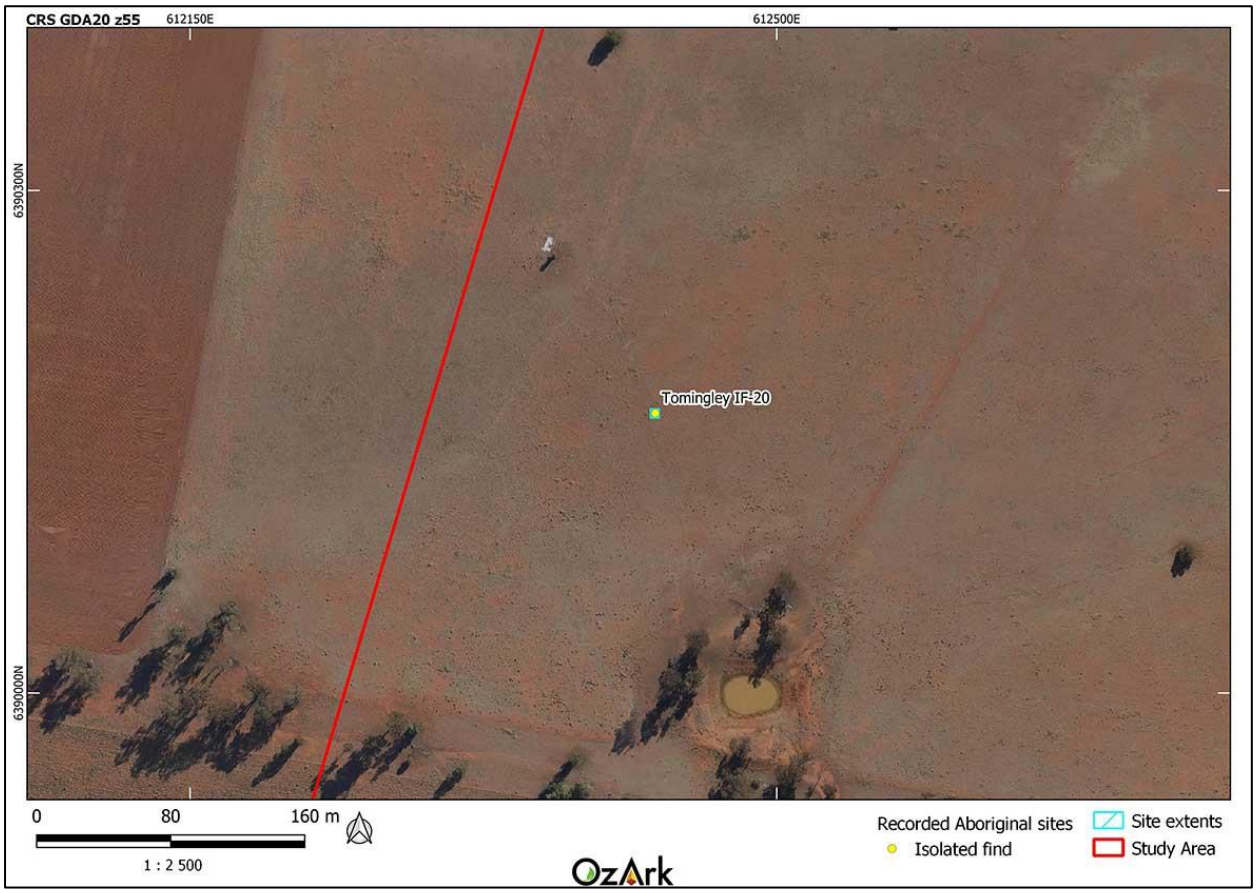


Figure 6-32: Tomingley IF-20. View of site and recorded artefact.

	
1. View south to the location of Tomingley IF-20 located within a ploughed paddock.	2. Tomingley IF-20 artefact: a chert flake.

Tomingley IF-21

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 614894E 6389181N

Location of Site: Tomingley IF-21 is located within the southern portion of Lot 43 DP755093, approximately 6.4 km south of the village of Tomingley. The site is 1.7 km south of Kyalite Road and 1.4 km east of the Newell Highway (**Figure 6-2** and **Figure 6-33**).

Description of Site: Tomingley IF-21 is a chert flake located on a located on the eastern wall on a dam (**Figure 6-34**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was moderate to high (70%) with a GSV of 80%. Identified disturbances include the construction of a dam, grazing and ploughing.

Tomingley IF-21 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-33: Location of Tomingley IF-21.

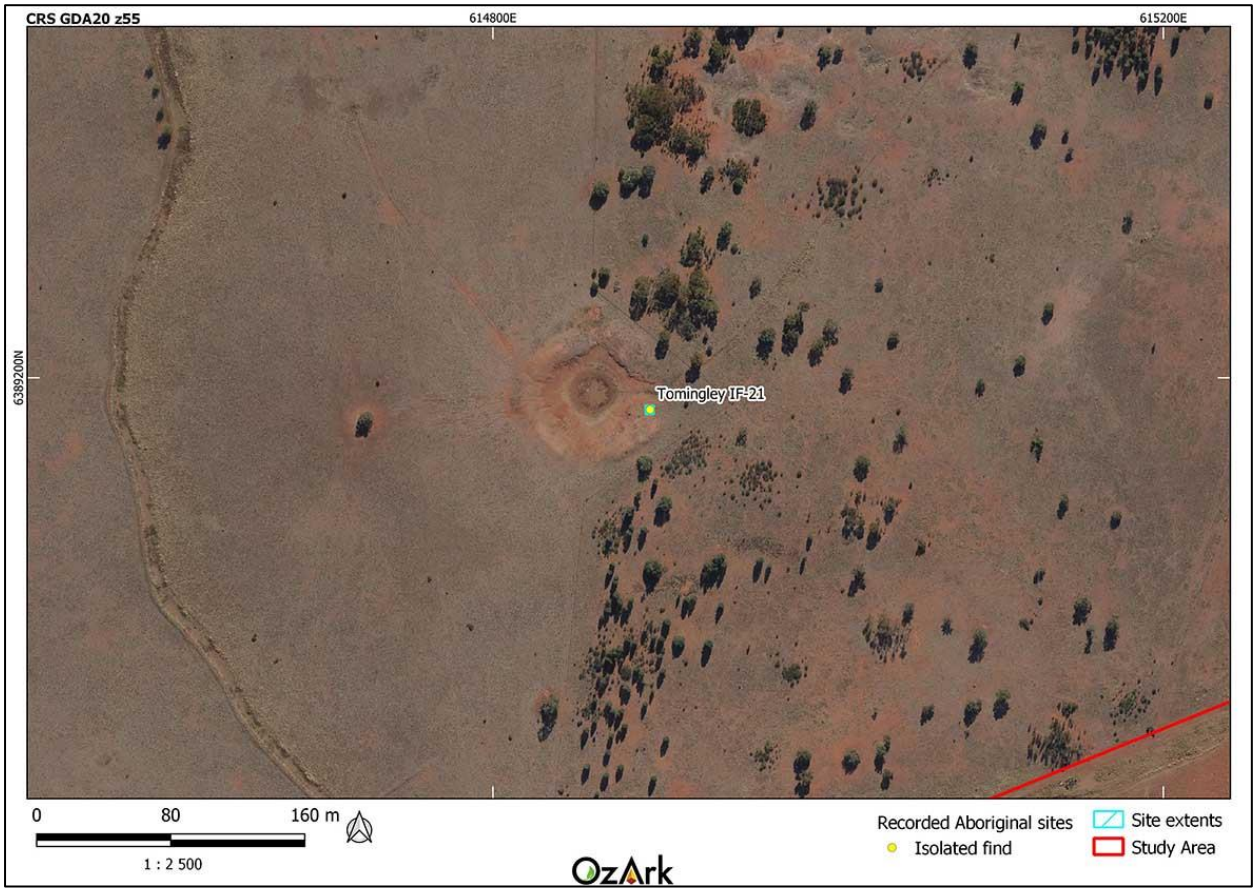


Figure 6-34: Tomingley IF-21. View of site and recorded artefact.

1. View north to the location of Tomingley IF-21 located on a dam wall.

2. Tomingley IF-21 artefact: a chert flake.

Tomingley IF-22

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 615585E 6390053N

Location of Site: Tomingley IF-22 is located within the north-eastern portion of Lot 43 DP755093, approximately 5.5 km south of the village of Tomingley. The site is 705 m south of Kyalite Road and 1.8 km east of the Newell Highway (**Figure 6-2** and **Figure 6-35**).

Description of Site: Tomingley IF-22 is a quartzite flake located between two trees in an otherwise cleared paddock (**Figure 6-36**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was moderate (60%) with a GSV of 70%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-22 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-35: Location of Tomingley IF-22 and IF-23.

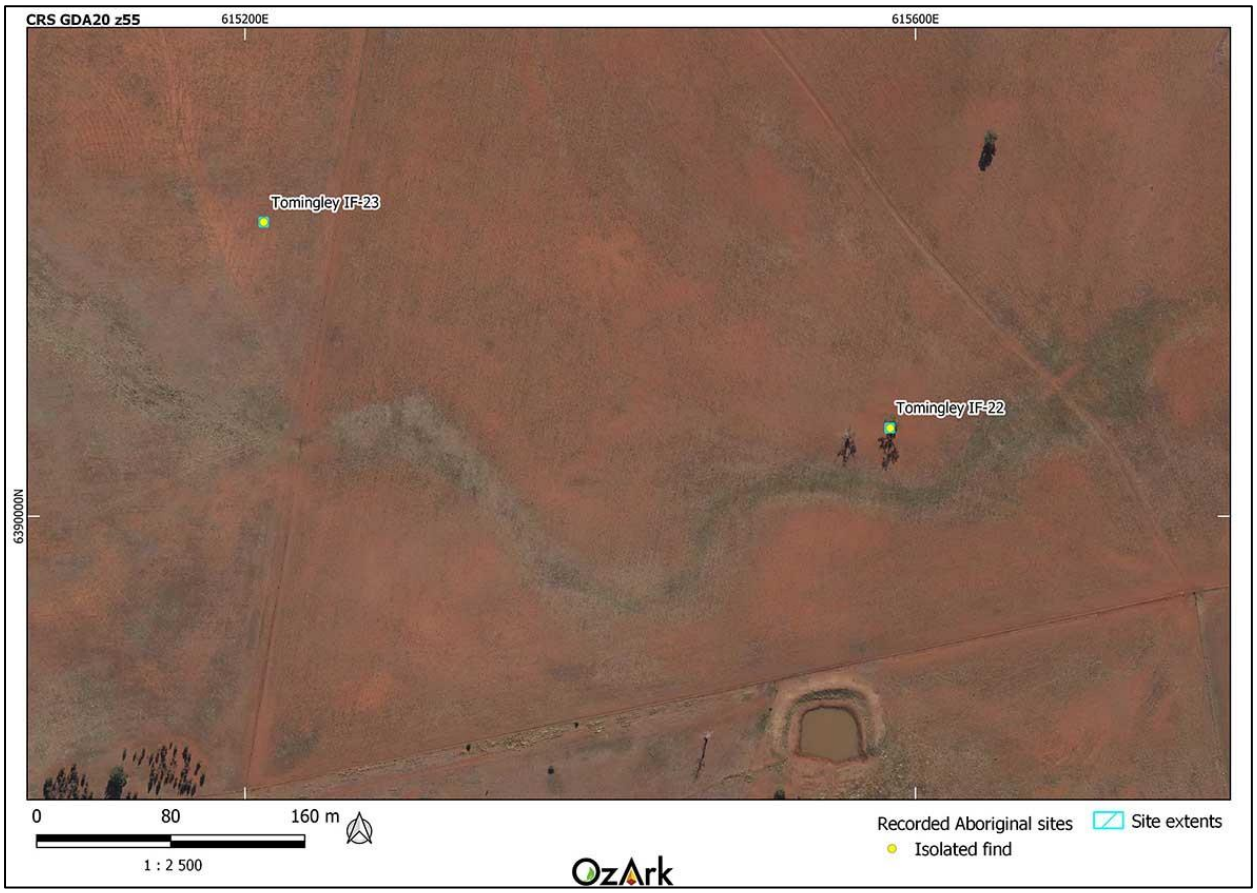


Figure 6-36: Tomingley IF-22. View of site and recorded artefact.

1. View north to the location of Tomingley IF-22 located within a ploughed paddock.

2. Tomingley IF-22 artefact: a quartzite flake.

Tomingley IF-23

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 615211E 6390176N

Location of Site: Tomingley IF-23 is located within the north-eastern portion of Lot 43 DP755093, approximately 5.4 km south of the village of Tomingley. The site is 650 m south of Kyalite Road and 1.4 km east of the Newell Highway (**Figure 6-2** and **Figure 6-35**).

Description of Site: Tomingley IF-23 is a volcanic flake located in a cleared paddock (**Figure 6-37**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was low to moderate (30%) with a GSV of 70%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley IF-23 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-37: Tomingley IF-23. View of site and recorded artefact.

1. View northeast to the location of Tomingley IF-23 located within a ploughed paddock.

2. Tomingley IF-23 artefact: a volcanic flake.

Tomingley IF-24

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 614208E 6390562N

Location of Site: Tomingley IF-24 is located within the north-western portion of Lot 43 DP755093, approximately 5.1 km south of the village of Tomingley. The site is 440 m south of Kyalite Road and 370 m east of the Newell Highway (**Figure 6-2** and **Figure 6-38**).

Description of Site: Tomingley IF-24 is a volcanic flake located to the north of a small dam (**Figure 6-39**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam. The GSE at the time of recording was low to moderate (30%) with a GSV of 70%. Identified disturbances include the construction of a dam, grazing and ploughing.

Tomingley IF-24 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-38: Location of Tomingley IF-24.

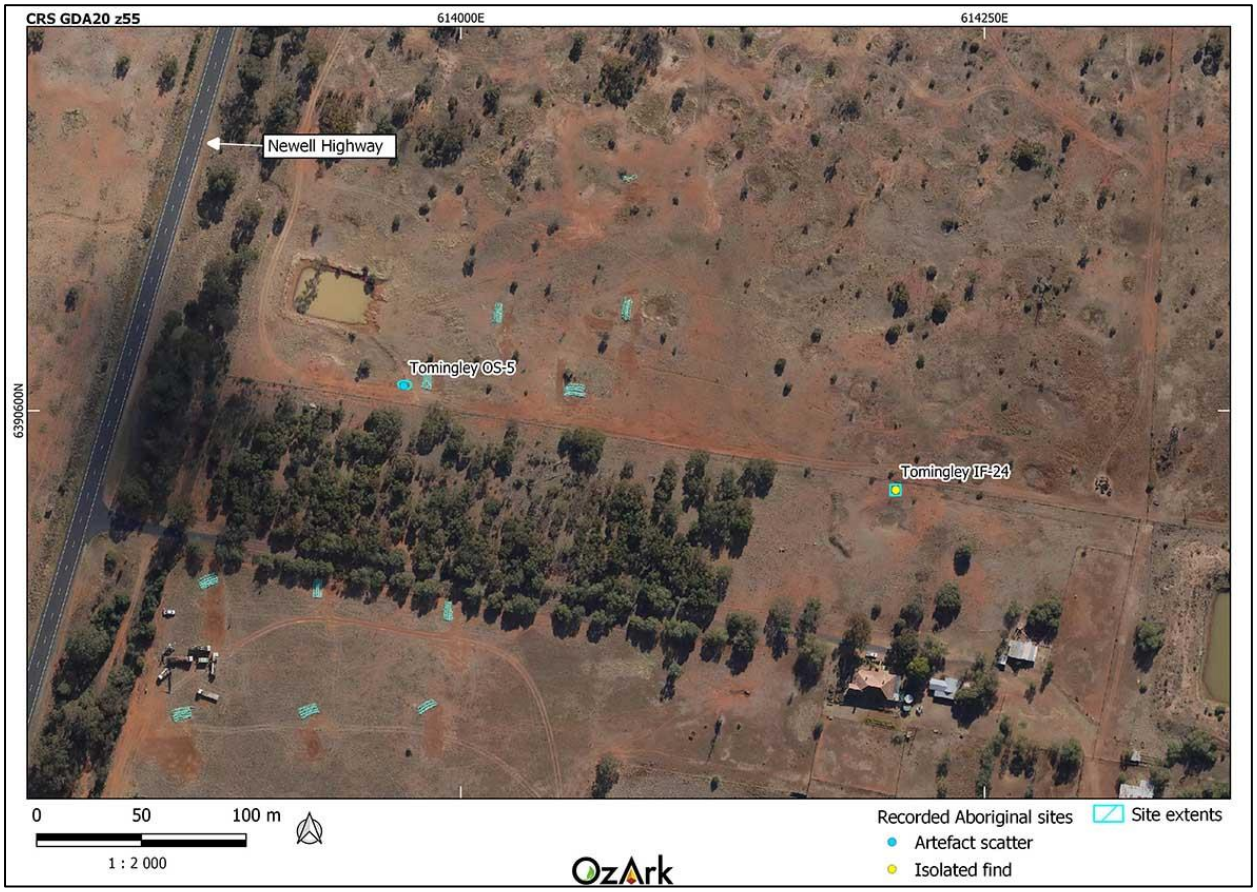


Figure 6-39: Tomingley IF-24. View of site and recorded artefact.

1. View east to the location of Tomingley IF-24 located on the northern wall of a dam.

2. Tomingley IF-24 artefact: a volcanic flake.

Tomingley IF-25

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 614379E 6390908N

Location of Site: Tomingley IF-25 is located within the north-western portion of Lot 43 DP755093, approximately 4.7 km south of the village of Tomingley. The site is 70 m south of Kyalite Road and 440 m east of the Newell Highway (**Figure 6-2** and **Figure 6-40**).

Description of Site: Tomingley IF-25 is a single chert flake located on a plain in an area surrounded by gilgai (**Figure 6-41**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (30%) with a GSV of 70% within the area of exposure. Identified disturbances include grazing.

Tomingley IF-25 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-40: Location of Tomingley IF-25 to IF-27.

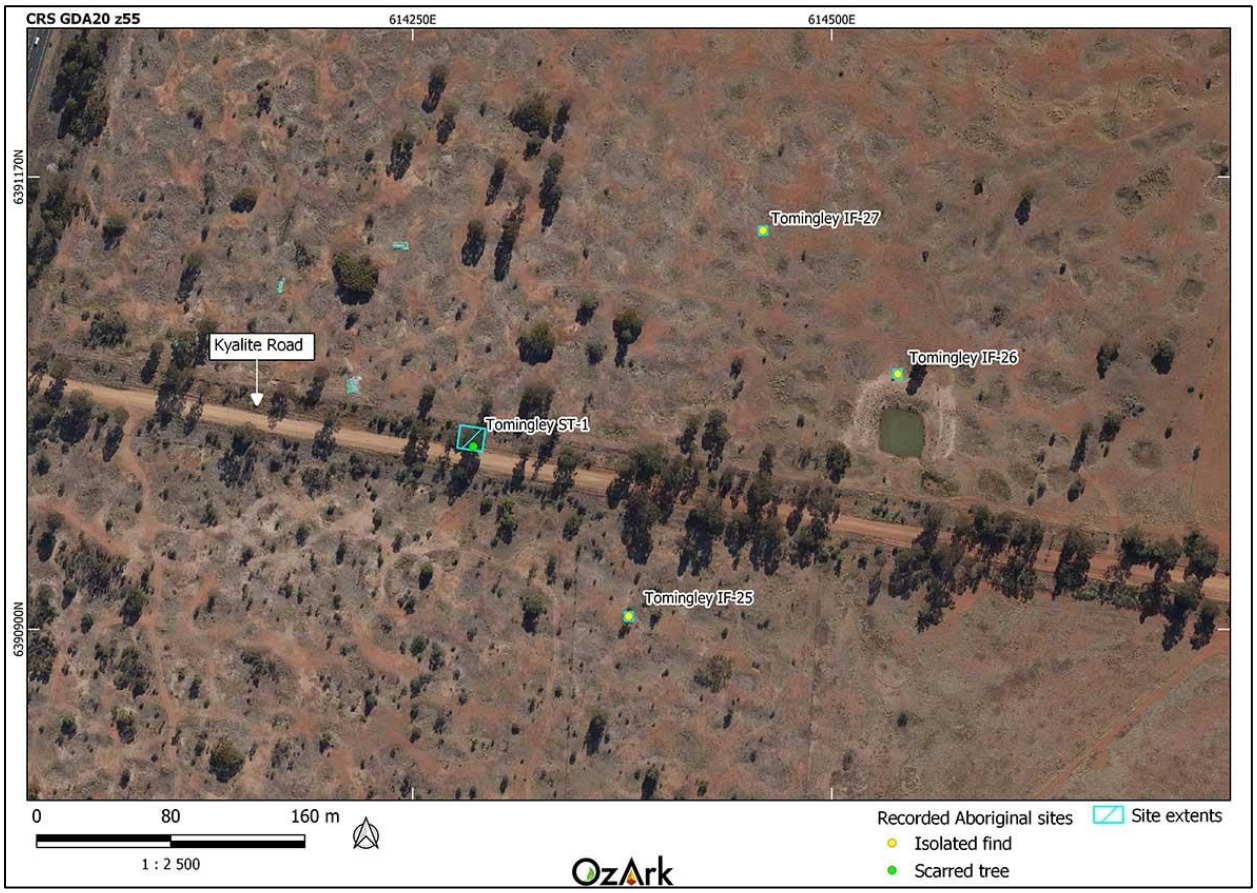


Figure 6-41: Tomingley IF-25. View of site and recorded artefact.

	
1. View north to the location of Tomingley IF-25 located within a paddock with abundant gilgai.	2. Tomingley IF-25 artefact: a chert flake.

Tomingley IF-26

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 614539E 6391052N

Location of Site: Tomingley IF-26 is located within the south-western portion of Lot 175 DP755093, approximately 4.6 km south of the village of Tomingley. The site is 84 m north of Kyalite Road and 550 m east of the Newell Highway (**Figure 6-2** and **Figure 6-40**).

Description of Site: Tomingley IF-26 is a single quartz flake located on a plain in an area surrounded by gilgai, to the north of a dam (**Figure 6-42**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with frequent gravels on the surface. The GSE at the time of recording was moderate (40%) with a GSV of 70% within the area of exposure. Identified disturbances include vegetation clearance, construction of a dam and grazing.

Tomingley IF-26 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-42: Tomingley IF-26. View of site and recorded artefact.

1. View north to the location of Tomingley IF-26 located within a cleared paddock to the north of a dam.

2. Tomingley IF-26 artefact: a quartz flake.

Tomingley IF-27

Site Type: Isolated find

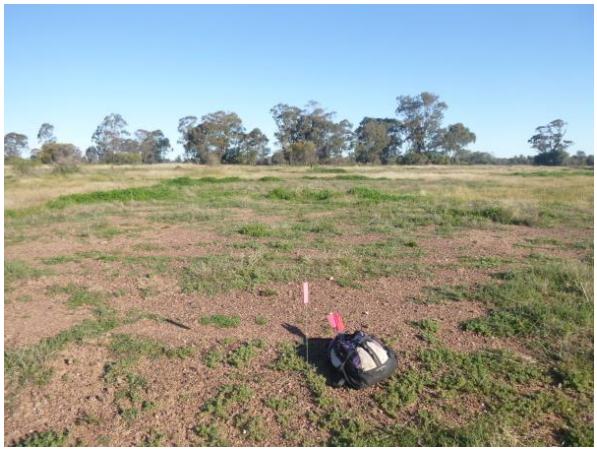
GPS Coordinates: GDA Zone 55 614459E 6391138N

Location of Site: Tomingley IF-27 is located within the south-western portion of Lot 175 DP755093, approximately 4.5 km south of the village of Tomingley. The site is 150 m north of Kyalite Road and 455 m east of the Newell Highway (**Figure 6-2** and **Figure 6-40**).

Description of Site: Tomingley IF-27 is a single volcanic flake located on a plain in an area surrounded by gilgai (**Figure 6-43**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with frequent gravels on the surface. The GSE at the time of recording was low (15%) with a GSV of 70% within the area of exposure. Identified disturbances include vegetation clearance and grazing.

Tomingley IF-27 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-43: Tomingley IF-27. View of site and recorded artefact.

	
1. View west to the location of Tomingley IF-27 located within a cleared paddock near gilgai.	2. Tomingley IF-27 artefact: a volcanic flake.

Tomingley IF-28

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 615830E 6391255N

Location of Site: Tomingley IF-28 is located within the north-western portion of Lot 43 DP755093, approximately 4.7 km south of the village of Tomingley. The site is located on the south of a dirt track that comes off Thornycroft Road and is 1.7 km east of the Newell Highway (**Figure 6-2** and **Figure 6-44**).

Description of Site: Tomingley IF-28 is a single volcanic flake located on a plain within a dirt access track. (**Figure 6-45**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was high (90%) within the track and low (20%) on either side of the track with a GSV of 80% within the area of exposure. Identified disturbances include grazing.

Tomingley IF-28 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-44: Location of Tomingley IF-28.

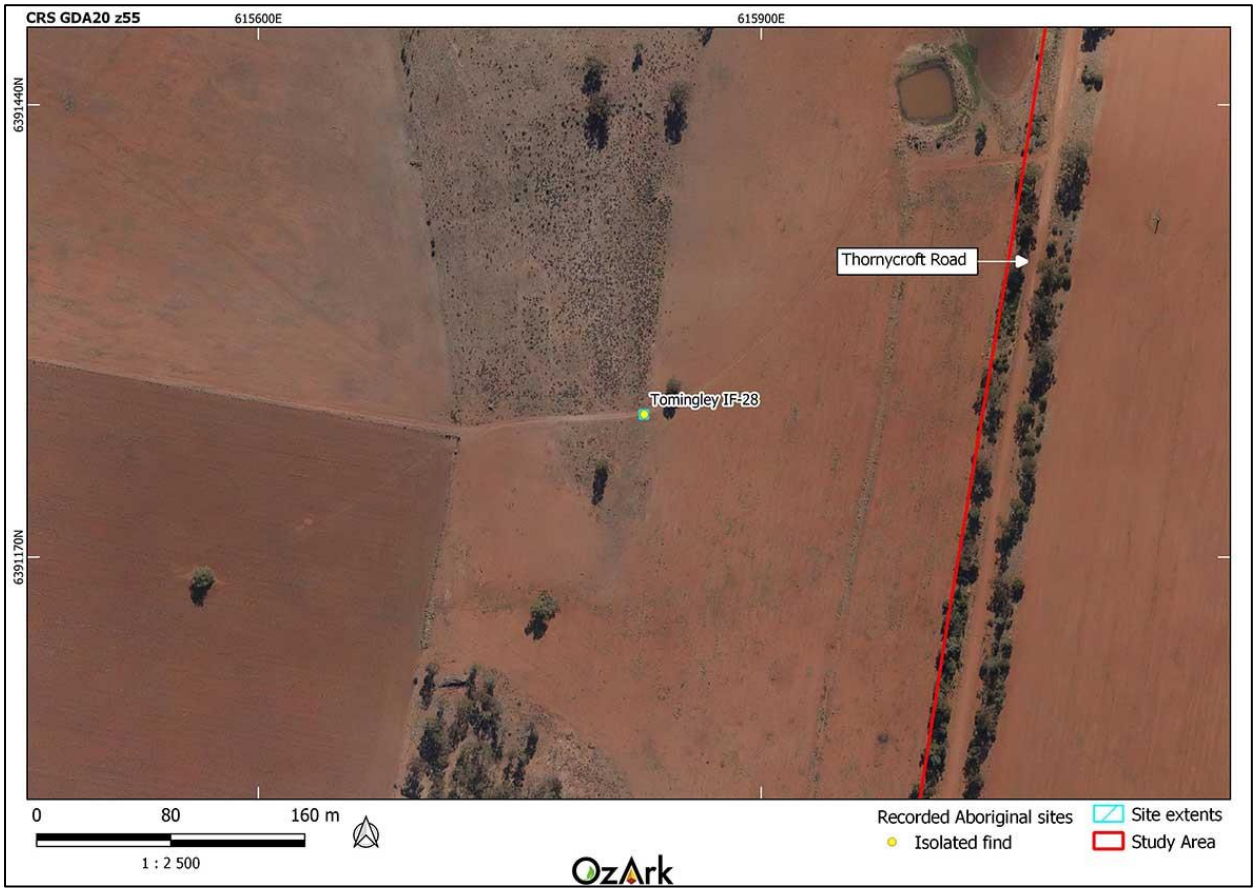
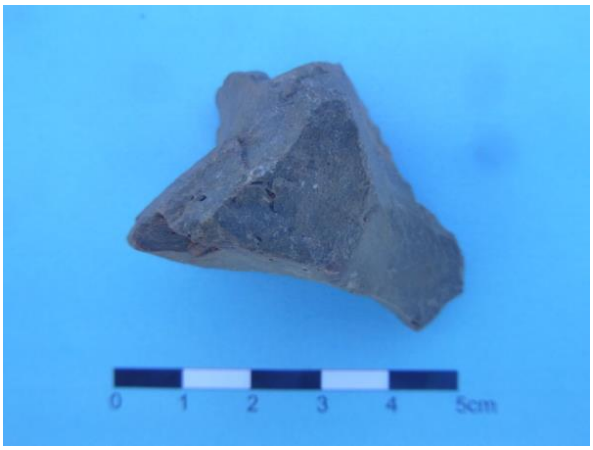


Figure 6-45: Tomingley IF-28. View of site and recorded artefact.

1. View west to the location of Tomingley IF-28 located within a ploughed paddock near gilgai.



2. Tomingley IF-28 artefact: a volcanic flake.

Tomingley IF-29

Site Type: Isolated find

GPS Coordinates: GDA Zone 55 612664E 6391109N

Location of Site: Tomingley IF-29 is located within the north-western portion of Lot 43 DP755093, approximately 5.1 km south of the village of Tomingley. The site is 1.1 km south of Mcniven Lane and 1.3 km west of the Newell Highway (**Figure 6-2** and **Figure 6-46**).

Description of Site: Tomingley IF-29 is a single volcanic side scraper located on a plain in an area surrounded by gilgai (**Figure 6-47**). The extent of the site is defined by a 5 m buffer around the artefact. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (30%) with a GSV of 80% within the area of exposure. Identified disturbances include grazing.

Tomingley IF-29 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-46: Location of Tomingley IF-29.

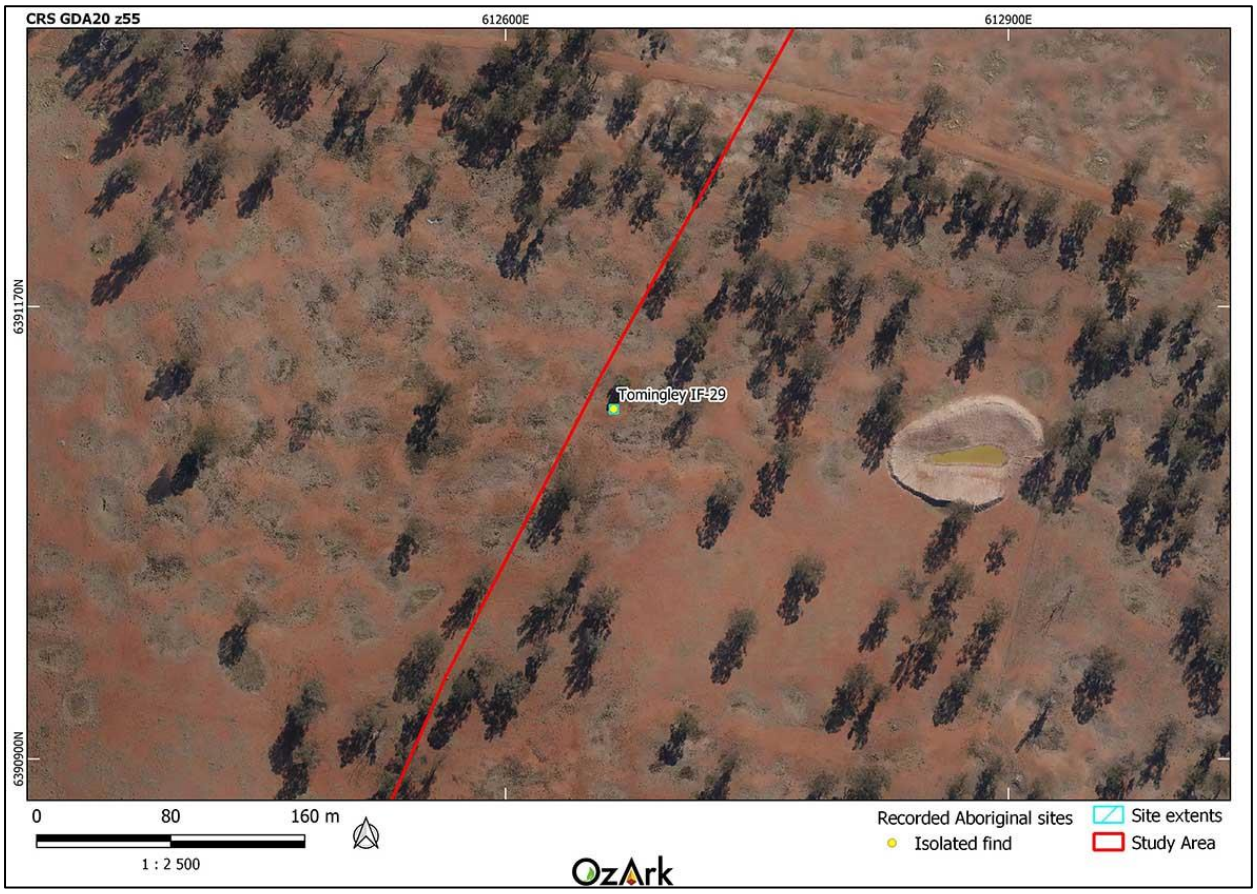


Figure 6-47: Tomingley IF-29. View of site and recorded artefact.

1. View west to the location of Tomingley IF-29 located within a cleared paddock near gilgai.

2. Tomingley IF-29 artefact: a volcanic side scraper.

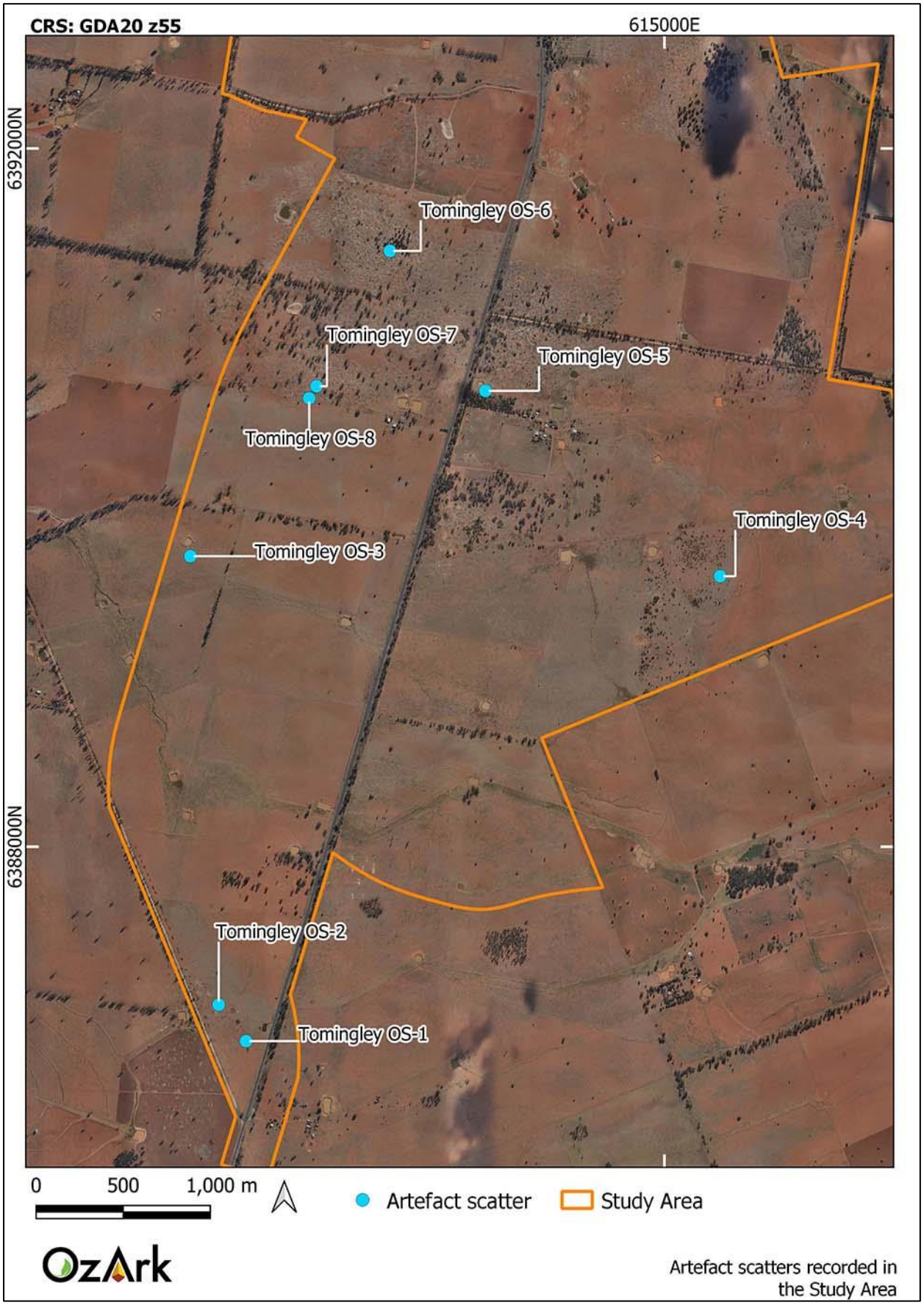
6.4.2 Artefact Scatters

Eight artefact scatters were recorded during the survey. These are listed in **Table 6-5** and shown on **Figure 6-49**. Full details of each artefact scatter follow.

Table 6-5: Artefact scatters recorded during the survey.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Site Extent	Number of artefacts
35-6-0287	Tomingley OS-1	612599	6386886	80 m x 45 m	17
35-6-0288	Tomingley OS-2	612443	6387095	11 m x 27 m	4
35-6-0289	Tomingley OS-3	612280	6389665	100 m x 32 m	4
35-6-0290	Tomingley OS-4	615319	6389550	60 m x 24 m	2
35-6-0291	Tomingley OS-5	613973	6390612	6 m x 4 m	2
35-6-0292	Tomingley OS-6	613425	6391413	7 m x 6 m	2
35-6-0293	Tomingley OS-7	613004	6390638	5 m x 5 m	2
35-6-0294	Tomingley OS-8	612962	6390569	5 m x 5 m	2

Figure 6-48: Overview of the location of all recorded artefact scatters within the Study Area.



Tomingley OS-1

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 612599E 6386886N

Location of Site: Tomingley OS-1 is located within the southern portion of Lot 168 DP755093, approximately 9.1 km south of the village of Tomingley. The site is at its closest, 200 m east of Back Tomingley West Road and 120 m west of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-1 consists of 17 artefacts located on a plain, to the east of areas of gilgai (**Figure 6-49** and **Figure 6-50**). Among the artefacts were 13 flakes, manufactured from volcanics and chert, one volcanic flaked piece, one chert side scraper, and a grindstone fragment (**Table 6-6**). The site extent measures 80 m (north–south) by 45 m (east–west). Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was moderate (50%) with a GSV of 70% within the area of exposure. Identified disturbances include grazing and ploughing.

Tomingley OS-1 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context from repeated ploughing.

Figure 6-49: Location of Tomingley OS-1.

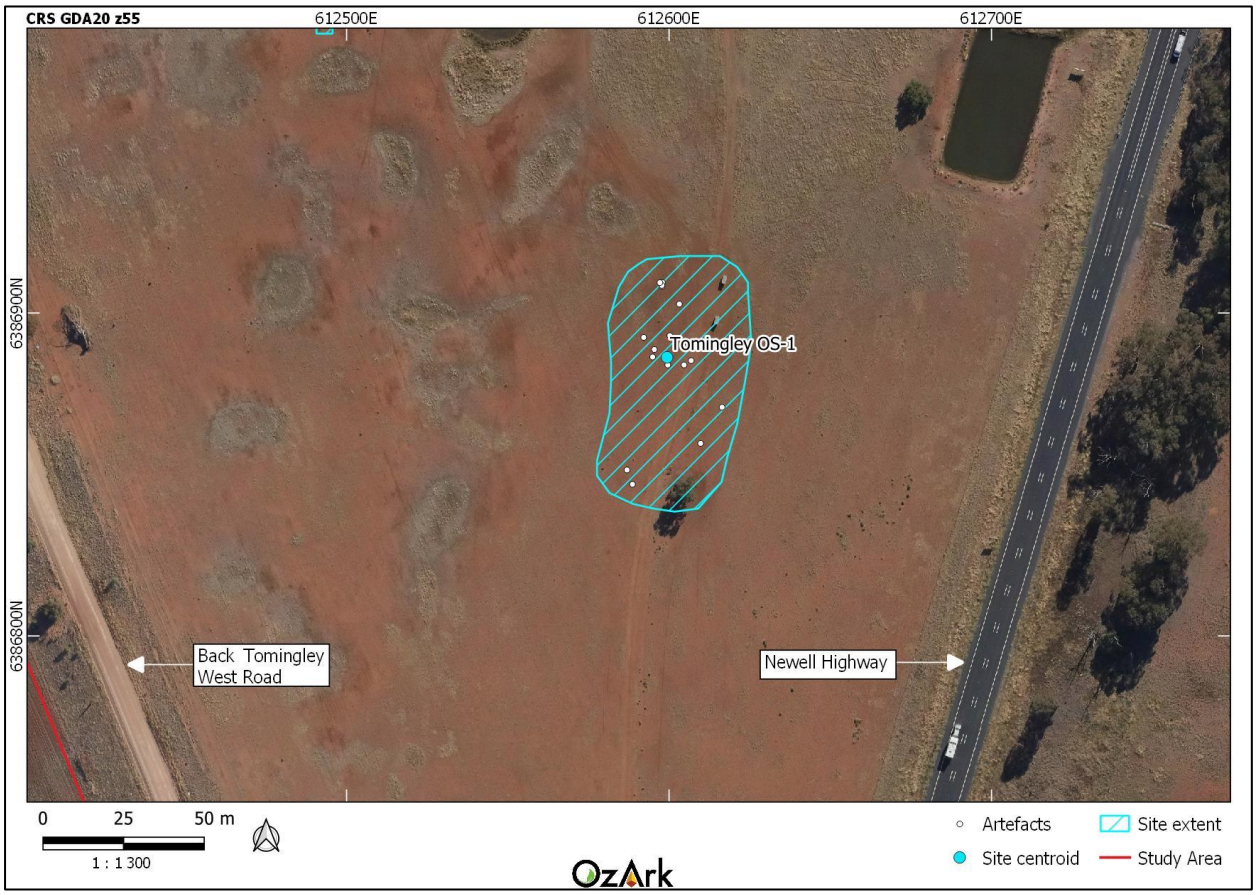


Figure 6-50: Tomingley OS-1. View of site and selection of recorded artefacts.

1. View south across the location of Tomingley OS-1 from the northern extent of the site.

2. View south across the location of Tomingley OS-1 from the central portion of the site.

3. Select volcanic and chert flakes.

4. A chert end scraper.

Table 6-6: Tomingley OS-1. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Volcanic	Longitudinal break	Tertiary	32x25x5
Flake	Chert	Complete	Tertiary	22x22x8
Blade	Quartzite	Complete	Secondary	85x15x8
Flake	Volcanic	Complete	Tertiary	23x32x15
Flake	Volcanic	Complete	Tertiary	34x28x4
Flake	Volcanic	Complete	Tertiary	52x50x12
Flake	Volcanic	Complete	Tertiary	30x65x8
Flake	Chert	Complete	Tertiary	20x22x8
End scraper	Chert	-	Secondary	72x70x18
Flake	Volcanic	Complete	Secondary	40x35x10
Flake	Volcanic	Proximal fragment	Tertiary	10x15x4
Flake	Volcanic	Distal fragment	Secondary	18x28x10
Flaked piece	Volcanic	-	Tertiary	32x22x11

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Volcanic	Complete	Secondary	42x22x8
Flake	Chert	Longitudinal break	Tertiary	20x28x7
Grindstone	Quartzite	Fragment	-	94x102x25
Flake	Volcanic	Complete	Tertiary	30x30x12

Tomingley OS-2

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 612442E 6387095N

Location of Site: Tomingley OS-2 is located within the southern portion of Lot 168 DP755093, approximately 9.1 km south of the village of Tomingley. The site is 145 m east of Back Tomingley West Road; 345 m directly west of the Newell Highway; and 220 m southwest of the former alignment of Bulldog Creek (**Figure 6-48**).

Description of Site: Tomingley OS-2 consists of four artefacts located on a plain in a ploughed paddock surrounded by gilgai (**Figure 6-51** and **Figure 6-52**). The recorded flakes are manufactured from quartz, volcanic and quartzite materials (**Table 6-7**). The site extent measures 11 m (north–south) by 27 m (east–west). Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low (<5%) with a GSV of 50%. Identified disturbances include grazing and ploughing.

Tomingley OS-2 is not considered to be associated with subsurface archaeological deposits.

Figure 6-51: Location of Tomingley OS-2.

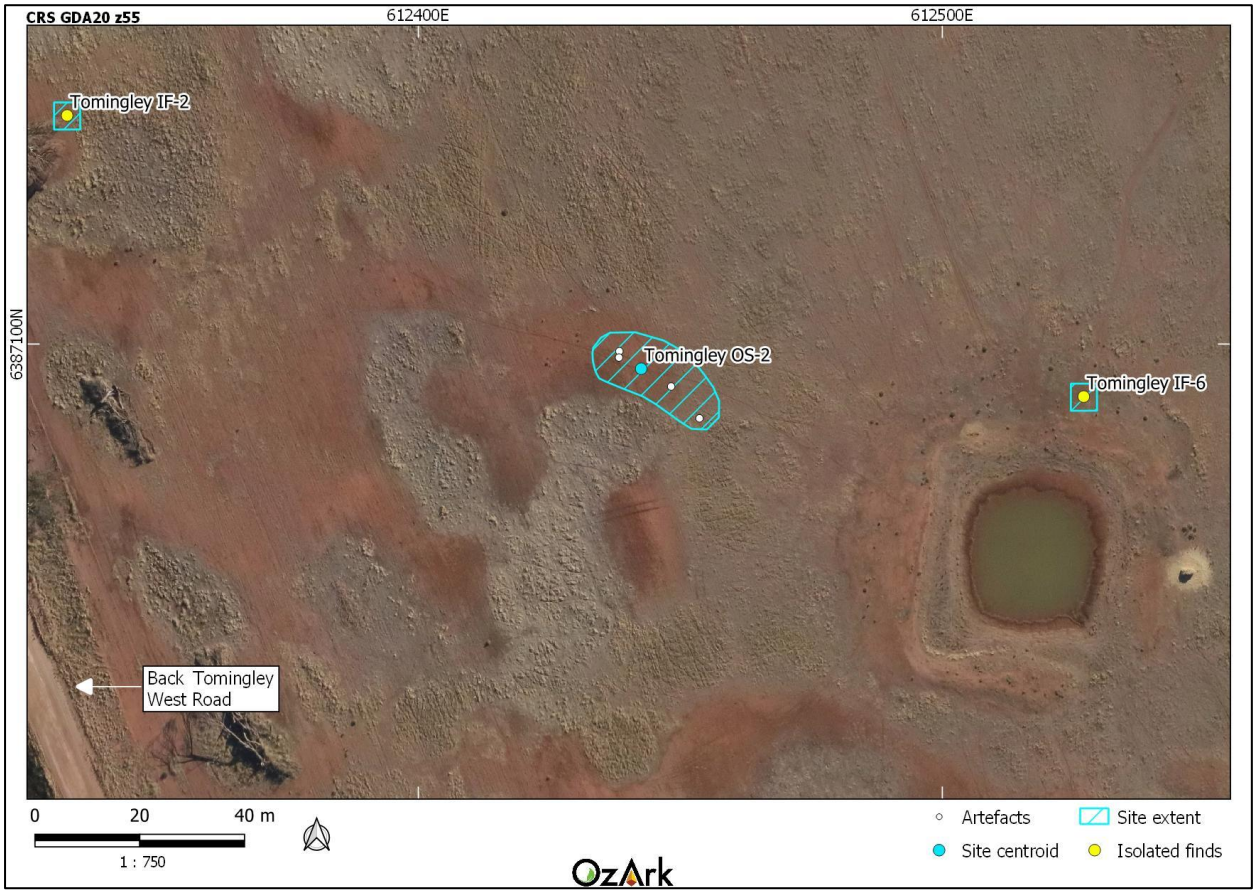


Figure 6-52: Tomingley OS-2. View of site and recorded artefacts.

	
1. View south to the location of Tomingley OS-2 adjacent to an area of gilgai.	2. A volcanic and a quartz flake.

	
3. A quartzite flake.	4. A volcanic flake.

Table 6-7: Tomingley OS-2. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Quartzite	Complete	Secondary	34x36x15
Flake	Quartz	Complete	Tertiary	22x25x6
Flake	Volcanic	Complete	Tertiary	25x20x8
Flake	Volcanic	Complete	Tertiary	25x34x7

Tomingley OS-3

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 612279E 6389664N

Location of Site: Tomingley OS-3 is located within the central portion of Lot 4 DP1213503, approximately 6.7 km south of the village of Tomingley. The site is 600 m east of Bulldog Creek, 1 km east of Back Tomingley Road and 1.2 km west of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-3 consists of four artefacts located on a plain in a ploughed paddock (**Figure 6-53** and **Figure 6-54**). The artefacts are manufactured from silcrete, chert, quartz, and volcanic materials (**Table 6-8**). The extent of the site is defined by a 100 m x 32 m buffer around the artefacts. Soils consist of light brown loam. The GSE at the time of recording was low (20%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley OS-3 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-53: Location of Tomingley OS-3.

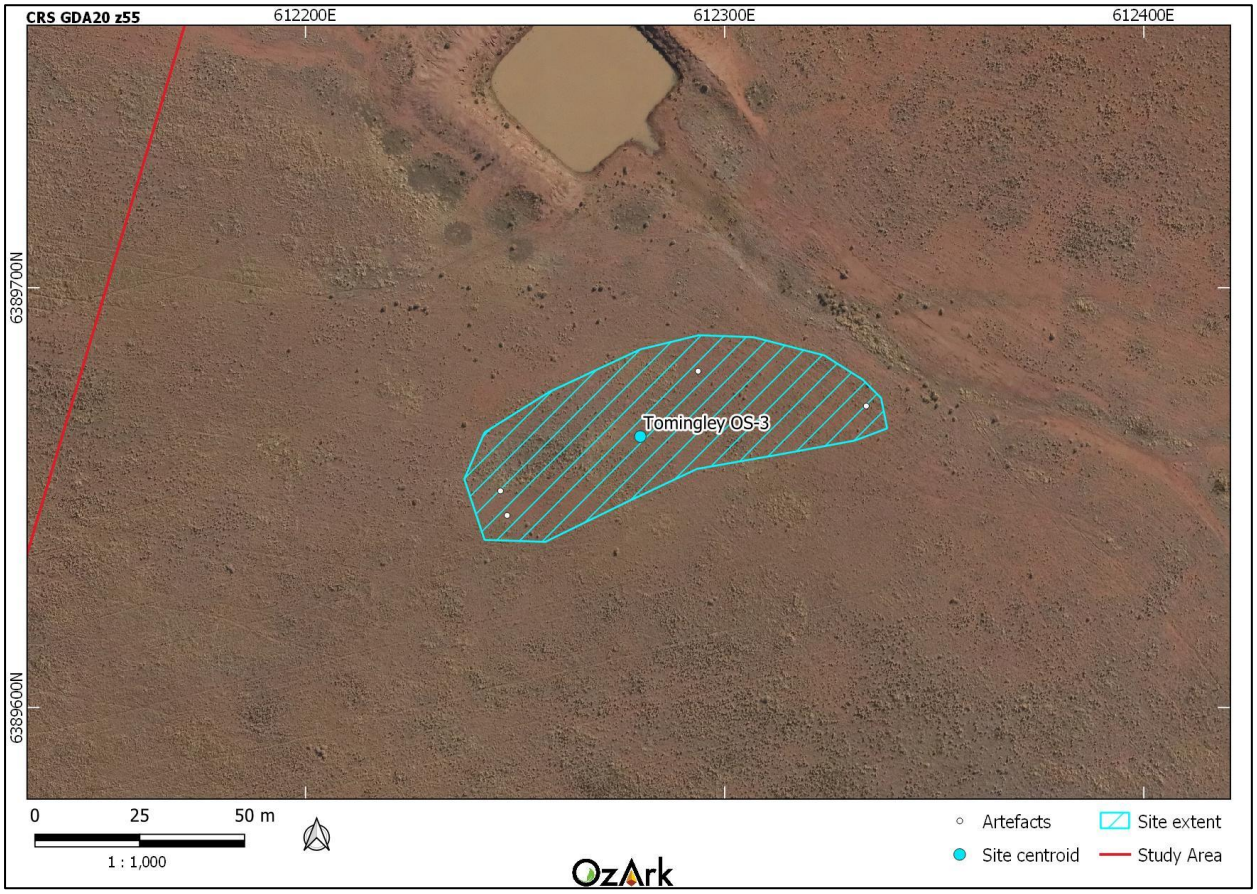


Figure 6-54: Tomingley OS-3. View of site and selection of recorded artefacts.

1. View south to the location of Tomingley OS-2 adjacent to an area of gilgai.

2. A chert and a quartz flake.

3. A ground-edge hatchet.

4. Side of view of the ground-edge.

Table 6-8: Tomingley OS-3. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Secondary	18x11x5
Flake	Chert	Complete	Secondary	20x10x8
Ground-edge hatchet	Volcanic	Broken	-	43x60x25
Shatter	Silcrete	-	Secondary	35x15x18

Tomingley OS-4

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 615319E 6389549N

Location of Site: Tomingley OS-4 is located within the southern portion of Lot 43 DP755093, approximately 6.4 km south of the village of Tomingley. The site is 1.2 km south of Kyalite Road and 1.7 km east of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-4 consists of two cores (one quartz and one silcrete) located on a gentle slope (**Figure 6-55** and **Figure 6-56**). The cores were manufactured from silcrete and quartz (**Table 6-9**). The extent of the site measures 24 m (north–south) by 60 m (east–west). Soils consist of light brown loam. The GSE at the time of recording was moderate to high (70%) with a GSV of 80%. Identified disturbances include the construction of a dam, grazing and ploughing.

Tomingley OS-4 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-55: Location of Tomingley OS-4.

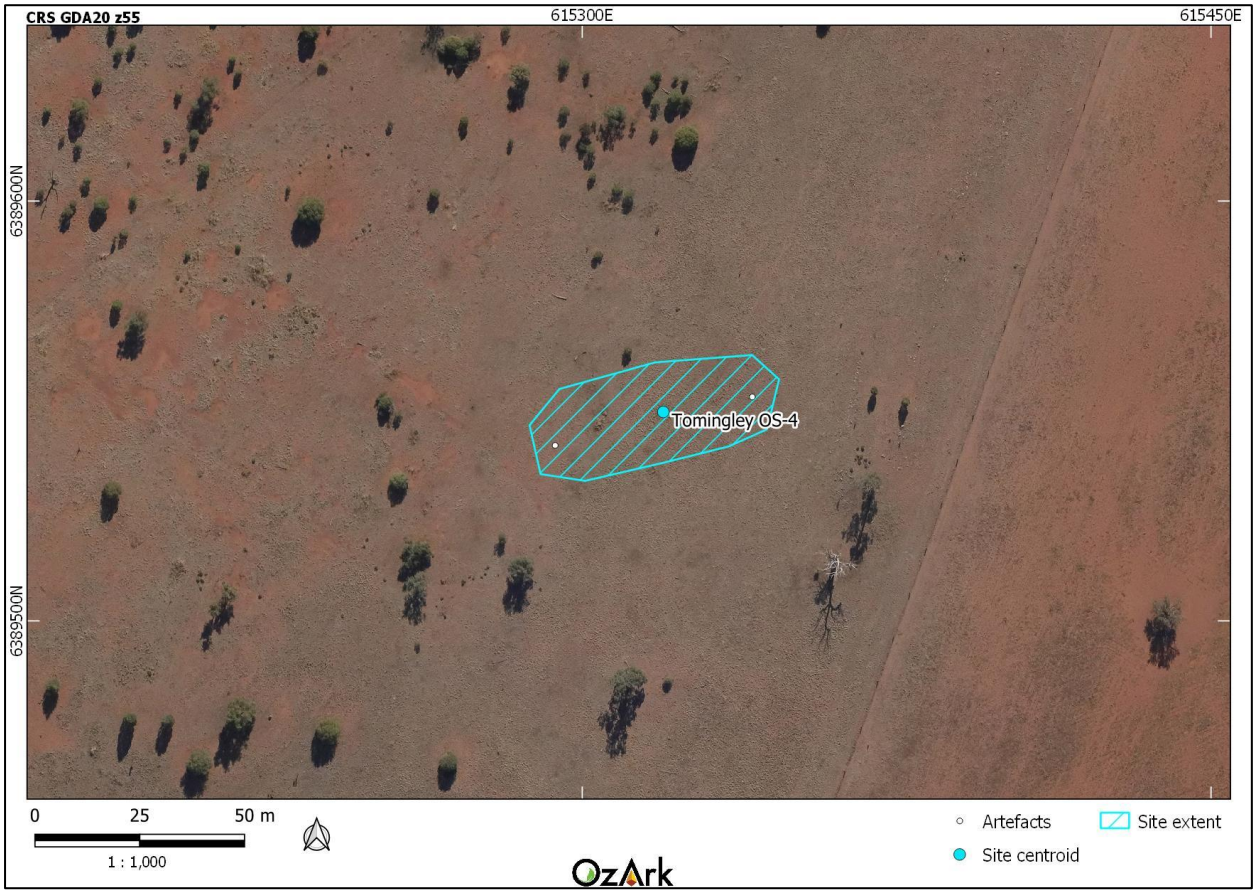


Figure 6-56: Tomingley OS-4. View of site and recorded artefacts.

1. View east to the location of Tomingley OS-4 on a gentle slope.

2. A quartz core.

3. A silcrete core.

Table 6-9: Tomingley OS-4. Artefact attributes.

Artefact type	Material	Maximum size (mm)	Additional notes
Core	Quartz	53 mm	Opportunistic; 1 flake scar; 60% cortex
Core	Silcrete	30 mm	Multi-directional; 7 flake scars; no cortex

Tomingley OS-5

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 613973E 6390612N

Location of Site: Tomingley OS-5 is located within the north-western portion of Lot 43 DP755093, approximately 5.3 km south of the village of Tomingley. The site is 435 m south of Kyalite Road and 125 m east of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-5 consists of two artefacts located to the southeast of a dam (**Figure 6-57** and **Figure 6-58**). The artefacts consist of two complete, silcrete flakes (**Table 6-10**). The extent of the site is defined by a 6 m x 4 m buffer around the artefacts. Soils consist of light brown loam. The GSE at the time of recording was low to moderate (30%) with a GSV of 70%. Identified disturbances include the construction of a dam, grazing and ploughing.

Tomingley OS-5 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-57: Location of Tomingley OS-5.

Figure 6-58: Tomingley OS-5. View of site and recorded artefacts.

1. View northwest to the location of Tomingley OS-5 showing a dam in the background.

2. Silcrete flakes.

Table 6-10: Tomingley OS-5. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Silcrete	Complete	Tertiary	28x30x5
Flake	Silcrete	Complete	Tertiary	29x20x10

Tomingley OS-6

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 613425E 6391413N

Location of Site: Tomingley OS-6 is located within the north-western portion of Lot 43 DP755093, approximately 4.6 km south of the village of Tomingley. The site is 900 m south of McNiven Lane and 640 m west of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-6 consists of two artefacts located on a plain in an area surrounded by gilgai (**Figure 6-59** and **Figure 6-60**). The artefacts include a mudstone end scraper and a flake manufactured from a volcanic material (**Table 6-11**). The extent of the site is defined by a 7 m by 6 m buffer around the artefacts. Soils consist of light brown loam with gravels on the surface. The GSE at the time of recording was low to moderate (30%) with a GSV of 80% within the area of exposure. Identified disturbances include grazing.

Tomingley OS-6 is not considered to be associated with subsurface archaeological deposits as it is likely located within a secondary context.

Figure 6-59: Location of Tomingley OS-6.

Figure 6-60: Tomingley OS-6. View of site and recorded artefacts.

1. View north to the location of Tomingley OS-6.

2. A mudstone end scraper and a volcanic flake.

Table 6-11: Tomingley OS-6. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
End scraper	Mudstone	Complete	Tertiary	32x35x18
Flake	Volcanic	Complete	Tertiary	42x40x12

Tomingley OS-7

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 613004E 6390638N

Location of Site: Tomingley OS-7 is located within the southern portion of Lot 5 DP1213503, approximately 5.5 km south of the village of Tomingley. The site is 2 km east of Back Tomingley Road and 800 m west of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-7 consists of two artefacts located on a located on a plain in a cleared paddock with gilgai (**Figure 6-61** and **Figure 6-62**). The artefacts include flakes are manufactured from quartz (**Table 6-12**). The extent of the site is defined by a 5 m x 5 m buffer around the artefacts. Soils consist of light brown loam. The GSE at the time of recording was low (20%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley OS-7 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-61: Location of Tomingley OS-7 and OS-8.

Figure 6-62: Tomingley OS-7. View of site and recorded artefacts.

1. View west to the location of Tomingley OS-7 surrounded by gilgai.

2. Quartz flakes.

Table 6-12: Tomingley OS-7. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Tertiary	21x17x7
Flake	Quartz	Complete	Tertiary	18x13x3

Tomingley OS-8

Site Type: Artefact scatter

GPS Coordinates: Site centroid - GDA Zone 55 612958E 6390569N

Location of Site: Tomingley OS-8 is located within the southern portion of Lot 5 DP1213503, approximately 5.5 km south of the village of Tomingley. The site is 2.1 km east of Back Tomingley Road and 800 m west of the Newell Highway (**Figure 6-48**).

Description of Site: Tomingley OS-8 consists of two artefacts located on a located on a plain in a cleared paddock (**Figure 6-61** and **Figure 6-63**). The artefacts are manufactured from quartz and chert (**Table 6-13**). The extent of the site is defined by a 5 m x 5 m buffer around the artefacts. Soils consist of light brown loam. The GSE at the time of recording was low (20%) with a GSV of 60%. Identified disturbances include vegetation clearance, grazing and ploughing.

Tomingley OS-8 is not considered to be associated with subsurface archaeological deposits as it is located within a secondary context.

Figure 6-63: Tomingley OS-8. View of site and recorded artefacts.

1. View northeast to the location of Tomingley OS-8 on the edge of an area of gilgai.

2. A chert and a quartz flake.

Table 6-13: Tomingley OS-8. Artefact attributes.

Artefact type	Material	Integrity	Reduction	Size (LxWxD) mm
Flake	Quartz	Complete	Tertiary	15x10x2
Blade	Chert	Distal fragment	Secondary	14x11x2

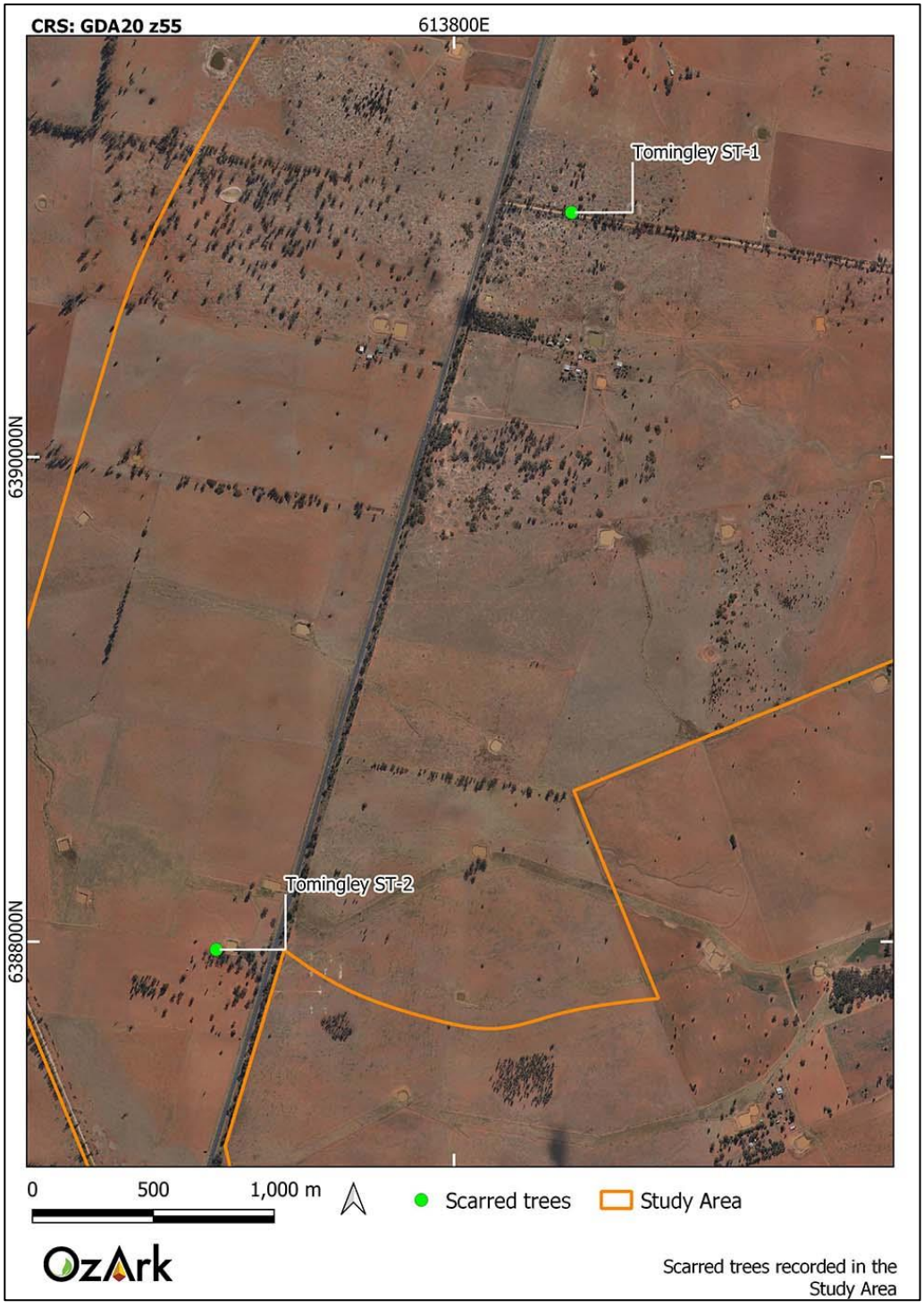
6.4.3 Scarred Trees

Two scarred trees were recorded during the survey. These are listed in **Table 6-14** and shown on **Figure 6-64**. Full details of the scarred trees follow.

Table 6-14: Scarred trees recorded during the survey.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing
35-6-0296	Tomingley ST-1	614286	6391009
35-6-0295	Tomingley ST-2	612816	6387967

Figure 6-64: Overview of the location of all recorded scarred trees within the Study Area.



Tomingley ST-1

Site Type: Scarred Tree

GPS Coordinates: 614286E 6391009N

Location of Site: Tomingley ST-1 is located within the northern corridor of Kyalite Road, 315 m east of the intersection of Kyalite Road and the Newell Highway and approximately 4.5 km south of the village of Tomingley (**Figure 6-64**).

Description of Site: Tomingley ST-1 scar tree located on a plain in an area surrounded by gilgai (**Figure 6-65**). Tomingley ST-1 comprises one elongated scar on a live tree with an epicormic shoot at the base (Table 6-15).

Figure 6-65: Tomingley ST-1. View of the scarred tree.

1. View west to Tomingley ST-1, located within the northern corridor of Kyalite Road.

2. Close up detail of scar and epicormic shoot.

Table 6-15: Tomingley ST-1 attributes.

Type of tree	Box
Condition of tree (good, fair, dead)	Good
Circumference (m)	350
Scar Length (cm)	125
Scar Width (cm)	25
Scar Depth (cm)	30
Overgrowth (cm)	40
Scar shape (Elongated, oval, irregular)	Elongated
Orientation (direction of scar is facing)	South
Condition of scar (good, fair, poor)	Good
Associated with artefacts/PAD	No

Tomingley ST-2

Site Type: Scarred Tree

GPS Coordinates: 612816E 6387967N

Location of Site: Tomingley ST-2 is located within the northern portion of Lot 168 DP755093, approximately 8 km south of the village of Tomingley. The site is 230 m west of the Newell Highway; 835 m east of Back Tomingley West Road; and 570 m east of Bulldog Creek (**Figure 6-64**).

Description of Site: Tomingley ST-2 is a scarred tree located in a patch of remnant vegetation (**Figure 6-66**). Tomingley ST-2 comprises one elongated scar on a live tree (**Table 6-16**).

Figure 6-66: Tomingley ST-2. View of the scarred tree.

1. View north to Tomingley ST-2.

2. Close up detail of the scar.

Table 6-16: Tomingley ST-2 attributes.

Type of tree	Box
Condition of tree (good, fair, dead)	Good
Circumference (cm)	400
Scar Length (cm)	85
Scar Width (cm)	20
Scar Depth (cm)	10
Overgrowth (cm)	20
Scar shape (Elongated, oval, irregular)	Elongated
Orientation (direction of scar is facing)	South
Condition of scar (good, fair, poor)	Good
Associated with artefacts/PAD	No

6.5 PREVIOUSLY RECORDED ABORIGINAL SITES LOCATED

Three previously recorded sites were located during the survey (**Section 5.4**). The coordinates for these sites are provided in **Table 6-17**.

The location of scarred trees 35-6-0184 and 35-6-0185 were ground-truthed and confirmed the coordinates of the sites provided by AHIMS are correct (**Figure 6-67** and **Figure 6-68**).

Scarred tree 35-6-0142 was located approximately 75 m northeast of the coordinates provided by AHIMS[5] (**Figure 6-69** and **Figure 6-70**). The coordinated provided for the site in **Table 6-17** include the ground-truthed coordinates.

Table 6-17: Previously recorded Aboriginal cultural heritage sites.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Feature(s)
35-6-0142	NHT-ST4	614463	6392981	Scarred tree
35-6-0184	TGP-ST8	614553	6393485	Scarred tree
35-6-0185	TGP-ST9	614551	6393461	Scarred tree

Figure 6-67: View of the scarred tree 35-6-0184.

1. View north to TGP-ST8.

2. Close up detail of the scar.

[5] OzArk has submitted an updated site card to correct the coordinates of the site on AHIMS.

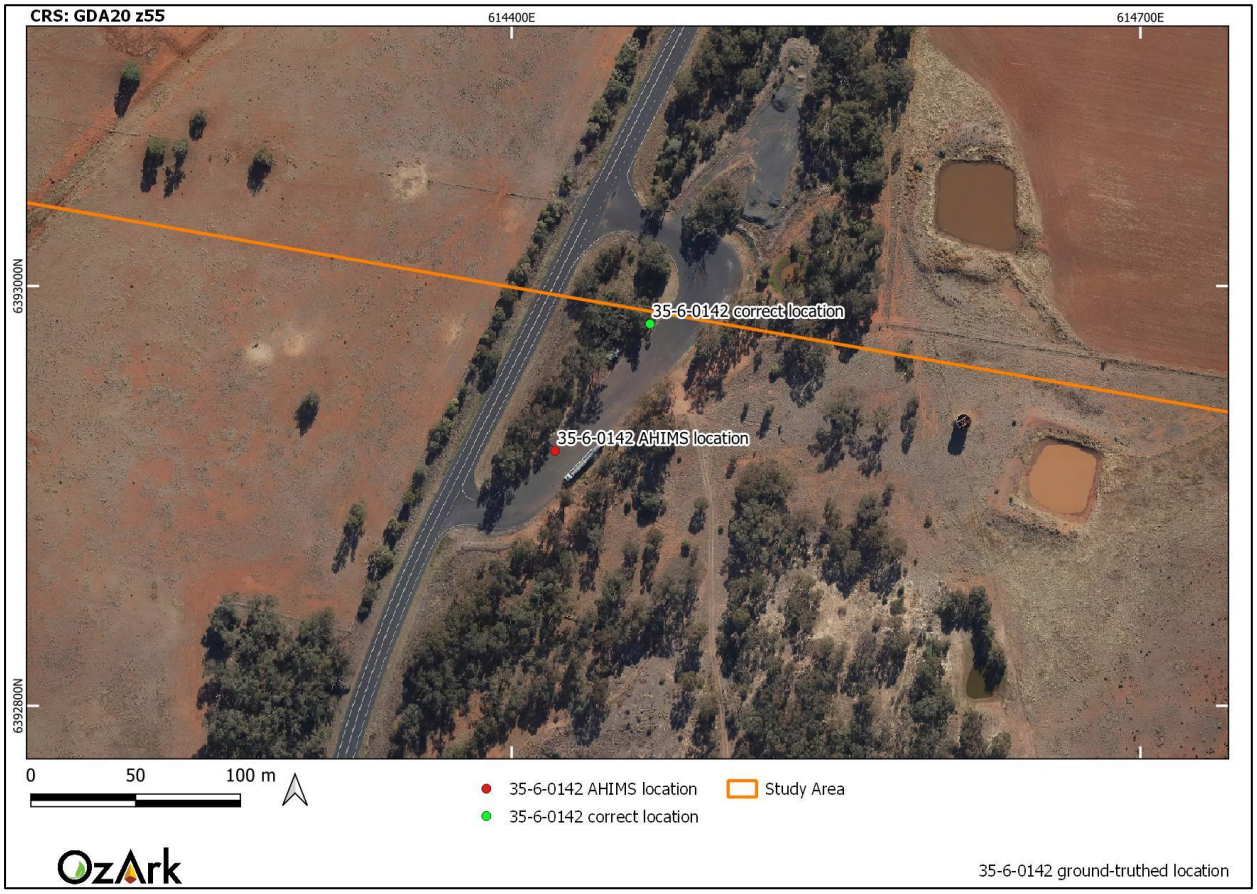
Figure 6-68: View of the scarred tree 35-6-0185.

	
1. View north to TGP-ST9.	2. Close up detail of the scar.

Figure 6-69: View of the scarred tree 35-6-0142.

	
1. View north to NHT-ST4.	2. Close up detail of the scar.

Figure 6-70: AHIMS location of 35-6-0142 and the ground-truthed location.



6.6 DISCUSSION

6.6.1 Summary Of Survey Results

Thirty-nine previously unidentified Aboriginal cultural heritage sites were recorded (**Section 6.4**), including:

- Two scarred trees; and
- 37 artefact sites, consisting of:
  - eight artefact scatters; and
  - 29 isolated finds.

In total, 64 stone artefacts were recorded across the 37 artefact sites identified during the survey. The predominate materials for stone artefacts were as follows.

- Volcanic (n=24; 37.5%).
- Quartz (n=14; 21.9%).
- Quartzite (n=10; 15.6%).
- Chert (n=9; 14.1%).

- Silcrete (n=5; 7.8%).
- Mudstone (n=2; 3.1%).

Unmodified flakes (n=48) were the dominant artefact type comprising 75% of the artefact assemblage. Other artefact types included:

- Four cores.
- Four scrapers (three side scrapers and one end scraper).
- Two grindstone fragments.
- Two ground edge hatchets.
- Two blades.
- One flaked piece.
- One piece of shatter.

Thirty-seven sites were identified in flat landforms and two were identified on low hills. Two sites, both isolated finds, were identified within a Drainage 2 buffer.

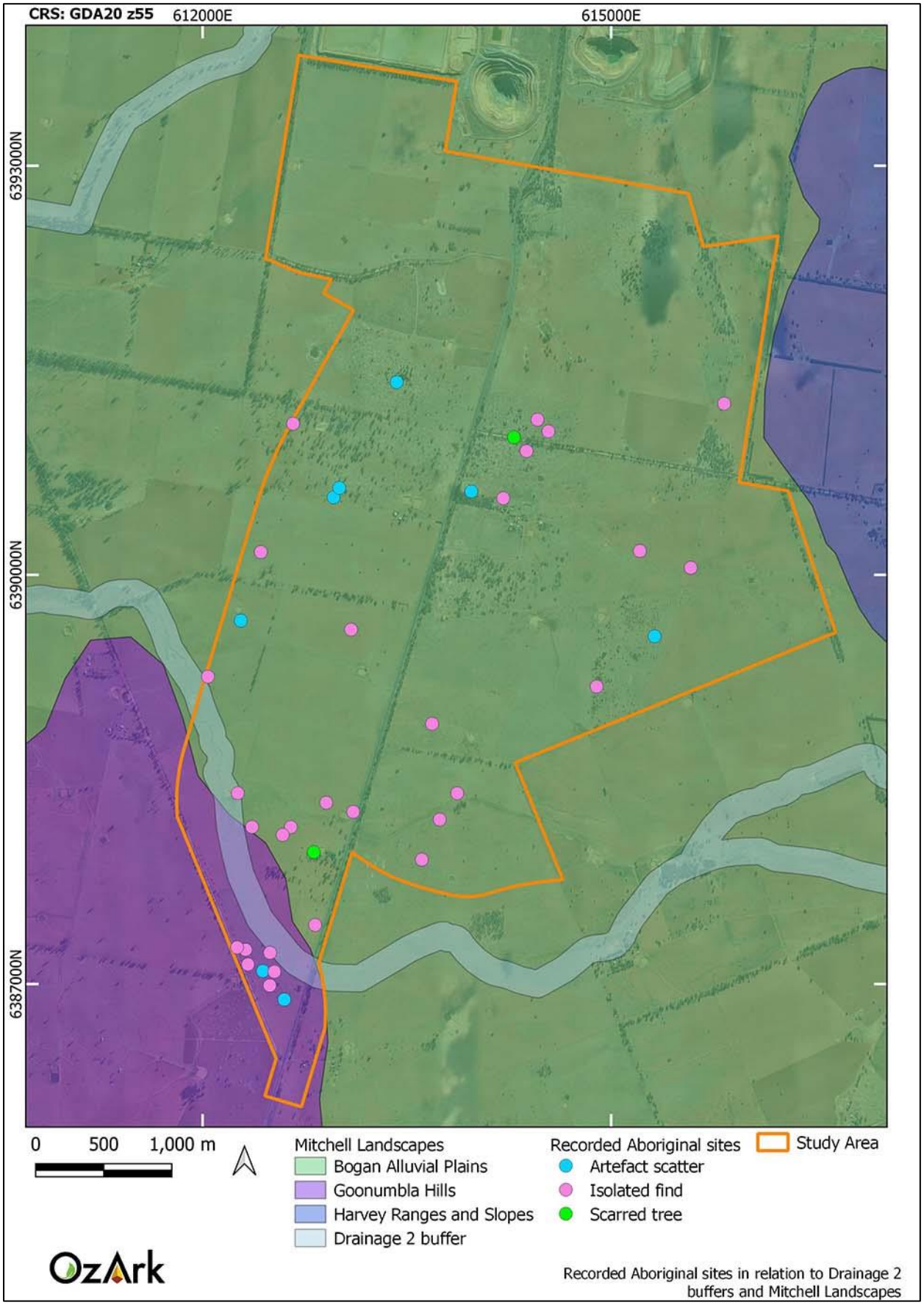
6.6.2 Discussion

The predictions based on landform modelling for the Study Area (**Section 5.6.3**) concluded that stone artefact sites (isolated finds and low-density artefact scatters) and scarred trees were the most likely site types to be identified. The results of the current study conform closely to the predictive model with two scarred trees, eight artefact scatters and 29 isolated finds being recorded (**Section 6.4**). The sites recorded during the survey, such as isolated finds and low-density artefact scatters, are representative of sites in the region that are in similar landforms. In terms of site size, artefact density, raw materials, and artefact types, the results of the survey are consistent with the archaeological context summarised in **Section 5.5**. The location of the scarred trees was consistent with the findings of Kelton (1996) and OzArk (2011), with the sites being recorded in landforms distant from semi or permanent water sources.

Based on the findings of OzArk (2016), sites were considered most likely to be recorded within the Drainage 2 buffer associated with Bulldog Creek in the south of the Study Area (**Section 5.6.1.2**). However only two of the 39 recorded sites were identified within Drainage 2 buffer (**Figure 6-71**). In terms of the landscape types defined by Mitchell (2002), a higher number of sites were predicted to be identified within the Slopes landscapes compared to Alluvial Plains landscapes. However, only eight sites were recorded within the Slopes landscapes while the remaining 31 sites were identified within Alluvial Plains landscapes. This result is likely attributed to only five per cent of the Study Area being located within the Slopes landscape type. Based on the Scarred trees were predicted more likely to occur within Slopes landscapes (Goonumbla Hills) as opposed to the Alluvial Plains (Bogan Alluvial Plains), however, Tomingley ST-1 and ST-2

were both recorded within Slopes landscapes (**Figure 6-71**). These discrepancies do not invalidate the predictive model set out in OzArk 2016; however, it is likely more accurate at a regional level, rather than for any specific study area. In the case of the Study Area, the likelihood that artefacts have been dispersed from their primary depositional context makes it difficult to place too much weight on the artefact distribution recorded during the survey.

Figure 6-71: Recorded sites in relation to the Drainage 2 buffer and Mitchell landscapes.



The high number of isolated finds identified is as predicted given the moderate to high levels of exposure and GSV across the Study Area that would generally otherwise obscure such artefacts. These isolated artefacts, in conjunction with the low-density artefact scatters recorded, highlight that the limited resources of the Study Area would likely have supported only sporadic visits in the past. As described in the regional and local archaeological contexts and the predictive model for site location, watercourses formed an important focus for traditional Aboriginal activities. The use of the Study Area on a sporadic basis is thought likely to be the result of a combination of the following factors:

- The Study Area is situated on flat terrain distant from permanent water, with only ephemeral waterways and seasonal areas of gilgai within and in close proximity
- Uniformity of vegetation, landforms, and geological resources; there are no distinct or 'special' resources available compared to the much wider landscape.

The results of the field survey conclude that the general site integrity is low for the recorded isolated finds and artefact scatters. The determination that none of the recorded sites are associated with PAD was based on the observation that all recorded sites are in secondary contexts having been moved by the repeated, extensive ploughing undertaken across the Study Area and other disturbances including the construction of dams, access tracks, and construction of fences. Further, the Study Area holds little potential for the existence of any undetected Aboriginal sites due to the nature of the landforms present, the distance from permanent or semi-permanent water sources, and the high levels of past disturbance.

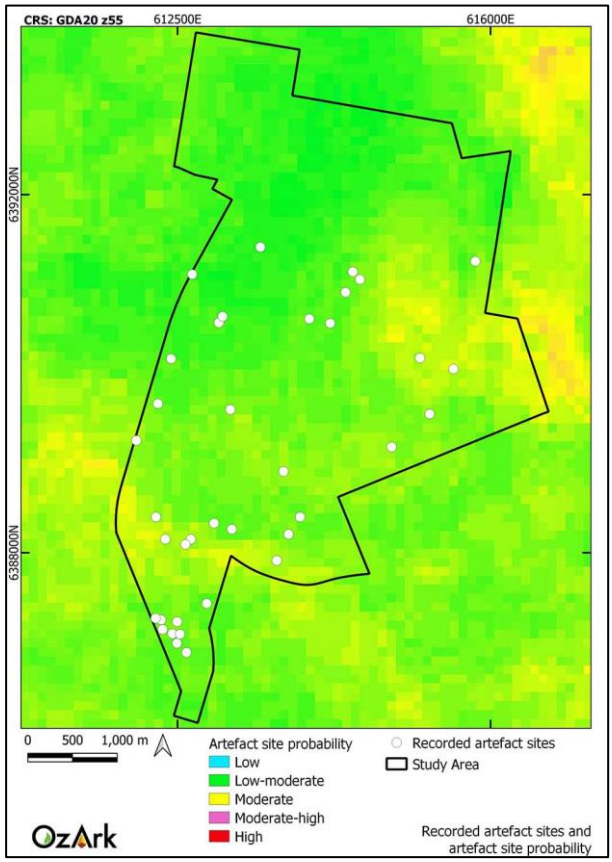
6.6.2.1 Research questions

- What resources were available to the Aboriginal people within the Study Area (food, stone and water)? And what resources were transported into the Study Area?
    - No suitable outcropping rock materials were identified within the Study Area. Therefore, the implication is that all the raw materials used for tool manufacture was transported into the area. No specific food resource locations were noted, and water resources were limited to Bulldog Creek and areas of gilgai.
- What tasks were Aboriginal people undertaking at the sites?
    - Due to the identification of isolated finds, low-density artefact scatters, and two scarred trees, use of the Study Area was most likely limited to more transient habitation as opposed to long-term, repeated occupation. The identification of cores within the Study Area indicates knapping was being undertaken. However, the low incidence of flakes across the Study Area indicates that this activity was not being undertaking on a regular basis. Given the high level of disturbance at the Study Area, it is probable that artefacts have been dispersed across the landscape through repeated ploughing (note that ploughing can move artefacts in excess of 8 m per season of cultivation [Frink 1984; Gaynor 2001]). Therefore little can be read into the artefact distribution recorded during the survey as all artefacts could have been dispersed from three or four small artefact scatters

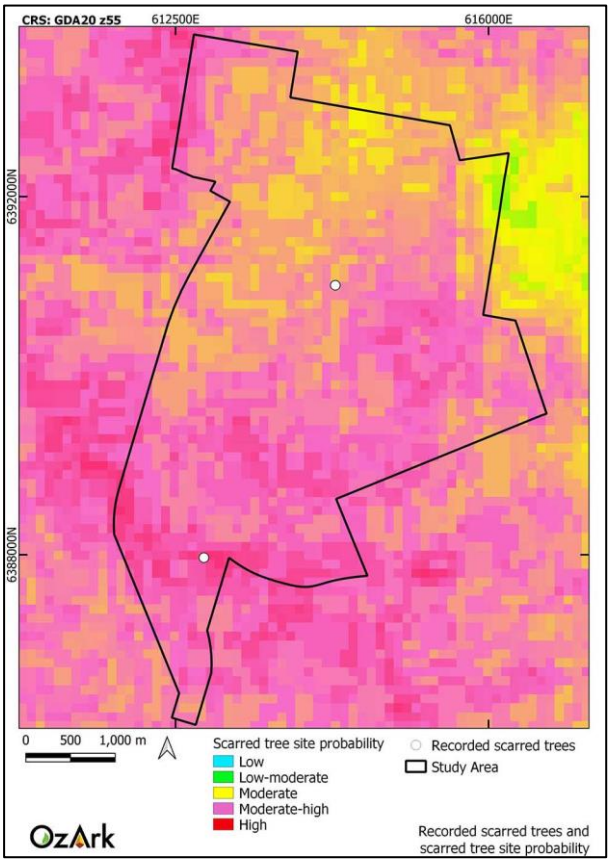
rather than being randomly deposited across the landscape as the results recorded.

- Are there hearths in the area? And if so, do they contain remains (animal/plant) that may indicate what people were cooking/eating? Can dates be obtained from hearths for the Aboriginal use of the area?
    - No hearths were identified during the survey. Further little evidence was recorded that would indicate a date for Aboriginal use of the Study Area as few diagnostic tools were recorded. In very general terms, the lack of backed blades and the recording of ground edge hatchets suggest that the assemblage probably dates to the last two thousand years as is it is in this period in southeast Australia that backed blade production declines and the use of ground edge technology increases (Hiscock 2008).
- Are there burials in the area?
    - There was no indication of there being burials in the Study Area. Generally, the landscape has been farmed for a long period and this may have removed or dispersed any evidence of burials over time had they existed.
- Do the survey results correlate with the ASDST models shown in **Figure 5-3** and the predictive model set out in **Section 5.6.3**?
    - In **Section 5.6.1.1** the ASDST models were used to develop a predictive model for site location. When the recorded sites are plotted against these models, the veracity of the models can be demonstrated. An examination of **Figure 6-72** allows the following observations to be made:
        - The ASDST model predicting the likelihood of an area recording a scarred tree is accurate with Tomingley ST-1 and ST-2 being recorded in landforms shown as having moderate to high potential for this site type
        - The ASDST model predicting the likelihood of an area recording an artefact site is slightly less accurate when the sites recorded during the assessment are plotted against the model. Most artefact sites are located within areas shown as having low to moderate potential, compared to the moderate potential areas
        - The ASDST model showing accumulative impact shows that sites are recorded where impacts are generally lower. However, the significance of this result is unclear as most of the Study Area is within landforms with low accumulative impacts according to the ASDST model.
    - As has been noted, the results generally agree with the predictive modelling in terms of the site types recorded and the raw materials used for artefacts but do not agree with the predictive model in terms of sites being associated with waterways or certain landscape types. It is likely that the agricultural disturbances within the Study Area have made site distribution pattering difficult to rely on as it is likely that the archaeological evidence has been dispersed through repeated ploughing.

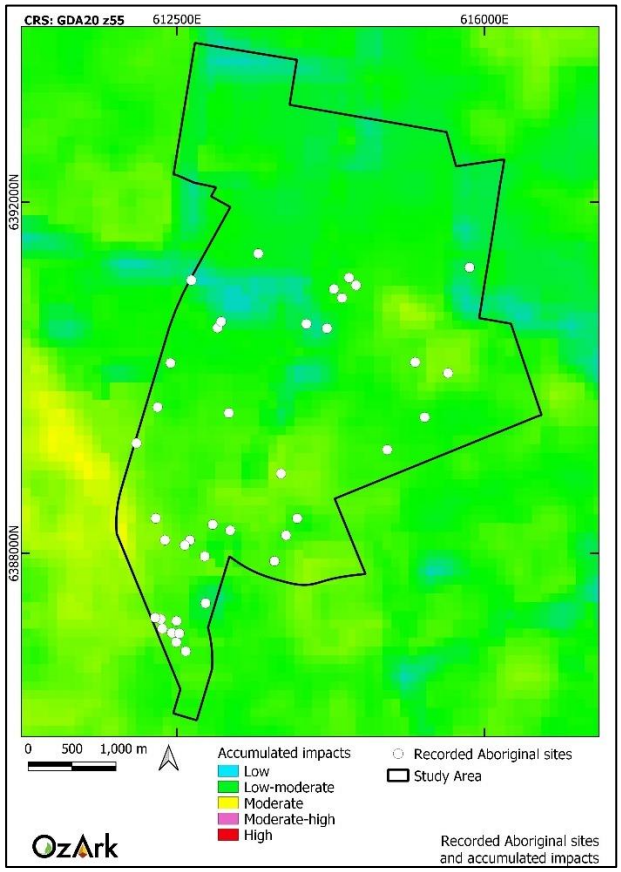
Figure 6-72: Recorded sites in relation to ASDST models.



1. Recorded artefacts sites and the ASDST model of artefact site probability.



2. Recorded scarred tree site location and the ASDST model of scarred tree site probability.



3. Recorded sites and the ASDST model of accumulated impacts.

7 SIGNIFICANCE AND IMPACT ASSESSMENT

7.1 IDENTIFYING CULTURAL SIGNIFICANCE

The concept of cultural significance is used in Australian heritage practice and legislation to encompass all the cultural values and meanings that might be recognised in a place. The *Burra Charter*'s definition of cultural significance is broad and encompasses places that are significant to Indigenous cultures (Burra Charter 2013).

The *Burra Charter* definition of 'place' is also broad and encompasses Indigenous places of cultural significance. '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). In fact, one place may be all these things or may embody all of these values at the same time.

In some cases, the find-spot of a single artefact may constitute a 'place'. Equally, a suite of related locations may together comprise a single 'place', such as the many individual elements that make up a Songline. These more complex places are sometimes called a cultural landscape or cultural route.

The Guide (OEH 2011: 8–9) notes that cultural significance is comprised of an assessment of social values, scientific values, aesthetic values, and historic values. These values are described as:

Social or cultural value

Social or cultural value refers to the spiritual, traditional, historical, or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them.

Places of social or cultural value have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods, or events. Communities can experience a sense of loss should a place of social or cultural value be damaged or destroyed.

There is not always consensus about a place's social or cultural value. Because people experience places and events differently, expressions of social or cultural value do vary and, in some instances, will be in direct conflict. When identifying values, it is not necessary to agree with or acknowledge the validity of each other's values, but it is necessary to document the range of values identified.

Social or cultural value can only be identified through consultation with Aboriginal people. This could involve a range of methodologies, such as cultural mapping, oral histories, archival documentation, and specific information provided by Aboriginal people specifically for the investigation.

Scientific (archaeological) value

This refers to the importance of a landscape, area, place or object because of its rarity, representativeness, and the extent to which it may contribute to further understanding and information (Burra Charter 2013).

Information about scientific values will be gathered through any archaeological investigation undertaken. Archaeological investigations must be carried out according to Heritage NSW's Code of Practice (DECCW 2010).

Often scientific values are informed by social values that allow a contemporary understanding of the archaeological data to be understood.

Aesthetic value

This refers to the sensory, scenic, architectural, and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Burra Charter 2013).

Historic value

Historic value refers to the associations of a place with a historically important person, event, phase, or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.

7.1.1 Assessed Significance of the Recorded Sites

Table 7-2 presents a summary of the significance assessment of Aboriginal cultural heritage sites recorded during this assessment. Further details of each of the assessment criteria are provided below.

7.1.1.1 Social or Cultural Value

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

Previously recorded sites, NHT-ST4, TGP-ST8 and TGP-ST8 have been assessed as having high cultural values following consultation with the local Aboriginal community as part of their respective projects (OzArk 2003 and 2011).

A copy of the draft ACHAR was sent to all RAPs for review on 25 August 2021 (**Section 3.1.3**). No feedback was received relating to the social or cultural value of the newly recorded site or the broader study area. As such, for the purposes of assessing the potential impact to Aboriginal cultural heritage, the recorded sites have been accorded high social and cultural values.

7.1.1.2 Archaeological/Scientific Value

In terms of scientific significance, locations will primarily be assessed on their ability to add reliable archaeological information which can further our understanding of the archaeology at a local and regional level or a site type's rarity within the landscape. This assessment has been informed through surface observations/survey and review of previous site-specific reports.

Considerations taken in this scientific assessment include an understanding that a part of the archaeological value of a place is the general community's association to that place. This is often distinct from the social, aesthetic, and historical criteria used to assess heritage significance as it relates to a person's relationship to the archaeology of the place. For the Aboriginal participants on the survey, for example, an archaeological site was appreciated as much for its archaeological values as it was for its cultural values. A site displaying either many artefacts or several interesting artefacts would engender fascination and discussion on purely archaeological grounds (Where did people live / eat? How did they live? How did they use the artefact and what does it tell us about the people who made it?).

It is therefore understood that many Aboriginal people, or people generally interested in prehistory, would see the sites recorded in this assessment to have higher archaeological values than may be given in this assessment. However, this assessment has attempted to distinguish between an artefact scatter with potential to yield further information (moderate–high scientific significance) and an artefact scatter in a dispersed/disturbed context that would yield little meaningful further information (low scientific significance).

When assessing scientific significance, this assessment will incorporate research on the rarity, representativeness, and integrity or condition of a site, along with the considerations outlined above.

<u>Previous assessments for scientific significance</u>

NHT-ST4 was assessed as having low-moderate scientific value by OzArk (2003) as scarred trees are a relatively frequent site type in the region and there is a high level of land clearance surrounding the site.

Previously recorded scarred trees TGP-ST8 and TGP-ST9 were assessed as having moderate scientific values by (OzArk 2011) given the high frequency of this site type in the local area and region combined with their overall low potential as a site type to increase understanding of the area's prehistory are factors thought to lower the significance of scarred trees in the area.

Scientific assessment of newly recorded sites

The archaeological or scientific significance assessment of the 39 sites recorded during the survey are evaluated and summarised in **Table 7-1**.

Table 7-1: The archaeological or scientific significance of sites.

AHIMS ID	Site name	Site type	Scientific significance	Justification
35-6-0259	Tomingley IF-1	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0258	Tomingley IF-2	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0260	Tomingley IF-3	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0261	Tomingley IF-4	Isolated find	Low to moderate	Site integrity has been affected by disturbance and the site is considered to have low potential for intact subsurface deposits. The artefact has been manufactured from a material (glass) which is considered rare and demonstrates traditional Aboriginal use of the Study Area may have continued into the modern period.
35-6-0262	Tomingley IF-5	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0263	Tomingley IF-6	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0264	Tomingley IF-7	Isolated find	Low to moderate	The site contains a good representation of an artefact type (ground-edge hatchet) which is uncommon in the region. However, the site is located within a disturbed context with low potential for intact subsurface deposits.
35-6-0265	Tomingley IF-8	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0266	Tomingley IF-9	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.

AHIMS ID	Site name	Site type	Scientific significance	Justification
35-6-0267	Tomingley IF-10	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0268	Tomingley IF-11	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0269	Tomingley IF-12	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0270	Tomingley IF-13	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0271	Tomingley IF-14	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0272	Tomingley IF-15	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0273	Tomingley IF-16	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0274	Tomingley IF-17	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0275	Tomingley IF-18	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0276	Tomingley IF-19	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0277	Tomingley IF-20	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0278	Tomingley IF-21	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0279	Tomingley IF-22	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.

AHIMS ID	Site name	Site type	Scientific significance	Justification
35-6-0280	Tomingley IF-23	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0281	Tomingley IF-24	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0282	Tomingley IF-25	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0283	Tomingley IF-26	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0284	Tomingley IF-27	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0285	Tomingley IF-28	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0286	Tomingley IF-29	Isolated find	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0287	Tomingley OS-1	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0288	Tomingley OS-2	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0289	Tomingley OS-3	Artefact scatter	Low	The site contains a fair representation of an artefact type (ground-edge hatchet) which is uncommon in the region. However, the ground-edge hatchet is broken, and the site is located within a disturbed context with low potential for intact subsurface deposits.
35-6-0290	Tomingley OS-4	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0291	Tomingley OS-5	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform has low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0292	Tomingley OS-6	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform is assessed as eroding with low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.

AHIMS ID	Site name	Site type	Scientific significance	Justification
35-6-0293	Tomingley OS-7	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform is assessed as eroding with low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0294	Tomingley OS-8	Artefact scatter	Low	Site integrity has been affected by disturbance and the landform is assessed as eroding with low potential for intact subsurface deposits. The site contains a fair representation of an artefact type and material, which are common in the region.
35-6-0296	Tomingley ST-1	Scarred tree	Low	While the scarred tree in combination with the high number of additional scarred trees in the local area strengthen the evidence for a picture of widespread Aboriginal modification of trees throughout the region, their common manifestation, lack of unique features, and lack of associated archaeological deposits means that the sites are unlikely to greatly contribute to our knowledge of past Aboriginal activities or settlement distribution in the region.
35-6-0295	Tomingley ST-2	Scarred tree	Low	While the scarred tree in combination with the high number of additional scarred trees in the local area strengthen the evidence for a picture of widespread Aboriginal modification of trees throughout the region, their common manifestation, lack of unique features, and lack of associated archaeological deposits means that the sites are unlikely to greatly contribute to our knowledge of past Aboriginal activities or settlement distribution in the region.

7.1.1.3 Aesthetic Value

All recorded artefact scatters and isolated finds (except for Tomingley IF-7) have been assessed as having low aesthetic value. None of these recorded site types have significant aesthetic value as the integrity of the sensory landscape has been altered in historic and modern times by agricultural practices. Additionally, the artefacts themselves are generally not remarkable.

Tomingley IF-7 is easy for the layperson to interpret and is a good example of archetypal ground-edge hatchet. However, the site is in a disturbed context (cleared and ploughed paddock) and therefore is assessed having low to moderate aesthetic values.

Tomingley ST-1 and Tomingley ST-2 have been assessed as having low aesthetic value. Despite scars on trees being typically less difficult for the layperson to interpret than stone artefact sites, the scarred trees are located in areas which have been significantly disturbed via agriculture and/or infrastructure (i.e. roads).

Previously recorded scarred tree NHT-ST4 was assessed as having low–moderate aesthetic value by OzArk (2003) as it is in a small remnant strip of natural vegetation and the scar is not of a rare or unusual type.

OzArk (2011), assessed previously recorded scarred trees TGP-ST8 and TGP-ST9 as having low aesthetic value.

7.1.1.4 Historic Value

Tomingley IF-4 consists of a piece of knapped glass which demonstrates that traditional Aboriginal use of the Study Area continued into the modern period. As such, the site has been assessed as having low to moderate historic values.

None of the remaining Aboriginal sites recorded in Study Area have an apparent direct relationship to known historic Aboriginal sites (e.g. missions, massacre sites, etc.) or display clear evidence consistent with 'contact' or 'post-contact' Aboriginal sites. To that end, all remaining recorded sites, are assessed as having no historic value.

Table 7-2: Aboriginal cultural heritage: significance assessment.

AHIMS ID	Site name	Social or Cultural Value	Archaeological / Scientific Value	Aesthetic Value	Historic Value
35-6-0259	Tomingley IF-1	High	Low	Low	None
35-6-0258	Tomingley IF-2	High	Low	Low	None
35-6-0260	Tomingley IF-3	High	Low	Low	None
35-6-0261	Tomingley IF-4	High	Low to moderate	Low	Low to Moderate
35-6-0262	Tomingley IF-5	High	Low	Low	None
35-6-0263	Tomingley IF-6	High	Low	Low	None
35-6-0264	Tomingley IF-7	High	Low to moderate	Low to moderate	None
35-6-0265	Tomingley IF-8	High	Low	Low	None
35-6-0266	Tomingley IF-9	High	Low	Low	None
35-6-0267	Tomingley IF-10	High	Low	Low	None
35-6-0268	Tomingley IF-11	High	Low	Low	None
35-6-0269	Tomingley IF-12	High	Low	Low	None
35-6-0270	Tomingley IF-13	High	Low	Low	None
35-6-0271	Tomingley IF-14	High	Low	Low	None
35-6-0272	Tomingley IF-15	High	Low	Low	None
35-6-0273	Tomingley IF-16	High	Low	Low	None
35-6-0274	Tomingley IF-17	High	Low	Low	None
35-6-0275	Tomingley IF-18	High	Low	Low	None
35-6-0276	Tomingley IF-19	High	Low	Low	None
35-6-0277	Tomingley IF-20	High	Low	Low	None
35-6-0278	Tomingley IF-21	High	Low	Low	None
35-6-0279	Tomingley IF-22	High	Low	Low	None
35-6-0280	Tomingley IF-23	High	Low	Low	None
35-6-0281	Tomingley IF-24	High	Low	Low	None
35-6-0282	Tomingley IF-25	High	Low	Low	None
35-6-0283	Tomingley IF-26	High	Low	Low	None
35-6-0284	Tomingley IF-27	High	Low	Low	None
35-6-0285	Tomingley IF-28	High	Low	Low	None
35-6-0286	Tomingley IF-29	High	Low	Low	None
35-6-0287	Tomingley OS-1	High	Low	Low	None
35-6-0288	Tomingley OS-2	High	Low	Low	None
35-6-0289	Tomingley OS-3	High	Low	Low	None

AHIMS ID	Site name	Social or Cultural Value	Archaeological / Scientific Value	Aesthetic Value	Historic Value
35-6-0290	Tomingley OS-4	High	Low	Low	None
35-6-0291	Tomingley OS-5	High	Low	Low	None
35-6-0292	Tomingley OS-6	High	Low	Low	None
35-6-0293	Tomingley OS-7	High	Low	Low	None
35-6-0294	Tomingley OS-8	High	Low	Low	None
35-6-0296	Tomingley ST-1	High	Low	Low	None
35-6-0295	Tomingley ST-2	High	Low	Low	None
35-6-0142	NHT-ST4	High	Low-moderate	Low-moderate	None
35-6-0184	TGP-ST8	High	Moderate	Low	None
35-6-0185	TGP-ST9	High	Moderate	Low	None

7.2 AVOIDING AND MINIMISING HARM

7.2.1 Likely Impacts to Aboriginal Heritage from the Project

In total, seven sites recorded as part of this assessment (Tomingley IF-12, IF-18, IF-24, IF-27, OS-5, OS-8, and ST-1) and two previously recorded AHIMS sites (35-6-0184 and 35-6-0185) are located within the Proposed Limit of Disturbance.

An additional three newly recorded sites (Tomingley IF-13, IF-25, and OS-7) and one previously recorded AHIMS site (35-6-0142) are located within the 30 m Proposed Limit of Disturbance buffer. Newly recorded site, Tomingley OS-1, partially extends into the 30 m Proposed Limit of Disturbance buffer.

While AHIMS site 35-6-0142 is within the 30 m Proposed Limit of Disturbance buffer and Tomingley OS-1 partially extends into this area, the Applicant has committed to avoiding harm to these sites.

The remaining sites would be conserved within the landscape.

Table 7-3 presents a summary of potential impacts to Aboriginal cultural heritage objects associated with the Project. **Figure 7-1** and **Figure 7-2** show the location of the recorded Aboriginal sites in relation to the Proposed Limit of Disturbance and the 30 m buffer.

Table 7-3: Aboriginal cultural heritage: impact assessment.

AHIMS ID	Site Name	Type of Harm (Direct/Indirect/ None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
35-6-0259	Tomingley IF-1	None	None	No loss of value
35-6-0258	Tomingley IF-2	None	None	No loss of value
35-6-0260	Tomingley IF-3	None	None	No loss of value
35-6-0261	Tomingley IF-4	None	None	No loss of value
35-6-0262	Tomingley IF-5	None	None	No loss of value
35-6-0263	Tomingley IF-6	None	None	No loss of value
35-6-0264	Tomingley IF-7	None	None	No loss of value

AHIMS ID	Site Name	Type of Harm (Direct/Indirect/ None)	Degree of Harm (Total/Partial / None)	Consequence of Harm (Total/Partial/No Loss of Value)
35-6-0265	Tomingley IF-8	None	None	No loss of value
35-6-0266	Tomingley IF-9	None	None	No loss of value
35-6-0267	Tomingley IF-10	None	None	No loss of value
35-6-0268	Tomingley IF-11	None	None	No loss of value
35-6-0269	Tomingley IF-12	Direct	Total	Total loss of value
35-6-0270	Tomingley IF-13	Direct	Total	Total loss of value
35-6-0271	Tomingley IF-14	None	None	No loss of value
35-6-0272	Tomingley IF-15	None	None	No loss of value
35-6-0273	Tomingley IF-16	None	None	No loss of value
35-6-0274	Tomingley IF-17	None	None	No loss of value
35-6-0275	Tomingley IF-18	Direct	Total	Total loss of value
35-6-0276	Tomingley IF-19	None	None	No loss of value
35-6-0277	Tomingley IF-20	None	None	No loss of value
35-6-0278	Tomingley IF-21	None	None	No loss of value
35-6-0279	Tomingley IF-22	None	None	No loss of value
35-6-0280	Tomingley IF-23	None	None	No loss of value
35-6-0281	Tomingley IF-24	Direct	Total	Total loss of value
35-6-0282	Tomingley IF-25	Direct	Total	Total loss of value
35-6-0283	Tomingley IF-26	None	None	No loss of value
35-6-0284	Tomingley IF-27	Direct	Total	Total loss of value
35-6-0285	Tomingley IF-28	None	None	No loss of value
35-6-0286	Tomingley IF-29	None	None	No loss of value
35-6-0287	Tomingley OS-1	None	None	No loss of value
35-6-0288	Tomingley OS-2	None	None	No loss of value
35-6-0289	Tomingley OS-3	None	None	No loss of value
35-6-0290	Tomingley OS-4	None	None	No loss of value
35-6-0291	Tomingley OS-5	Direct	Total	Total loss of value
35-6-0292	Tomingley OS-6	None	None	No loss of value
35-6-0293	Tomingley OS-7	Direct	Total	Total loss of value
35-6-0294	Tomingley OS-8	Direct	Total	Total loss of value
35-6-0296	Tomingley ST-1	Direct	Total	Total loss of value
35-6-0295	Tomingley ST-2	None	None	No loss of value
35-6-0142	NHT-ST4	None	None	No loss of value
35-6-0184	TGP-ST8	Direct	Total	Total loss of value
35-6-0185	TGP-ST9	Direct	Total	Total loss of value

Figure 7-1: Location of Aboriginal sites in relation to the Proposed Limit of Disturbance in the north of the Study Area.

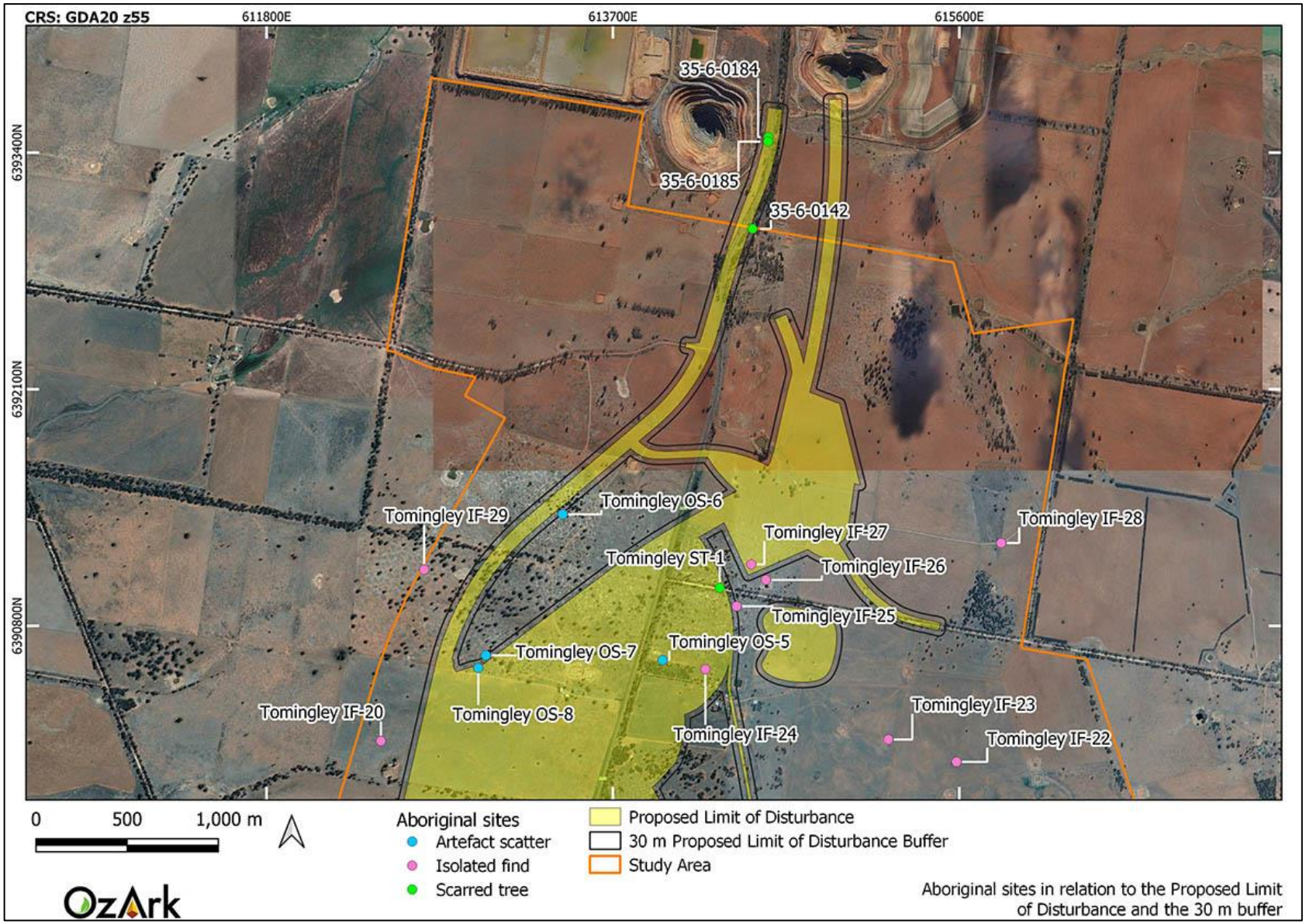
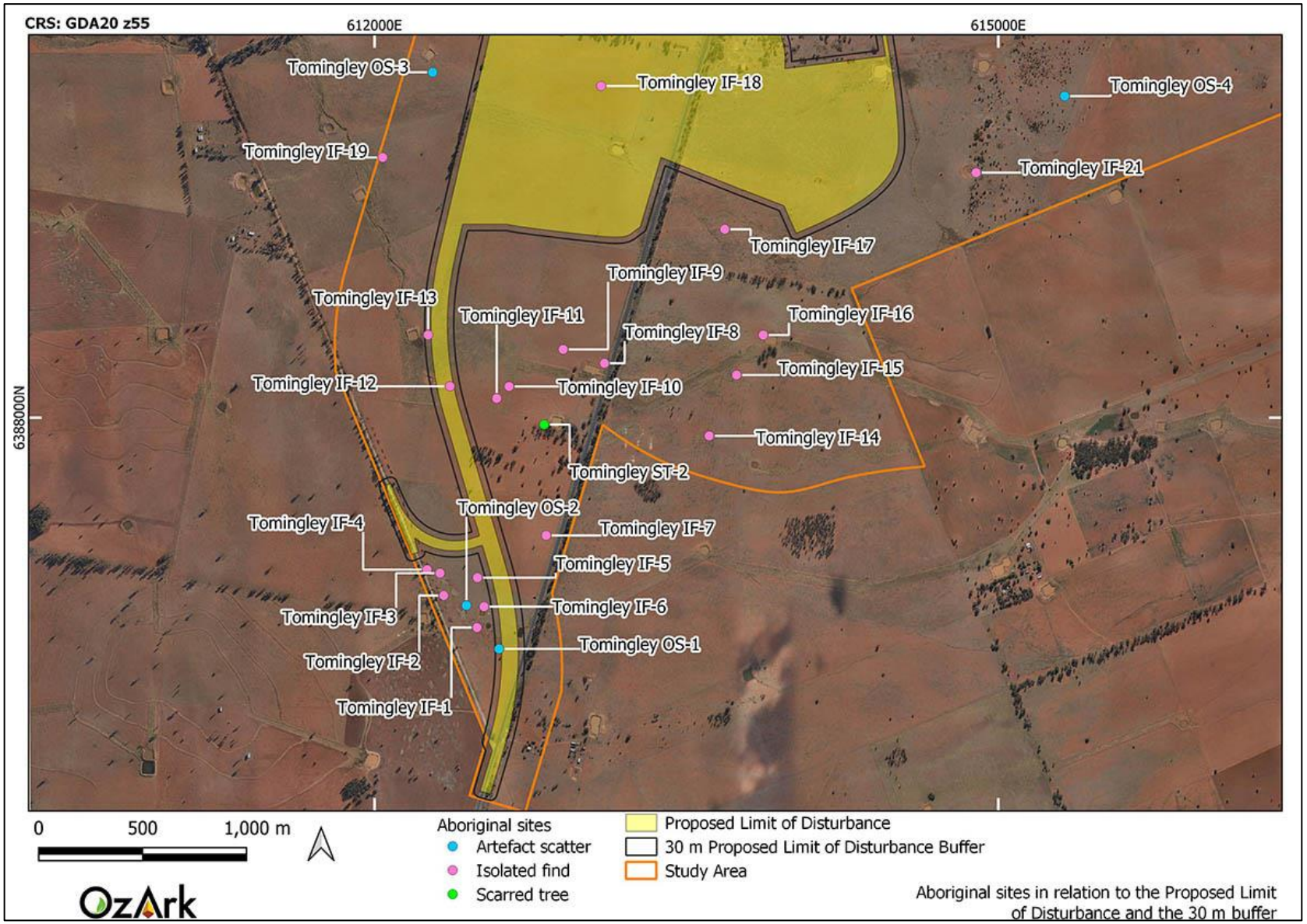


Figure 7-2: Location of Aboriginal sites in relation to the Proposed Limit of Disturbance in the south of the Study Area.



7.2.2 Conserving Significant Aboriginal Cultural Heritage

An object of the NPW Act is the '*conservation of objects places and features… of cultural value within the landscape, including… places, objects and features of significance to Aboriginal people*' (s.2A(1(b)(i)).

As heritage professionals, OzArk, strives for good conservation outcomes. In particular, OzArk is primarily concerned with the conservation and protection of Aboriginal cultural heritage that is of significance to Aboriginal people.

Two primary objectives when managing harm to an Aboriginal object are:

- Impacts to significant Aboriginal objects and places should always be avoided wherever possible; and
- where impacts to Aboriginal objects and places cannot be avoided, proposals should be amended to reduce the extent and severity of impacts to significant Aboriginal objects and places through the use of reasonable and feasible measures.

7.2.3 Opportunities to Conserve Aboriginal Cultural Heritage Values

Twenty-eight of the 42 Aboriginal sites are located outside of the Proposed Limit of Disturbance. An additional two sites (Tomingley OS-1 and 35-6-0142) are within the 30 m buffer of the Proposed Limit of Disturbance. However, as Tomingley OS-1 comprises the largest artefact scatter within the Study Area the Applicant has committed to avoiding this site. Additionally, as three scarred trees will be impacted by the Project, the Applicant has also committed to avoiding site 35-6-0142.

All sites within 50 m of the proposed 30 m Proposed Limit of Disturbance buffer would be managed during the construction of the Project to ensure that they are not inadvertently impacted (**Section 8.2.2**).

7.2.4 Ecologically Sustainable Development Principles

Ecologically sustainable development principles (ESD) (defined in s.6 of the *Protection of the Environment Administration Act 1991*) requires the integration of economic and environmental considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

7.2.4.1 Intergenerational Equity

Intergenerational equity is the principle whereby the present generation should ensure the health, diversity, and productivity of the environment for the benefit of future generations.

In terms of Aboriginal heritage, intergenerational equity can be considered in terms of the cumulative impacts to Aboriginal objects and places in a region. If few Aboriginal objects and

places remain in a region (for example, because of impacts under previous permits), fewer opportunities remain for future generations of Aboriginal people to enjoy the cultural benefits of those Aboriginal objects and places.

Information about the integrity, rarity or representativeness of the Aboriginal objects and places proposed to be impacted, and how they illustrate the occupation and use of land by Aboriginal people across the region, will be relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of the proposal.

Where there is uncertainty, the precautionary principle should also be followed.

7.2.4.2 The Precautionary Principle

The precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

In relation to Aboriginal cultural values, the precautionary principle should be guided by:

- The proposal involves a risk of serious or irreversible damage to Aboriginal objects or places or to the value of those objects or places
- There is uncertainty about the Aboriginal cultural heritage values or scientific or archaeological values, including in relation to the integrity, rarity or representativeness of the Aboriginal objects or places proposed to be impacted.

7.2.4.3 Principle of Integration

The Plan of Implementation of the World Summit on Sustainable Development held in Johannesburg, 2002, noted the need to "*promote the integration of the three components of sustainable development- economic development, social development and environmental protection- as interdependent and mutually reinforcing pillars*".

The principle of integration ensures mutual respect and reciprocity between economic and environmental considerations:

- Environmental considerations are to be integrated into economic and other development plans, programs, and projects and
- Development needs are to be considered in applying environmental objectives.

7.2.4.4 Applicability to the Project

There are 12 Aboriginal sites which would be impacted by the Project (**Section 7.2.1**). Management strategies would be implemented to mitigate the harm to Aboriginal cultural heritage at all sites that would be impacted.

The Aboriginal sites that would be impacted by the Project consist of three scarred trees, three low-density artefact scatters, and six isolated finds. Ten of these sites (Tomingley IF-12, IF-13,

IF-18, IF-24, IF-25, IF-27, OS-5, OS-7, OS-8 and ST-1) have been assessed as having low archaeological significance. Sites 35-6-0184 and 35-6-0185 have been assessed as having moderate archaeological significance.

Stone artefact sites are the most common site types proposed to be impacted and are not considered a rare site type in the region. As such, numerous examples would continue to be available to future generations (including stone artefact sites within the Study Area). In addition, surface collection of stone artefacts is proposed to mitigate the impact from the Project and loss of value (**Section 8.2.1**). Three scarred trees would also be impacted by the Project. Scarred trees are the most recorded site type in the local area with over 70 recorded within 30 km of the Study Area. To mitigate the impact from the Project and loss of heritage value, the scarred portions of the trees are proposed to be removed and placed on display (**Section 8.2.2**). A salvage report would be produced to contribute to the archaeological record, which would also be available to future generations.

Table 7-4 examines the application of ESD principles to the Project.

Table 7-4: Application of ESD principles to the Project.

ESD principle	Response
Avoiding and minimising harm	**Section 8.2.3** sets out mechanisms by which Aboriginal sites located within the Study Area but outside the 30 m Proposed Limit of Disturbance buffer will be excluded from harm.
The integration principle	The Project would seek to minimise environmental and heritage harm wherever possible. While some Aboriginal objects and features may be harmed by the Project, including two assessed as having moderate scientific significance, measures would be implemented to mitigate the loss of value associated with the sites.
The precautionary principle	The Project has followed the precautionary principle though undertaking a robust impact assessment to ensure that harm to Aboriginal objects is minimised. The survey adopted a precautionary principle when it came to describing and assessing the archaeological potential of landforms within the Study Area.
The intergenerational equity principle	While it is acknowledged that the loss of 12 sites would result in a diminution of inter-generational equity, the mitigation measures contained in this ACHAR are designed to mitigate, as much as is possible, this potential loss of inter-generational equity. Of the 42 sites considered in this report, 33 sites, including the artefact scatter with the greatest number of artefacts (Tomingley OS-1), the rare, knapped glass artefact (Tomingley IF-4), and the representative example of a ground edge hatchet (Tomingley IF-7), would be conserved in the landscape. This would allow for 79 per cent of the known sites in the Study Area, and the most significant sites in the Study Area, to remain in place to be available for future research and interpretation.

8 MANAGEMENT OF ABORIGINAL CULTURAL HERITAGE SITES

8.1 GENERAL MANAGEMENT PRINCIPLES

Appropriate management of cultural heritage items is primarily determined based on their assessed significance as well as the likely impacts of the proposed development. **Section 7.1.1** and **Section 7.2.1** describe, respectively, the significance / potential of the recorded sites and the likely impacts of the development. The following management options are general principles, in terms of best practice and desired outcomes, rather than mitigation measures against individual site disturbance.

- Avoid impact by altering the development proposal or in this case by avoiding impact to a recorded Aboriginal site. If this can be done, then a suitable curtilage around the site must be provided to ensure its protection both during the short-term construction phase of development and in the long-term use of the area. If plans are altered, care must be taken to ensure that impacts do not occur to areas not previously assessed.

- If impact is unavoidable then approval to disturb sites under the authority of an ACHMP must be sought from DPIE. The recommendations for site management in this ACHAR will normally be carried over into the ACHMP. Aboriginal community can assess the management recommendations within this ACHAR and the ACHMP when it is developed and offer their comments. The ACHMP procedures will often stipulate that the Aboriginal community should be involved in any salvage activities and will dictate what the fate of any salvaged Aboriginal objects will be.

8.2 MANAGEMENT AND MITIGATION OF RECORDED ABORIGINAL SITES

Based on the current impact footprint of the Project, 12 sites would be impacted and 30 would be avoided.

Sites which would be impacted by the Project include:

- Six isolated finds: Tomingley IF-12, Tomingley IF-13, Tomingley IF-18, Tomingley IF-24, Tomingley IF-25, and Tomingley IF-27;
- three artefact scatters: Tomingley OS-5, Tomingley OS-7, and Tomingley OS-8; and
- three scarred trees: Tomingley ST-1, 35-6-0184, and 35-6-0185.

Table 8-1 sets out the recommended archaeological management of all Aboriginal cultural heritage sites which would be impacted by the Project. The management processes have been grouped into the following:

- Group 1: Surface collection
- Group 2: Scarred tree relocation

- Group 3: Sites that require management to be conserved in the landscape as they are within 50 m of the Proposed Limit of Disturbance buffer.

Table 8-1: Management and mitigation measures for Aboriginal heritage sites.

Site Name	AHIMS ID	Site Type	Scientific significance	Degree of Harm	Management strategy
Tomingley IF-1	35-6-0259	Isolated find	Low	None	No management warranted
Tomingley IF-2	35-6-0258	Isolated find	Low	None	No management warranted
Tomingley IF-3	35-6-0260	Isolated find	Low	None	No management warranted
Tomingley IF-4	35-6-0261	Isolated find	Low to moderate	None	No management warranted
Tomingley IF-5	35-6-0262	Isolated find	Low	None	**Group 3**: The site requires fencing to ensure it is not inadvertently impacted
Tomingley IF-6	35-6-0263	Isolated find	Low	None	**Group 3**: The site requires fencing to ensure it is not inadvertently impacted
Tomingley IF-7	35-6-0264	Isolated find	Low to moderate	None	No management warranted
Tomingley IF-8	35-6-0265	Isolated find	Low	None	No management warranted
Tomingley IF-9	35-6-0266	Isolated find	Low	None	No management warranted
Tomingley IF-10	35-6-0267	Isolated find	Low	None	No management warranted
Tomingley IF-11	35-6-0268	Isolated find	Low	None	No management warranted
Tomingley IF-12	35-6-0269	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-13	35-6-0270	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-14	35-6-0271	Isolated find	Low	None	No management warranted
Tomingley IF-15	35-6-0272	Isolated find	Low	None	No management warranted
Tomingley IF-16	35-6-0273	Isolated find	Low	None	No management warranted
Tomingley IF-17	35-6-0274	Isolated find	Low	None	No management warranted
Tomingley IF-18	35-6-0275	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-19	35-6-0276	Isolated find	Low	None	No management warranted
Tomingley IF-20	35-6-0277	Isolated find	Low	None	No management warranted
Tomingley IF-21	35-6-0278	Isolated find	Low	None	No management warranted
Tomingley IF-22	35-6-0279	Isolated find	Low	None	No management warranted
Tomingley IF-23	35-6-0280	Isolated find	Low	None	No management warranted
Tomingley IF-24	35-6-0281	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-25	35-6-0282	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-26	35-6-0283	Isolated find	Low	None	**Group 3**: The site requires fencing to ensure it is not inadvertently impacted
Tomingley IF-27	35-6-0284	Isolated find	Low	Total	**Group 1**: Mapping, description, and collection of surface artefact.
Tomingley IF-28	35-6-0285	Isolated find	Low	None	No management warranted
Tomingley IF-29	35-6-0286	Isolated find	Low	None	No management warranted
Tomingley OS-1	35-6-0287	Artefact scatter	Low	None	**Group 3**: The site requires fencing to ensure it is not inadvertently impacted
Tomingley OS-2	35-6-0288	Artefact scatter	Low	None	No management warranted
Tomingley OS-3	35-6-0289	Artefact scatter	Low	None	No management warranted

Site Name	AHIMS ID	Site Type	Scientific significance	Degree of Harm	Management strategy
Tomingley OS-4	35-6-0290	Artefact scatter	Low	None	No management warranted
Tomingley OS-5	35-6-0291	Artefact scatter	Low	Total	**Group 1**: Mapping, description, and collection of surface artefacts
Tomingley OS-6	35-6-0292	Artefact scatter	Low	None	**Group 3:** The site requires fencing to ensure it is not inadvertently impacted
Tomingley OS-7	35-6-0293	Artefact scatter	Low	Total	**Group 1**: Mapping, description, and collection of surface artefacts
Tomingley OS-8	35-6-0294	Artefact scatter	Low	Total	**Group 1**: Mapping, description, and collection of surface artefacts
Tomingley ST-1	35-6-0296	Scarred tree	Low	Total	**Group 2**: Removal of the scarred portion of the tree
Tomingley ST-2	35-6-0295	Scarred tree	Low	None	No management warranted
NHT-ST4	35-6-0142	Scarred tree	Low-moderate	None	**Group 3**: The site requires fencing to ensure it is not inadvertently impacted
TGP-ST8	35-6-0184	Scarred tree	Moderate	Total	**Group 2**: Removal of the scarred portion of the tree
TGP-ST9	35-6-0185	Scarred tree	Moderate	Total	**Group 2**: Removal of the scarred portion of the tree

8.2.1 Group 1 Sites: Surface Collection

The nine sites recommended for archaeological salvage by means of surface collection are detailed in **Table 8-2**.

Table 8-2: Group 1 sites requiring surface collection.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Site type
35-6-0269	Tomingley IF-12	612363	6388152	Isolated find
35-6-0270	Tomingley IF-13	612258	6388399	Isolated find
35-6-0275	Tomingley IF-18	613090	6389598	Isolated find
35-6-0281	Tomingley IF-24	614208	6390562	Isolated find
35-6-0282	Tomingley IF-25	614379	6390908	Isolated find
35-6-0284	Tomingley IF-27	614459	6391138	Isolated find
35-6-0291	Tomingley OS-5	613973	6390612	Artefact scatter
35-6-0293	Tomingley OS-7	613004	6390638	Artefact scatter
35-6-0294	Tomingley OS-8	612962	6390569	Artefact scatter

The recommended methodology for the surface collection would be finalised after the approvals process as part of the ACHMP, but would include the following measures:

- All visible surface artefacts at a site should be flagged in the field.
- The site should be photographed after flagging and before recording.
- All artefacts should have the following artefact information recorded:
    - Location;

- artefact class;
- artefact type;
- size;
- reduction level;
- raw material; and
- notes.

- A selection of indicative and / or unusual artefacts from each site will be photographed.
- Once all recording is complete, the artefacts will be collected according to site with artefacts from each site being kept separate.
- Should the collection team encounter a human burial, all work should cease in the area and advice from authorities and RAPs (should the remains be Aboriginal) sought.
- The recording of the artefacts recovered will largely be completed in the field and this data would be incorporated into a report.
- An Aboriginal Site Impact Recording Form (ASIRF) will be submitted by the archaeologist detailing the salvage process and results of the sites.

8.2.2 Group 2 Sites: Scarred Tree Relocation

The three scarred trees recommended for relocation are detailed in **Table 8-3**. The scarred portion of the trees should be photographically recorded prior to removal. The removal of the scarred portion should follow the advice of a suitably qualified arborist. The scarred portions will be removed to a place of safe-keeping, and with the agreement of the RAPs, potentially placed on display to allow continued interpretation of the items.

Table 8-3: Group 2 sites requiring scarred tree relocation.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing
35-6-0184	TGP-ST8	614553	6393485
35-6-0185	TGP-ST9	614551	6393461
35-6-0296	Tomingley ST-1	614286	6391009

8.2.3 Group 3 Sites: Sites Requiring Fencing

Six sites that are located within 50 m of the Proposed Limit of Disturbance buffer and may be unintentionally harmed by the Project unless specific management is undertaken to avoid impacts (**Table 8-4**).

Due to their proximity to Proposed Limit of Disturbance, these sites are at greater risk of unintentional impact when compared to sites located further away. A 5 m buffer around the extent of these sites should be fenced with hi-visibility fencing for the duration of the construction of the Project components proposed near these sites (**Table 8-4**).

Table 8-4: Group 3 sites requiring fencing.

AHIMS ID	Site name	GDA Zone 55 Easting	GDA Zone 55 Northing	Site type	Nearby Project component
35-6-0262	Tomingley IF-5	612495	6387230	Isolated find	Newell Highway realignment
35-6-0263	Tomingley IF-6	612527	6387090	Isolated find	Newell Highway realignment
35-6-0283	Tomingley IF-26	614539	6391052	Isolated find	Site water storage facility
35-6-0287	Tomingley OS-1	612599	6386886	Artefact scatter	Newell Highway realignment
35-6-0292	Tomingley OS-6	613425	6391413	Artefact scatter	Newell Highway realignment
35-6-0142	NHT-ST4	614463	6392981	Scarred tree	Newell Highway realignment

8.3 LONG-TERM MANAGEMENT OF ABORIGINAL OBJECTS

The ACHMP would include protocols for the long-term management of the Aboriginal sites salvaged for the Project. The protocol would adhere to the procedures of a Care Agreement that are enacted between Heritage NSW, RAPs, and the Applicant.

Regarding the stone artefact sites, suitable procedures for the long-term management of stone artefacts could include the reburial of artefacts at a location outside of impacts that adheres to Requirement 26 of the Code of Practice, or the removal of artefacts to an agreed place of safe keeping.

For the scarred trees, a suitable procedure, with the agreement of the RAPs, would involve relocation of the scarred portion of the trees to a nearby area where they can be placed on display and appreciated by both the Aboriginal and non-Aboriginal community.

8.4 UNANTICIPATED FINDS PROTOCOL

Should consent for the Project be gained, an ACHMP would be developed in consultation with RAPs and DPIE. The ACHMP will contain procedures should a new discovery of Aboriginal artefacts be made during construction and/or operation of the Project. The procedure in **Section 8.4.1** is an example of an unanticipated finds protocol that could be incorporated into the ACHMP.

8.4.1 Unanticipated Finds Protocol Example

An Aboriginal artefact is anything which is the result of past Aboriginal activity. This includes stone (artefacts, rock engravings etc.), plant (culturally scarred trees) and animal (if showing signs of modification, i.e. smoothing, use). Human bone (skeletal) remains may also be uncovered while on site.

Cultural heritage significance is assessed by the Aboriginal community and is typically based on traditional and contemporary lore, spiritual values, and oral history, and may also consider scientific and educational value.

Protocol to be followed if previously unrecorded or unanticipated Aboriginal object(s) are encountered:

1. If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the Applicant must:
    a. Not further harm the object.
    b. Immediately cease all work at the particular location.
    c. Secure the area so as to avoid further harm to the Aboriginal object.
    d. Notify Heritage NSW as soon as practical on (02) 9873 8500, providing any details of the Aboriginal object and its location.
    e. Not recommence any work at the particular location unless authorised in writing by Heritage NSW.
2. If Aboriginal burials are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and Heritage NSW contacted.
3. Cooperate with the appropriate authorities and relevant Aboriginal community representatives to facilitate:
    a. The recording and assessment of the find(s).
    b. The fulfilment of any legal constraints arising from the find(s), including complying with Heritage NSW directions.
    c. The development and implementation of appropriate management strategies, including consultation with stakeholders and the assessment of the significance of the find(s).
4. Where the find(s) are determined to be Aboriginal object(s), recommencement of work in the area of the find(s) can only occur in accordance with any consequential legal requirements and after gaining written approval from Heritage NSW (normally an Aboriginal Heritage Impact Permit).

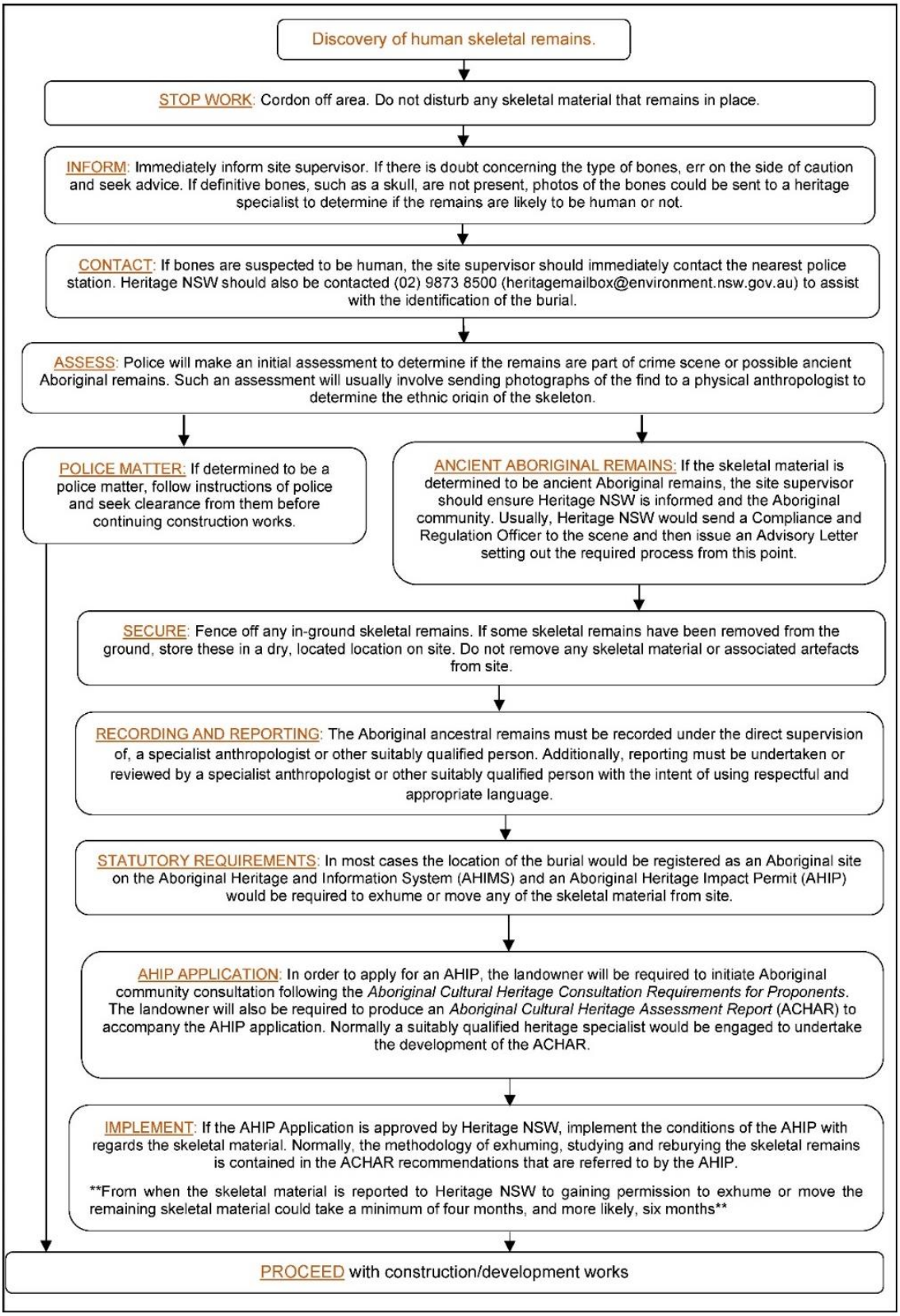
8.5 UNANTICIPATED SKELETAL REMAINS PROTOCOL

Should consent for the project be gained, an ACHMP would be developed in consultation with RAPs and DPIE. The ACHMP would contain procedures should a new discovery of human skeletal remains be made during construction or operation of the project. The procedure in **Section 8.5.1** is an example of a human skeletal remains protocol that could be incorporated into the ACHMP.

8.5.1 Example Human Skeletal Remains Protocol

A potential flow-chart relating to the discovery of human skeletal remains is shown on **Figure 8-1**.

Figure 8-1: Example of a human skeletal remains procedure.



9 RECOMMENDATIONS

Under Section 89A of the NPW Act it is mandatory that all newly recorded Aboriginal sites be registered with AHIMS. As a professional in the field of cultural heritage management it is the responsibility of OzArk to ensure this process is undertaken.

To this end it is noted that 39 Aboriginal sites were recorded during the assessment and all have been registered with AHIMS.

The following recommendations are made based on the predicted impacts identified as part of this assessment and with regard to:

- Legal requirements under the terms of the NPW Act whereby it is illegal to damage, deface or destroy an Aboriginal place or object without the prior written consent of Heritage NSW, or its equivalent;
- the findings of the current investigations undertaken within the Study Area; and
- the interests of the Aboriginal community.

Recommendations concerning Aboriginal cultural values within the Study Area are as follows:

1. Following development consent of the Project, the Applicant would develop an ACHMP which is to be agreed to by the RAPs and DPIE (with input from Heritage NSW). The ACHMP would also include an unanticipated finds protocol, unanticipated skeletal remains protocol and long-term management of any Aboriginal sites being impacted.
2. Should development consent for the Project be granted, management strategies to manage and mitigate the impact of the Project would include:
    a. Group 1 sites listed in **Table 8-2** should be subject to the surface collection methodology outlined in **Section 8.2.1**
    b. Group 2 sites listed in **Table 8-3** should be subject to scarred tree relocation outlined in **Section 8.2.2**
    c. Group 3 sites listed in **Table 8-4** should be subject to fencing as outlined in **Section 8.2.3**.
3. All land-disturbing activities must be confined to within the Study Area or the approved TGO Mine Site. Should the parameters of the proposed work extend beyond this, then further archaeological assessment may be required.

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APPENDIX 1: ABORIGINAL COMMUNITY CONSULTATION

Community consultation log

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
24.3.20	Daily Liberal	Rebecca Hardman (RH) rang - newspaper is printed daily, Proof needs to be finalised by 1pm the day prior.	phone
24.3.20	Daily Liberal	RH sent ad off to the newspaper	email
24.3.20	Biodiversity and Conservation Division (BCD)	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	Peak Hill Local Aboriginal Land Council	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	Office of The Registrar, ALRA	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	National Native Title Tribunal	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	NTSCORP	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	Narromine Shire Council	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
24.3.20	Central West Local Land Services	RH sent Stage 1 agency letter requesting potential stakeholders. Closing date 7.4.20	email
25.3.20	Daily Liberal	RH received proof	email
25.3.20	Daily Liberal	RH phoned, approved advert and paid over phone. Tammy will send copy of receipt and tear sheet	phone
25.3.20	Daily Liberal	RH received receipt	email
26.3.20	Daily Liberal	RH received tear sheet	email
26.3.20	Daily Liberal	RH thanked Tammy	email
26.3.20	National Native Title Tribunal	RH received notification *Records held by the National Native Title Tribunal as at 25 March 2020 indicate that the identified parcel Lot 43 on DP755093 appears to be freehold, and freehold tenure extinguishes native title*	email
7.4.20	BCD	RH received stakeholder list	email
8.4.20	Stakeholder 1	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	John Shipp	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Peak Hill Local Aboriginal Land Council	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	Paul Brydon	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	Peter Peckham	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Wiradjuri Council of Elders	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	Trevor Robinson	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Wiradjuri Interim Working Party	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	David Smith	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
8.4.20	Gary Smith	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Michael Smith	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Peter Chatfield	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Raymond Thomas Smith	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	William Smith	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	Post
8.4.20	Tubba-Gah (Maing) Wiradjuri Aboriginal Corporation	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	Tubba-Gah Aboriginal Corporation	RH sent EOI. RSVP closes 27.4.20 - Extended for Easter	email
8.4.20	Tubba-Gah Aboriginal Corporation	RH received email registering as a RAP	email
8.4.20	Corroboree Aboriginal Corporation	RH received email registering as a RAP	email
9.4.20	Tubba-Gah Aboriginal Corporation	RH thanked Geoff	email
9.4.20	Gunjeewong Cultural Heritage Corporation Heritage Preservation	RH received email registering as a RAP	email
14.4.20	Gunjeewong Cultural Heritage Corporation Heritage Preservation	RH confirmed registration	email
15.4.20	Paul Brydon	Registered as a RAP	email
22.4.20	Jay & Warren Daley	RH received letter they sent to Narromine Shire Council expressing interest to register as a RAP.	email
27.4.20	Jay & Warren Daley	RH phoned to register and confirm contact details - Left message	Phone
27.4.20	Jay & Warren Daley	RH received call back, confirmed contact details	Phone
29.4.20	Tubba-Gah Aboriginal Corporation	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	Peak Hill Local Aboriginal Land Council	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	Corroboree Aboriginal Corporation	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	Gunjeewong Cultural Heritage Corporation Heritage Preservation	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	Paul Brydon	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	Jay & Warren Daley	RH sent Stage 2. Feedback ends 27.5.20	email
29.4.20	BCD	RH sent notification of RAPs	email
29.4.20	Peak Hill Local Aboriginal Land Council	RH sent notification of RAPs	email
29.4.20	BCD	RH received thanks	email
30.4.20	Jay & Warren Daley	RH received call from Jay, has not received stage 2 pkg yet. Rh advised has been sent, clarified email address, all ok. Jay to check junk mail and call RH back on Monday if cannot find	phone
5.5.20	Tubba-Gah Aboriginal Corporation	RH received feedback	email
20.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH received email registering as a RAP	email
21.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH sent stage 2 for feedback and confirmed registration	email
21.5.20	BCD	RH sent updated notification of RAPs	email

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
21.5.20	Peak Hill Local Aboriginal Land Council	RH sent updated notification of RAPs	email
23.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH received email asking why not contacted to register and where project is up to	email
25.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned - left message saying will reply to email instead	phone
25.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH emailed explaining process and where project is up to, also noted they were not listed on BCD stakeholder list. Recommended to contact BCD	email
25.5.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH had phone call from Karry clarifying process and why left off list	Phone
30.6.20	Tubba-Gah Aboriginal Corporation	RH sent survey methodology update for their information	email
30.6.20	Peak Hill Local Aboriginal Land Council	RH sent survey methodology update for their information	email
30.6.20	Corroboree Aboriginal Corporation	RH sent survey methodology update for their information	email
30.6.20	Gunjeewong Cultural Heritage Corporation Heritage Preservation	RH sent survey methodology update for their information	email
30.6.20	Paul Brydon	RH sent survey methodology update for their information	email
30.6.20	Jay & Warren Daley	RH sent survey methodology update for their information	email
30.6.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH sent survey methodology update for their information	email
30.6.20	Peak Hill Local Aboriginal Land Council	RH phoned landline - disconnected	phone
30.6.20	Peak Hill Local Aboriginal Land Council	RH phoned mobile - disconnected	phone
30.6.20	Peak Hill Local Aboriginal Land Council	RH phoned Anthony and confirmed he will be attending fieldwork and that he will chase up copy of workers comp tomorrow. RH also confirmed he is able to answer no to all the COVID 19 questions	phone
30.6.20	Paul Brydon	RH phone Paul, confirmed fieldwork days, had to change days as unavailable on 8th and 9th. RH to send updated fieldwork invite.	Phone
30.6.20	Jay & Warren Daley	RH phoned and spoke to Leanne, confirmed will be ok to answer No for all COVID questions. Offred extra days, put as confirmed Jay will call if not available. RH to send updated letter to 3rd party employer	Phone
30.6.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned and confirmed attendance, discussed workers comp requirements and 3rd party employer. RH to send updated letter to Karry and Frank. Karryn will look into costs for workers comp for group rather than 3rd party. RH to call tomorrow to find out which way wants to go.	Phone
30.6.20	Tubba-Gah Aboriginal Corporation	RH phoned and spoke to Geoff, unsure if will be able to do extra day, will confirm mid-week with SR on site.	Phone
30.6.20	Paul Brydon	RH sent updated fieldwork invite	email
30.6.20	Jay & Warren Daley	RH sent updated fieldwork invite	email
30.6.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH sent updated fieldwork invite	email

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
2.7.20	Peak Hill Local Aboriginal Land Council	Stephanie Rusden (SR) received phone call asking what they need to send through	phone
2.7.20	Peak Hill Local Aboriginal Land Council	HR received call, RH to call back	phone
2.7.20	Peak Hill Local Aboriginal Land Council	RH phoned back, Keesha noted is trying to get copy of workers comp but not yet received, RH advised cannot go on site without copy. Keesha to chase up and send through ASAP	phone
2.7.20	Paul Brydon	RH received call; Paul withdrew for fieldwork due to a letter he received noting they will not let him on their land. Paul still wants to be consulted as a RAP.	email
2.7.20	Peak Hill Local Aboriginal Land Council	RH phoned Keesha - N/A	phone
2.7.20	Peak Hill Local Aboriginal Land Council	RH phoned Anthony, he advised Lyn will be the site officer as he has to work. Anthony was under the impression Keesha had sent workers comp to OzArk. RH advised had not received and when spoke to Keesha she was still chasing. RH advised Anthony Lyn cannot attend without a copy being received. Anthony said will chase up tomorrow and have Lyn call us, to give her contact number. RH offered to give contact details for 3rd party employer as an alternative, Lyn to advise tomorrow if she would like to go ahead with that option	phone
2.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned and spoke to Karryn, confirmed she is attending and will be covered under Tubba-Gah Maing workers compensation. RH requested an email from the Tubba-Gah Maing group confirming they are happy to cover her. Karryn will get that through today	email
2.7.20	Tubba-Gah (Maing) Wiradjuri Aboriginal Corporation	RH received email from Nathan: The majority of Directors have agreed that on this occasion we are happy for Karryn to be engaged to conduct the site survey in Tomingley. I will ask our accountant to initiate to process in terms of her engagement.	email
3.7.20	Tubba-Gah (Maing) Wiradjuri Aboriginal Corporation	RH thanked Nathan and sent copy of fieldwork invite for Karryn with invoicing details	email
3.7.20	Paul Brydon	RH phoned Paul to confirm if he would like to attend or not. Paul declined offer	email
3.7.20	Tubba-Gah Aboriginal Corporation	RH phoned Geoff - N/A	Phone
3.7.20	Jay & Warren Daley	RH phoned Leanne to ask if they had received a letter from Karry and confirm attendance. Offered extra fieldwork days. Leanne confirmed available. RH to send updated letter	email
3.7.20	Tubba-Gah Aboriginal Corporation	RH phoned Geoff confirmed he had not received a letter and will be attending	Phone
3.7.20	Peak Hill Local Aboriginal Land Council	RH phoned, spoke to receptionist, asked to pass on message asking for update on workers comp and Keesha to call RH back	phone
3.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH emailed Karry confirming the Tubba Gah Maing group will cover her for workers comp and that we will pay the Tubba Gah Maing group and they will pay her.	email

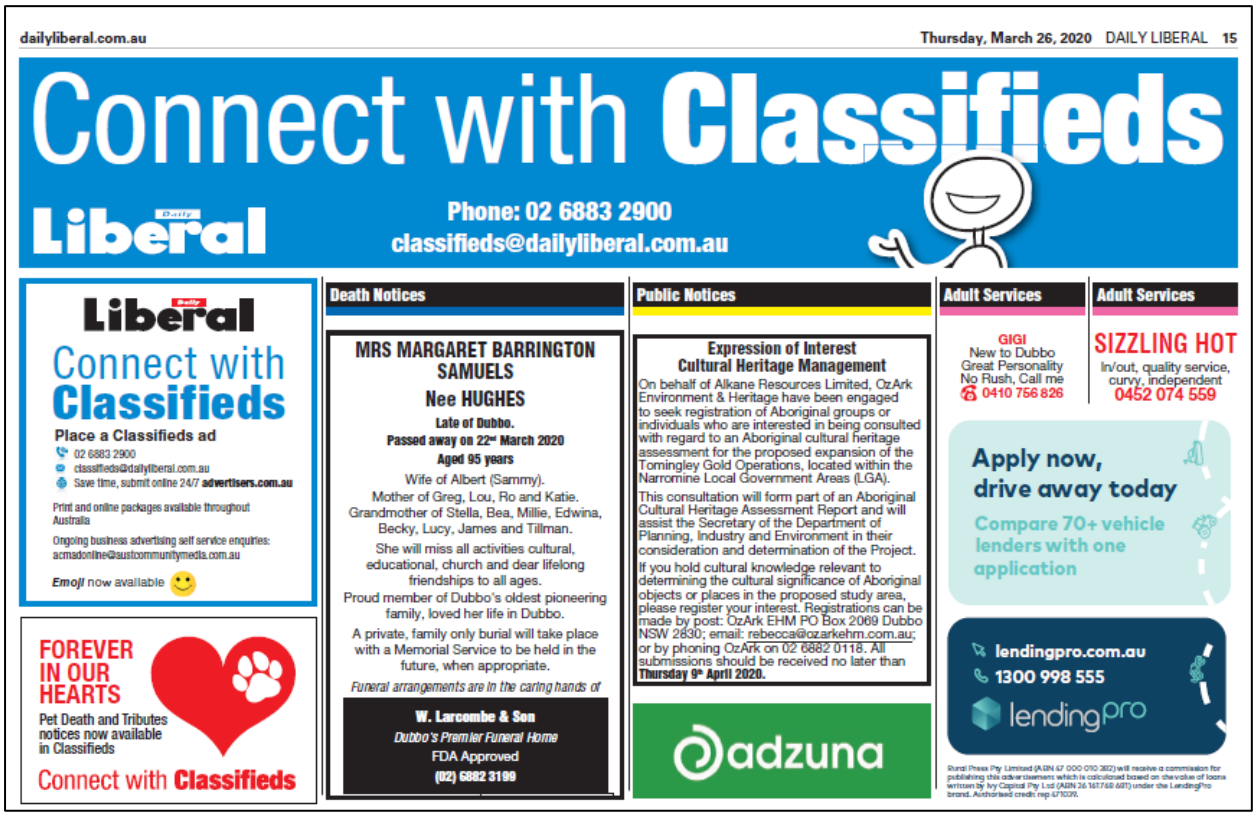
Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
3.7.20	Peak Hill Local Aboriginal Land Council	RH received call to confirm email address and contact number for site officer	phone
3.7.20	Peak Hill Local Aboriginal Land Council	RH received copy of workers compensation	email
3.7.20	Peak Hill Local Aboriginal Land Council	RH phoned site officer and confirmed days and extra days. RH to send updated letter to LALC only.	email
3.7.20	Peak Hill Local Aboriginal Land Council	RH sent updated fieldwork invite letter	email
3.7.20	Jay & Warren Daley	RH sent updated fieldwork invite letter with Frank copied in	email
3.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH received thanks	email
8.7.20	GetSet	RH received call asking to confirm attendance for Jay or Warren	Phone
8.7.20	GetSet	RH phoned back and Confirmed Jay attended both Monday and Tuesday of the first week	Phone
8.7.20	GetSet	Sheridan Baker (SB) received invoice	email
12.7.20	Peak Hill Local Aboriginal Land Council	SR called Lyn to advise fieldwork would be postponed due to rain. SR would advise revised dates	Phone
12.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	SR called Karryn to advise fieldwork would be postponed due to rain. SR would advise revised dates	Phone
12.7.20	Jay & Warren Daley	SR called Lee-anne to advise fieldwork would be postponed due to rain. SR would advise revised dates	Phone
13.7.20	Tubba-Gah Aboriginal Corporation	RH received invoice	email
13.7.20	Tubba-Gah Aboriginal Corporation	RH thanked Geoff	email
13.7.20	Jay & Warren Daley	SR sent Jay an email advising that fieldwork had not yet been rescheduled and would advise when a date had been set	email
13.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	SR emailed Karryn asking what her availability was for the rest of the week	email
13.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	SR received an email from Karryn saying she was free to work the rest of the week depending on the date of the funeral. She advised she would let us know when the date is set but thought it would be early next week.	email
13.7.20	Jay & Warren Daley	SR sent Jay an email advising that fieldwork had not yet been rescheduled and would advise when a date had been set	email
15.7.20	Jay & Warren Daley	RH phoned Leanne - N/A	Phone
15.7.20	Jay & Warren Daley	RH phoned Jay and confirmed both he and Warren will attend fieldwork on Friday	Phone
15.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned - N/A	email
15.7.20	Peak Hill Local Aboriginal Land Council	RH phoned Lyn and confirmed will attend fieldwork this Friday	Phone
15.7.20	GetSet	RH received call asking to confirm attendance for Jay or Warren	Phone
15.7.20	GetSet	RH phoned back and Confirmed Jay attended Wed, Thurs and half of Friday	Phone
15.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	Karryn called and confirmed will attend fieldwork for this Friday	email

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
15.7.20	GetSet	RH received invoice	email
21.7.20	Peak Hill Local Aboriginal Land Council	RH phoned and spoke to Lyn, confirmed she will be available for Tues 28th and Wed 29th to attend FW	Phone
21.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	Emailed to see if available for Fieldwork 28th and 29th	email
21.7.20	Jay & Warren Daley	Emailed to see if available for Fieldwork 28th and 29th	email
21.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	Karryn confirmed will attend	email
22.7.20	Jay & Warren Daley	RH phoned and confirmed will attend fieldwork 28th and 29th	email
22.7.20	GetSet	RH received call asking to confirm attendance for Jay or Warren	Phone
22.7.20	GetSet	RH received invoice	email
27.7.20	Jay & Warren Daley	RH phoned and cancelled fieldwork for 28th and 29th	email
27.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned and left message for call back to cancelled fieldwork for 28th and 29th	email
27.7.20	Peak Hill Local Aboriginal Land Council	RH phoned and cancelled fieldwork for 28th and 29th	Phone
27.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned and cancelled fieldwork for 28th and 29th	email
28.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH received email clarifying invoice	email
28.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH sent info for invoicing	email
30.7.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH received thanks	email
5.8.20	Peak Hill Local Aboriginal Land Council	RH received invoice to date	email
6.8.20	Peak Hill Local Aboriginal Land Council	RH sent back edits to invoice	email
6.8.20	Peak Hill Local Aboriginal Land Council	RH received invoice	email
6.8.20	Tubba-Gah (Maing) Wiradjuri Aboriginal Corporation	RH received invoice for Karryn	email
13.8.20	Peak Hill Local Aboriginal Land Council	RH phoned and confirmed attending FW 1& 2 Sept 2020. asked to be reminded closer to the date.	Phone
13.8.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH phoned and confirmed attending FW 1& 2 Sept 2020.	email
13.8.20	Jay & Warren Daley	RH phoned and confirmed attending FW 1& 2 Sept 2020.	email
13.8.20	Peak Hill Local Aboriginal Land Council	RH sent copy of fieldwork invite	Phone
13.8.20	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	RH sent copy of fieldwork invite	email
13.8.20	Tubba-Gah (Maing) Wiradjuri Aboriginal Corporation	RH copied into fieldwork invite for Karryn from Bogan River Peak Hill Wiradjuri Aboriginal Corporation	email
13.8.20	Jay & Warren Daley	RH sent copy of fieldwork invite	email
13.8.20	GetSet	RH copied in Frank to the fieldwork invite for Jay & Warren Daily	email

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
14.8.20	Jay & Warren Daley	RH received: Warren and Jay are both right for the 1 and 2 September	email
17.8.20	Jay & Warren Daley	RH thanked Leanne	email
17.8.20	Peak Hill Local Aboriginal Land Council	RH received email confirming fieldwork attendance	email
3.9.20	Peak Hill Local Aboriginal Land Council	RH received invoice for fieldwork	email
3.9.20	Peak Hill Local Aboriginal Land Council	RH sent thanks	email
9.9.20	GetSet	RH received call and confirmed fieldwork for Warren and Jay	email
9.9.20	GetSet	RH received invoice	email
21/10/2020	Tubba-Gah Aboriginal Corporation	Brendan Fisher (BF) sent project update email for TGEP MOD5	email
21/10/2020	Peak Hill Local Aboriginal Land Council	BF sent project update email for TGEP MOD5	email
21/10/2020	Corroboree Aboriginal Corporation	BF sent project update email for TGEP MOD5	email
21/10/2020	Gunjeewong Cultural Heritage Corporation Heritage Preservation	BF sent project update email for TGEP MOD5	email
21/10/2020	Paul Brydon	BF sent project update email for TGEP MOD5	email
21/10/2020	Jay & Warren Daley	BF sent project update email for TGEP MOD5	email
21/10/2020	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	BF sent project update email for TGEP MOD5	email
27/10/2020	Jay & Warren Daley	Jay Daley thanked BF and OzArk team for project update email	email
10/2/2021	Peak Hill Local Aboriginal Land Council	RH sent invite to fieldwork.	email
10/2/2021	Tubba-Gah Aboriginal Corporation	BF sent project update letter	email
10/2/2021	Peak Hill Local Aboriginal Land Council	BF sent project update letter	email
10/2/2021	Corroboree Aboriginal Corporation	BF sent project update letter	email
10/2/2021	Gunjeewong Cultural Heritage Corporation Heritage Preservation	BF sent project update letter	email
10/2/2021	Paul Brydon	BF sent project update letter	email
10/2/2021	Jay & Warren Daley	BF sent project update letter	email
10/2/2021	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	BF sent project update letter	email
10/2/2021	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	Karryn thanked BF for project update letter	email
22/2/2021	Peak Hill Local Aboriginal Land Council	RH received email confirming attendance at FW	email
22/2/2021	Peak Hill Local Aboriginal Land Council	RH thanked and noted SR will phone on Thursday to confirm as rain is forecast	email
1/3/2021	Peak Hill Local Aboriginal Land Council	RH received invoice	email
9/8/2021	Tubba-Gah Aboriginal Corporation	SR sent project update	email
9/8/2021	Peak Hill Local Aboriginal Land Council	SR sent project update	email
9/8/2021	Corroboree Aboriginal Corporation	SR sent project update	email

Aboriginal Consultation Log – Tomingley Gold Extension Project			
Date	**Organisation**	**Comment**	**Method**
9/8/2021	Gunjeewong Cultural Heritage Corporation Heritage Preservation	SR sent project update	email
9/8/2021	Paul Brydon	SR sent project update	email
9/8/2021	Jay & Warren Daley	SR sent project update	email
9/8/2021	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	SR sent project update	email
25/8/2021	Tubba-Gah Aboriginal Corporation	BF sent stage 4 letter and ACHAR	email
25/8/2021	Peak Hill Local Aboriginal Land Council	BF sent stage 4 letter and ACHAR	email
25/8/2021	Corroboree Aboriginal Corporation	BF sent stage 4 letter and ACHAR	email
25/8/2021	Gunjeewong Cultural Heritage Corporation Heritage Preservation	BF sent stage 4 letter and ACHAR	email
25/8/2021	Paul Brydon	BF sent stage 4 letter and ACHAR	email
25/8/2021	Jay & Warren Daley	BF sent stage 4 letter and ACHAR	email
25/8/2021	Bogan River Peak Hill Wiradjuri Aboriginal Corporation	BF sent stage 4 letter and ACHAR	email

Appendix 1 Figure 1: Stage 1 Advertisement, *Daily Liberal*.



dailyliberal.com.au Thursday, March 26, 2020 DAILY LIBERAL 15

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Death Notices

MRS MARGARET BARRINGTON SAMUELS
Nee HUGHES
Late of Dubbo.
Passed away on 22nd March 2020
Aged 95 years
Wife of Albert (Sammy).
Mother of Greg, Lou, Ro and Katie.
Grandmother of Stella, Bea, Millie, Edwina, Becky, Lucy, James and Tillman.
She will miss all activities cultural, educational, church and dear lifelong friendships to all ages.
Proud member of Dubbo's oldest pioneering family, loved her life in Dubbo.
A private, family only burial will take place with a Memorial Service to be held in the future, when appropriate.
Funeral arrangements are in the caring hands of
W. Larcombe & Son
Dubbo's Premier Funeral Home
FDA Approved
(02) 6882 3199

Public Notices

Expression of Interest
Cultural Heritage Management
On behalf of Alkane Resources Limited, OzArk Environment & Heritage have been engaged to seek registration of Aboriginal groups or individuals who are interested in being consulted with regard to an Aboriginal cultural heritage assessment for the proposed expansion of the Tomingley Gold Operations, located within the Narromine Local Government Areas (LGA).
This consultation will form part of an Aboriginal Cultural Heritage Assessment Report and will assist the Secretary of the Department of Planning, Industry and Environment in their consideration and determination of the Project.
If you hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects or places in the proposed study area, please register your interest. Registrations can be made by post: OzArk EHM PO Box 2069 Dubbo NSW 2830; email: rebecca@ozarkehm.com.au; or by phoning OzArk on 02 6882 0118. All submissions should be received no later than Thursday 9th April 2020.

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Appendix 1 Figure 2: Stage 1 agency letter (sample)

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2069
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

24 March 2020

Narromine Shire Council
PO Box 115
NARROMINE NSW 2821
mail@narromine.nsw.gov.au

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE SAN ANTONIO, ROSWELL AND EL PASO PROSPECTS, TOMINGLEY NSW

Dear Sir/Madam,

OzArk Environment & Heritage (OzArk) has been engaged by RW Corkery & Co Pty Ltd on behalf of Alkane Resources Limited (the proponent) to undertake Aboriginal community consultation as per the *'Aboriginal cultural heritage consultation requirements for proponents 2010' (the Guidelines)* to inform an *Aboriginal Cultural Heritage Assessment Report* (ACHAR) which will form part of an *Environmental Impact Statement*.

The proponent intends to seek development consent under Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to expand into the San Antonio, Roswell and El Paso (SAR) prospects located to the south of the Tomingley Gold Operations (TGO), located in the Narromine Local Government Area (LGA) (**Figure 1**).

Consistent with Section 4.1 of the Guidelines, we are seeking Expressions of Interest from relevant Aboriginal groups and individuals in the local area who wish to be consulted in relation to the Project. This consultation is to assist OzArk and the proponent in preparing the ACHAR, and to assist the Secretary of the Department of Planning, Industry and Environment (DPIE) in its assessment of the Project.

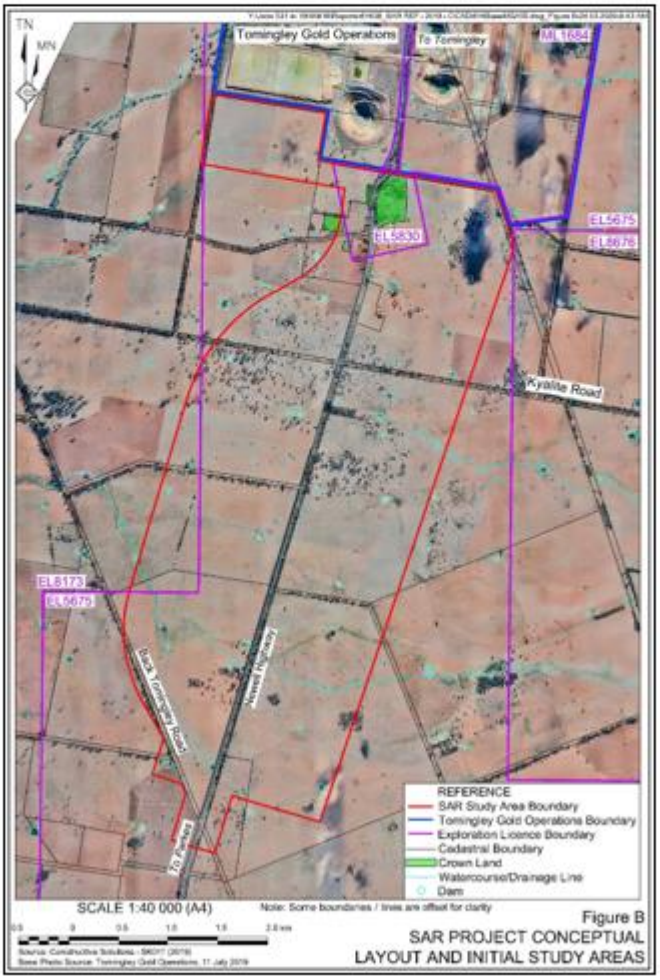
If your organisation can recommend and provide contact details for any known Aboriginal groups or individuals with cultural knowledge relevant to determining the impacts to the cultural significance of the Project, please advise our office. We would appreciate it if you could provide any feedback regarding these Aboriginal stakeholder groups to the contact details provided at the top of the page within **Tuesday 7th April 2020**, or sooner if possible.

Once relevant groups and individuals have been identified, they will form part of the formal consultation process for the Project.

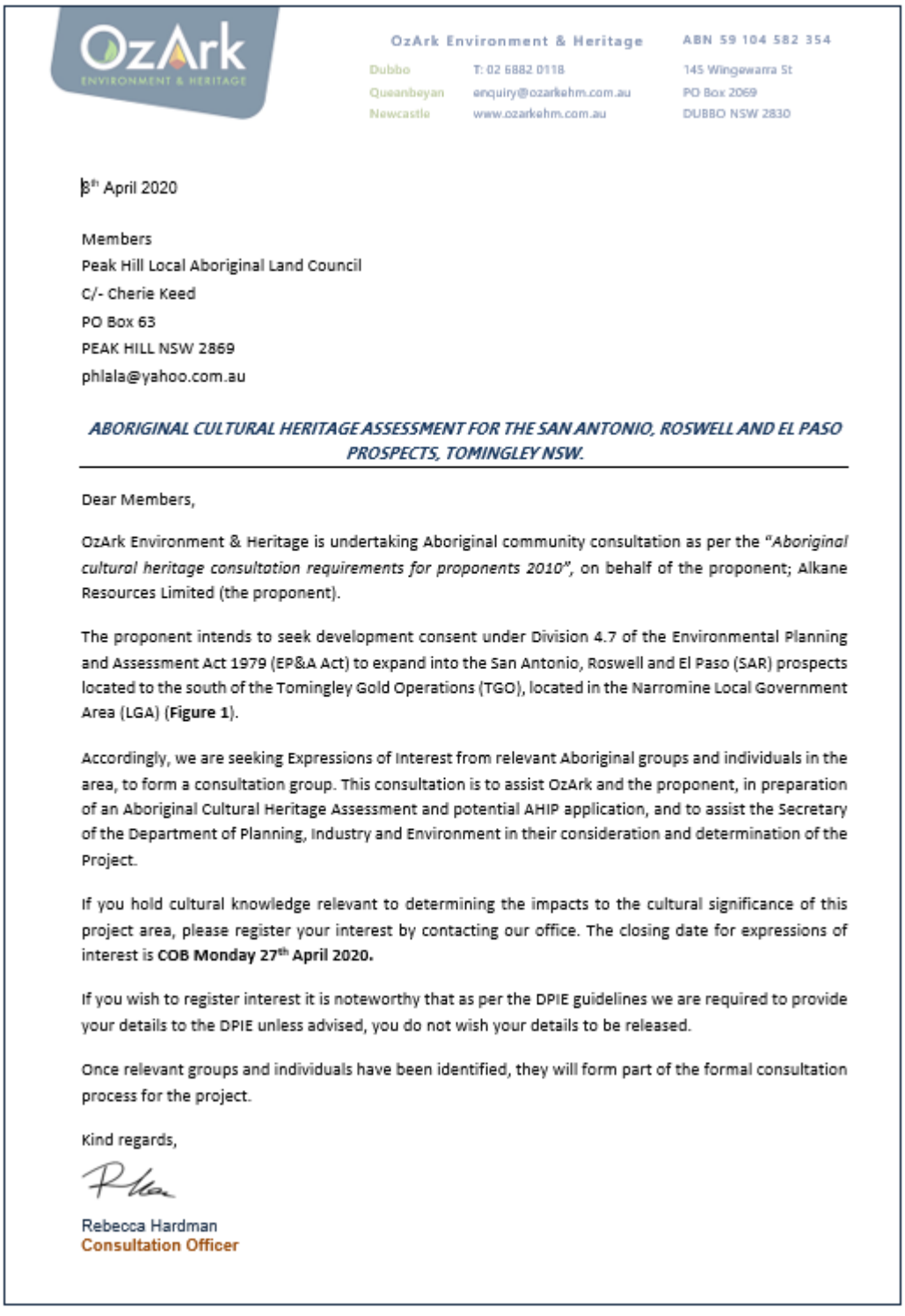
Kind regards,

Rebecca Hardman
Community Liaison & Administration

Figure 1. Indicative Project Layout



Appendix 1 Figure 3: Stage 1 community letter (sample)



OzArk Environment & Heritage ABN 59 104 582 354

Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2069
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

8th April 2020

Members
Peak Hill Local Aboriginal Land Council
C/- Cherie Keed
PO Box 63
PEAK HILL NSW 2869
phlala@yahoo.com.au

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE SAN ANTONIO, ROSWELL AND EL PASO PROSPECTS, TOMINGLEY NSW.

Dear Members,

OzArk Environment & Heritage is undertaking Aboriginal community consultation as per the *"Aboriginal cultural heritage consultation requirements for proponents 2010"*, on behalf of the proponent; Alkane Resources Limited (the proponent).

The proponent intends to seek development consent under Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act) to expand into the San Antonio, Roswell and El Paso (SAR) prospects located to the south of the Tomingley Gold Operations (TGO), located in the Narromine Local Government Area (LGA) (**Figure 1**).

Accordingly, we are seeking Expressions of Interest from relevant Aboriginal groups and individuals in the area, to form a consultation group. This consultation is to assist OzArk and the proponent, in preparation of an Aboriginal Cultural Heritage Assessment and potential AHIP application, and to assist the Secretary of the Department of Planning, Industry and Environment in their consideration and determination of the Project.

If you hold cultural knowledge relevant to determining the impacts to the cultural significance of this project area, please register your interest by contacting our office. The closing date for expressions of interest is **COB Monday 27th April 2020.**

If you wish to register interest it is noteworthy that as per the DPIE guidelines we are required to provide your details to the DPIE unless advised, you do not wish your details to be released.

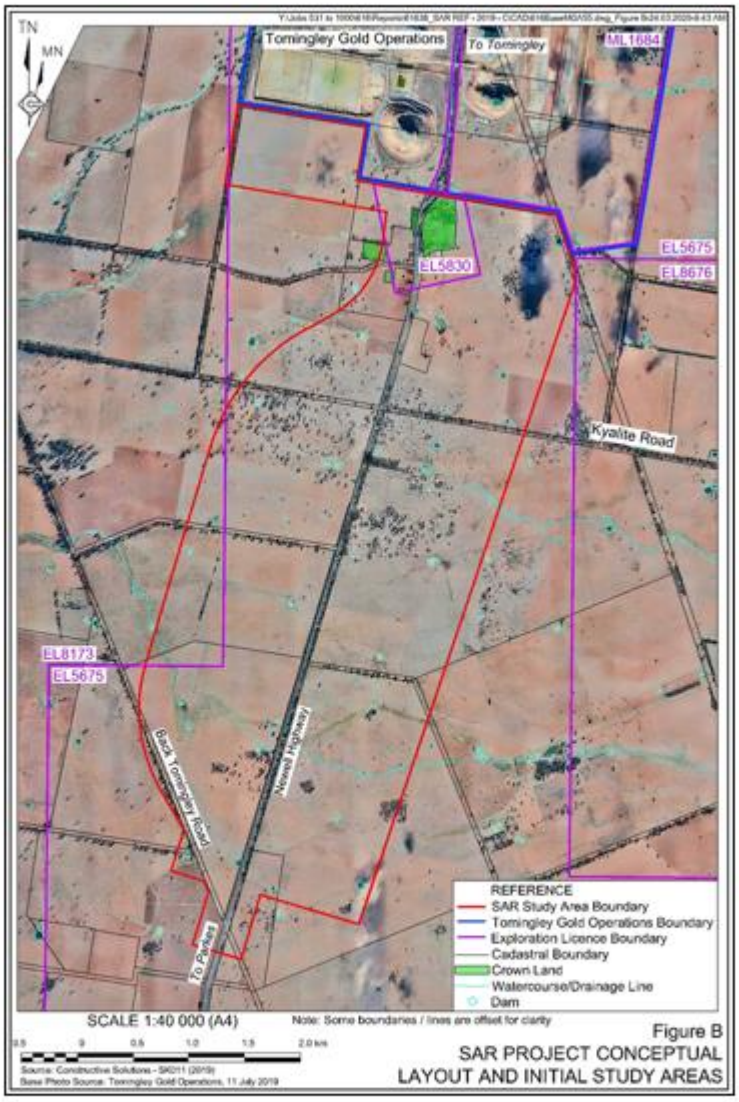
Once relevant groups and individuals have been identified, they will form part of the formal consultation process for the project.

Kind regards,

Rebecca Hardman
Consultation Officer

OzArk Environment & Heritage

Figure 1: Indicative Project Layout.



Appendix 1 Figure 4: Stage 2/3 Survey Methodology cover letter (sample)

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2069
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

29 April 2020

Members
Peak Hill Local Aboriginal Land Council
C/- Cherie Keed
PO Box 63
PEAK HILL NSW 2869
phlala@yahoo.com.au

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE SAN ANTONIO, ROSWELL AND EL PASO PROSPECTS, TOMINGLEY NSW.

Dear Members,

Thank-you for your registration of interest to become a Registered Aboriginal Party (RAP) to be consulted for the proposed expansion of the San Antonio, Roswell and El Paso (SAR) prospects located to the south of the Tomingley Gold Operations (TGO), located in the Narromine Local Government Area (LGA).

The purpose of this letter is to invite you to comment on the enclosed draft methodology for the Aboriginal Cultural Heritage Survey Methodology, San Antonio, Roswell And El Paso Prospects: Tomingley Gold Operations Narromine LGA, April 2020. This assessment will support a potential AHIP application when lodged with the Office of Environment and Heritage (OEH).

In addition to comments on the draft report, if you can share any Aboriginal cultural heritage knowledge relevant to the proposed study area, we welcome this input so as to improve our assessment outcomes and to ensure Aboriginal cultural values are considered. OzArk is required to give you 28 days to supply feedback on the attached document. This period closes 5pm **on Wednesday 27th May 2020.** If you need any help supplying feedback, please do not hesitate to contact our office.

Should you have any queries in relation to the enclosed information please do not hesitate to contact our office.

Kind regards,

Rebecca Hardman
Community Liaison & Administration

Appendix 1 Figure 5: Stage 2/3 Survey Methodology update letter (sample)

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2069
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

30 June 2020

Members
Peak Hill Local Aboriginal Land Council
C/- Cherie Keed
PO Box 63
PEAK HILL NSW 2869
phlala@yahoo.com.au

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE SAN ANTONIO, ROSWELL AND EL PASO PROSPECTS, TOMINGLEY NSW.

Dear Members,

On 29 April 2020, OzArk Environment & Heritage (OzArk) circulated the *Aboriginal Cultural Heritage Survey Methodology: San Antonio, Roswell and El Paso Prospects, Tomingley Gold Operations, Narromine NSW* to all Registered Aboriginal Parties (RAPs) in accordance with Stage 3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs).

Since the closure of Stage 3, the Study Area for the Project has increased in size from approximately 1,600 hectares (ha) to 2,000 ha. As a result, OzArk has amended the sample strategy to take into account the revised Study Area.

Based on the revised Study Area (**Figure 1**), the field assessment will include:

- Full pedestrian survey of approximately 900 ha. This will occur in areas with minimal disturbance and good ground surface visibility within landforms possessing Aboriginal archaeological potential, i.e. areas within 200 m of Bulldog Creek, elevated landforms and areas with remnant vegetation (**Figure 1**)
- Targeted pedestrian survey of approximately 225 ha. This will occur in all other areas: i.e. areas more than 200 m from watercourses; areas with poor ground surface visibility; landforms with low archaeological potential; areas of gilgai and areas with significant prior disturbance (**Figure 1**)
- All trees deemed to be of sufficient maturity to contain cultural modification will be inspected, as well as any areas with outcropping rock
- Some areas may not be physically surveyed if the RAPs and OzArk staff agree they are too disturbed or possess a very low likelihood of sites.

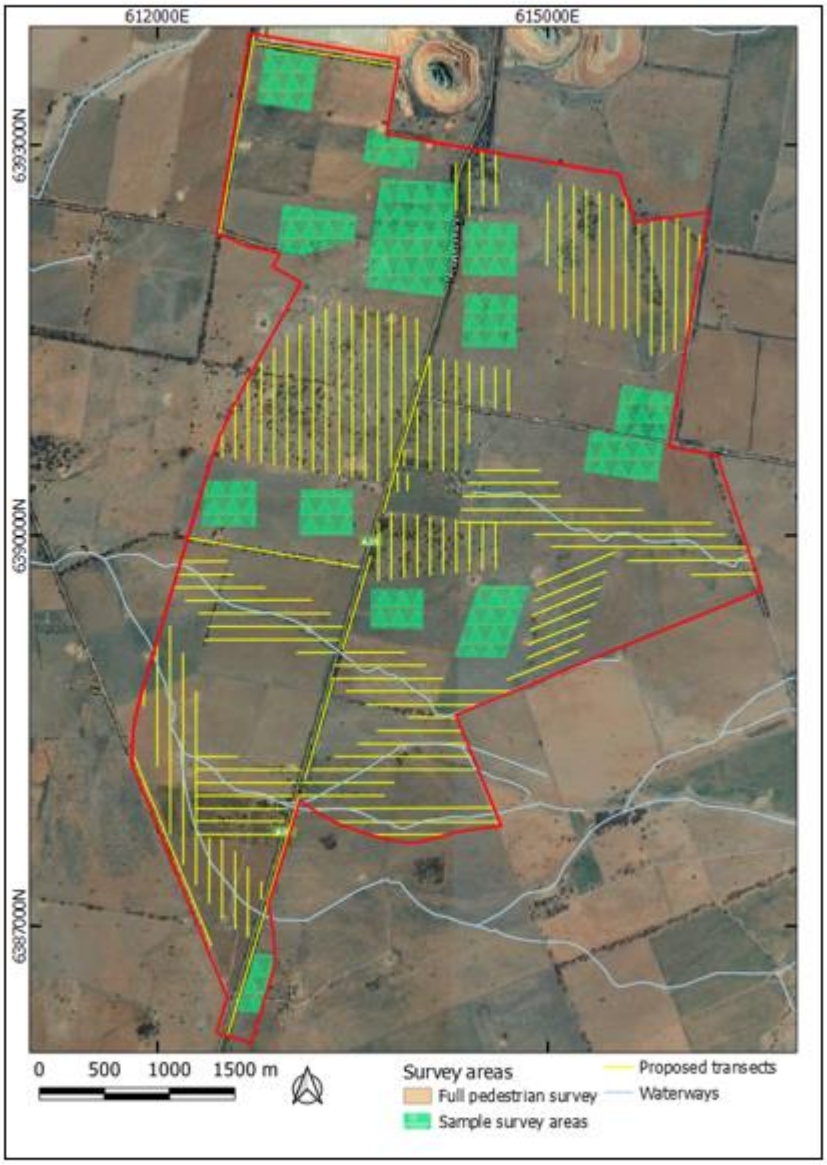
Should you have any queries in relation to the updated Study Area and sample strategy please do not hesitate to contact our office on (02) 6882 0118 or at rebecca@ozarkehm.com.au.

Kind regards,

Rebecca Hardman
Community Liaison & Administration

OzArk Environment & Heritage

Figure 1: Aerial showing the revised Study Area and proposed survey areas.



Appendix 1 Figure 6: Project update letter regarding Modification 5

OzArk Environment & Heritage
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
ABN 59 104 582 354
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

20th October 2020

UPDATE FOR THE ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE PROPOSED TOMINGLEY GOLD DEVELOPMENT PROJECT, TOMINGLEY NSW

Dear Members,

As you are a Registered Aboriginal Party (RAP) of the Tomingley Gold Expansion Project (TGEP), previously referred to as the San Antonio, Roswell and El Paso (SAR) prospects, we are writing to update you on the status of the project.

As you are aware this project commenced in March 2020 leading into the field survey work that took place in August and September this year. The surveys undertaken cover the area of the proposed extension project as shown in **Figure 1.**

The proponent, Alkane Resources, have now determined that the TGEP is unlikely to be approved in time to allow the scheduled construction of Residue Storage Facility 2 (RFS2), and approval for that facility is required by July 2021 to ensure operations of the mine can continue. As a result, an application to modify the current approval for Tomingley Gold Operations, to be referred to as Modification 5 (MOD5) is now being prepared.

This means that a block of land in the north of the extension study area, shown in blue on **Figure 1** and labelled in green as *Residue Storage Facility 2*, will be brought forward for development approval under the MOD5.

From the perspective of the Aboriginal heritage assessment, survey over this block was extensive and no further survey is needed. Furthermore, no Aboriginal sites were recorded over this block. To enable Alkane to progress the MOD5 application, OzArk will prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) that will just cover this block, with the larger expansion project ACHAR to come later this year or early next year.

As a result you will be receiving a draft ACHAR for this smaller area within the next couple of weeks for your review as per Stage 4 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs). You will have **28 days** to review this document and get back to us with any feedback.

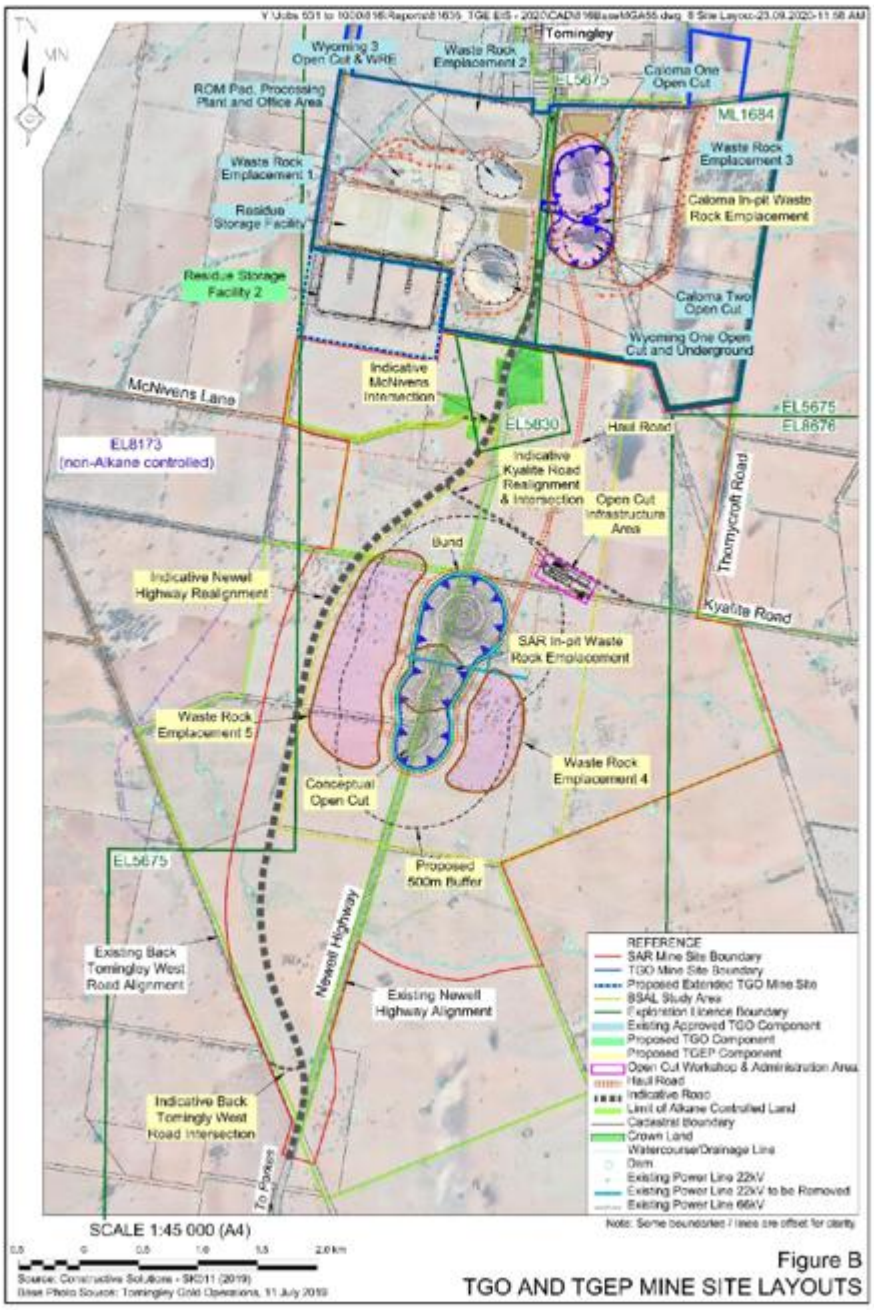
There is no need for you to undertake any specific action in relation to this letter, it was just to provide this update and alert you to the fact that you will soon be receiving the ACHAR.

Please do not hesitate to get in touch if you have any queries and we will be in touch soon.

Kind regards,

Rebecca Hardman
Community Liaison & Administration

Figure 1: Area of the Tomiongley Gold extension project shown in green, with the Modifcation 5 area shown in blue and labelled as the Residue Storage Facility 2



Appendix 1 Figure 7: Project update letter regarding Kyalite Road realignment options.

OzArk Environment & Heritage ABN 59 104 582 354
Dubbo T: 02 6882 0118 145 Wingewarra St
Queanbeyan enquiry@ozarkehm.com.au PO Box 2069
Newcastle www.ozarkehm.com.au DUBBO NSW 2830

10 February 2021

Members
Peak Hill Local Aboriginal Land Council
C/- Cherie Keed
PO Box 63
PEAK HILL NSW 2869
phlalc@yahoo.com.au
aw_1967@outlook.com

UPDATE FOR THE PROPOSED TOMINGLEY GOLD EXTENSION PROJECT, TOMINGLEY NSW

Dear Members,

As you are a Registered Aboriginal Party (RAP) of the Tomingley Gold Extension Project (TGEP), previously referred to as the San Antonio, Roswell and El Paso (SAR) prospects, we are writing to update you on the status of the project.

As you are aware this project commenced in March 2020 leading into the field survey work that took place in August and September last year. The surveys undertaken cover the study area shown in **Figure 1**.

Since the completion of the survey, an additional realignment option for Kyalite Road has been proposed which extends outside the assessed study area (**Figure 1**). As such, further survey is required to assess the proposed alignment. The alignment is approximately six kilometres in length and has a 40-metre-wide corridor.

The results of the additional survey will be included in the *Aboriginal Cultural Heritage Assessment Report* (ACHAR) which will be distributed to all RAPs once a draft is complete as per Stage 4 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs). You will have **28 days** to review this document and get back to us with any feedback.

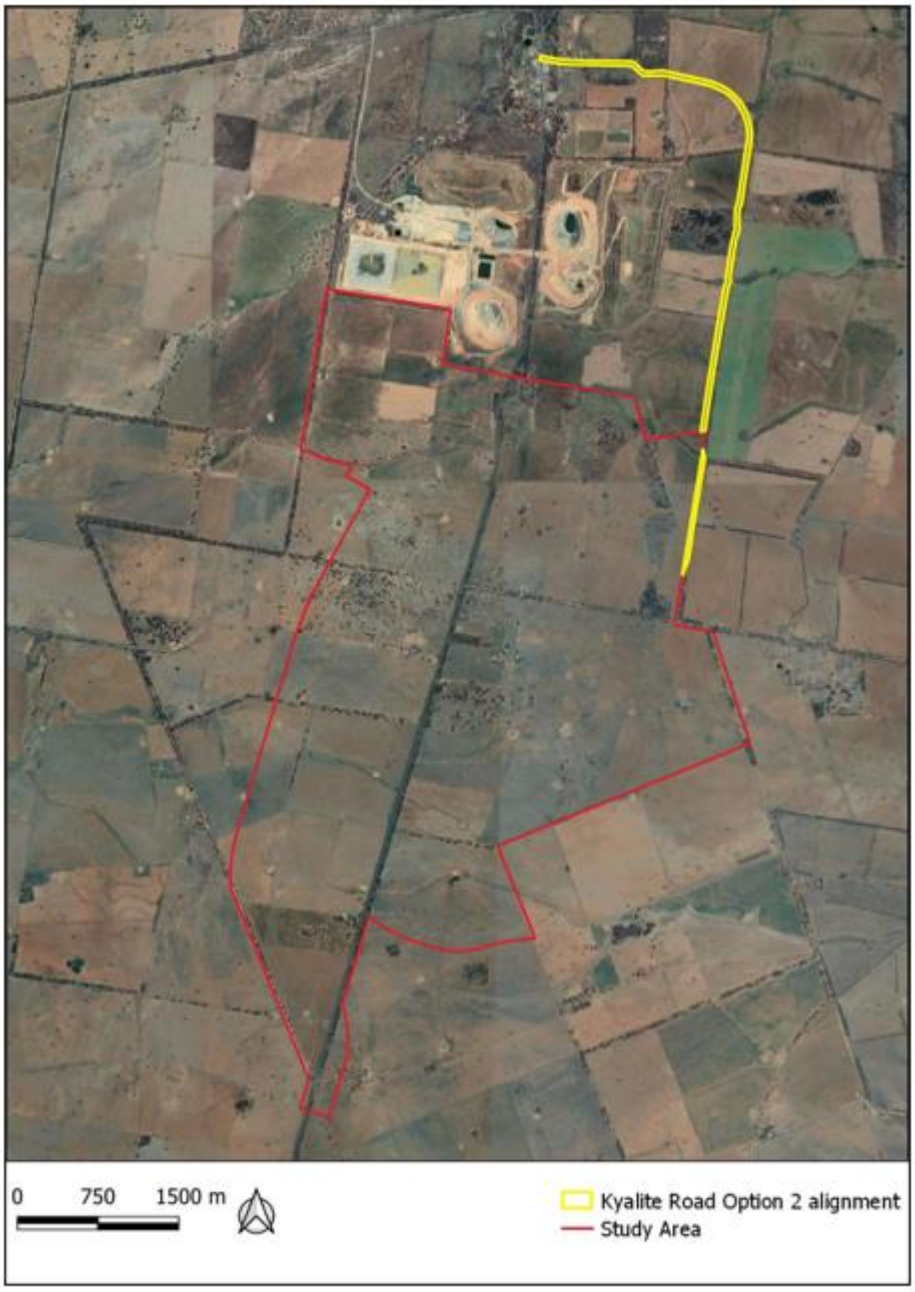
Please do not hesitate to get in touch if you have any queries and we will be in touch soon.

Kind regards,

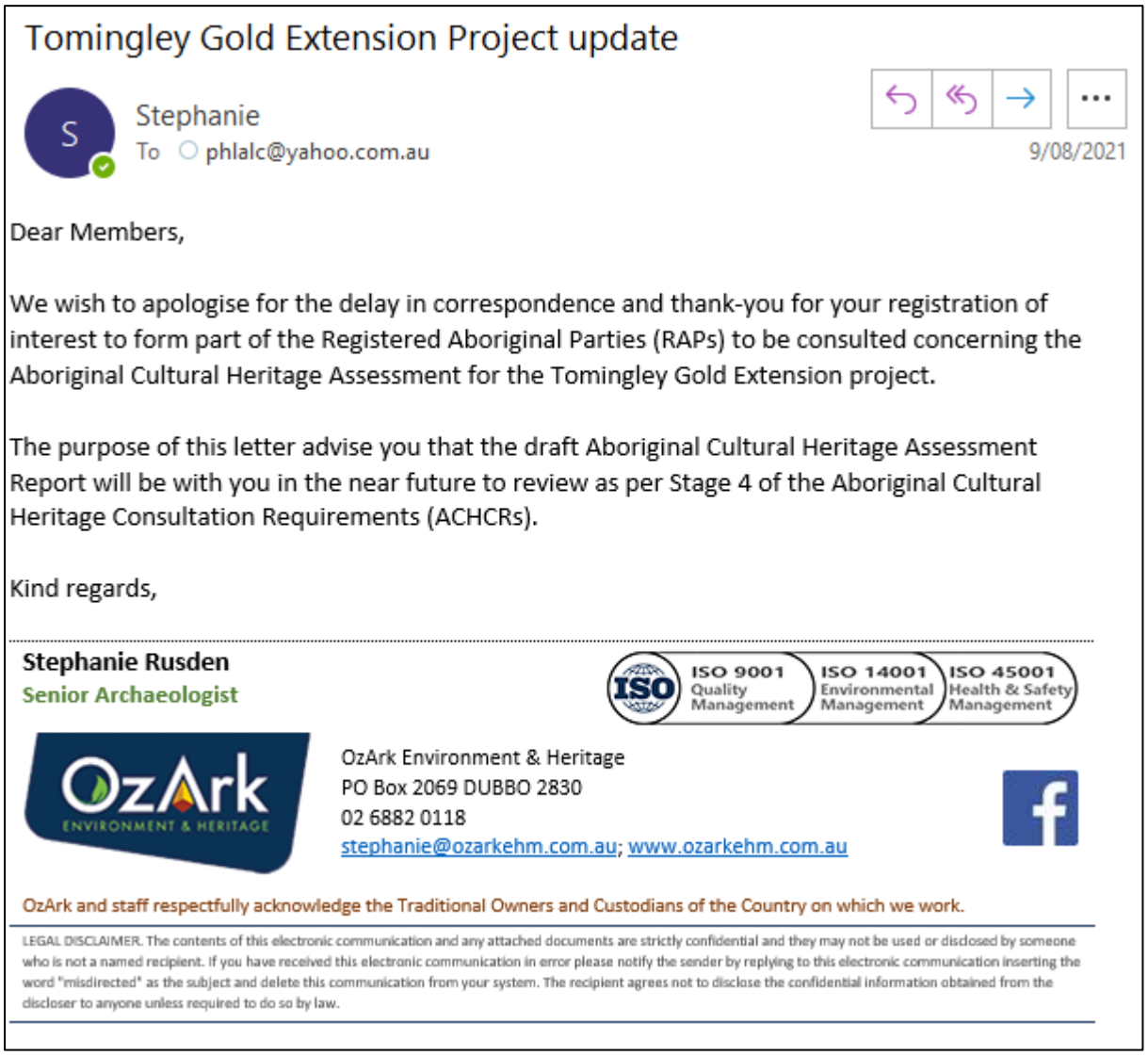
Rebecca Hardman
Community Liaison & Administration

OzArk Environment & Heritage

Figure 1: Option 2 realignment of Kyalite Road in relation to the study area.



Appendix 1 Figure 8: Project update letter regarding draft ACHAR.



Tomingley Gold Extension Project update

Stephanie
To phlalc@yahoo.com.au

9/08/2021

Dear Members,

We wish to apologise for the delay in correspondence and thank-you for your registration of interest to form part of the Registered Aboriginal Parties (RAPs) to be consulted concerning the Aboriginal Cultural Heritage Assessment for the Tomingley Gold Extension project.

The purpose of this letter advise you that the draft Aboriginal Cultural Heritage Assessment Report will be with you in the near future to review as per Stage 4 of the Aboriginal Cultural Heritage Consultation Requirements (ACHCRs).

Kind regards,

Stephanie Rusden
Senior Archaeologist

ISO 9001 Quality Management | ISO 14001 Environmental Management | ISO 45001 Health & Safety Management

OzArk Environment & Heritage
PO Box 2069 DUBBO 2830
02 6882 0118
stephanie@ozarkehm.com.au; www.ozarkehm.com.au

OzArk and staff respectfully acknowledge the Traditional Owners and Custodians of the Country on which we work.

LEGAL DISCLAIMER. The contents of this electronic communication and any attached documents are strictly confidential and they may not be used or disclosed by someone who is not a named recipient. If you have received this electronic communication in error please notify the sender by replying to this electronic communication inserting the word "misdirected" as the subject and delete this communication from your system. The recipient agrees not to disclose the confidential information obtained from the discloser to anyone unless required to do so by law.

Appendix 1 Figure 9: Stage 4 cover letter.

OzArk Environment & Heritage
Dubbo
Queanbeyan
Newcastle
T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au
ABN 59 104 582 354
145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

25 August 2021

Members
Peak Hill Local Aboriginal Land Council
PO Box 63
PEAK HILL NSW 2869
phlalc@yahoo.com.au
aw_1967@outlook.com

ABORIGINAL CULTURAL HERITAGE ASSESSMENT FOR THE TOMINGLEY GOLD EXTENSION PROJECT, TOMINGLEY NSW

Dear Members,

Thank-you for your continued participation as a Registered Aboriginal Party (RAP) and involvement in the Tomingley Gold Extension Project.

Tomingley Gold Operations Pty Ltd (the Proponent) would like to offer you the opportunity to provide feedback on the draft report that has been undertaken in accordance with stage four (4) of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCR).

We would greatly appreciate any feedback regarding the social/cultural values of the recorded sites and the proposed management measures outlined in the ACHAR.

As per the ACHCRs we are required to give you twenty-eight (28) days to supply feedback on the attached document. This period closes on the **Thursday 23rd September 2021**. Should our office not be contacted within this time frame, we will presume that you are satisfied with the contents of the report as it stands.

If you need any help supplying feedback or have any queries, please do not hesitate to contact our office on (02) 6882 0118.

Kind regards,

Brendan Fisher
Project Archaeologist

APPENDIX 2: SURVEY METHODOLOGY

View east from the Newell Highway across the south of the Study Area.

ABORIGINAL CULTURAL HERITAGE SURVEY METHODOLOGY

SAN ANTONIO, ROSWELL AND EL PASO PROSPECTS:

TOMINGLEY GOLD OPERATIONS

NARROMINE LOCAL GOVERNMENT AREA

MAY 2020

Report prepared by

OzArk Environment & Heritage

for Alkane Resources Limited

OzArk
Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

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OzArk Environment & Heritage

DOCUMENT CONTROLS

Proponent	Alkane Resources Limited
Client	RW Corkery & Co
Document Description	*Aboriginal Cultural Heritage Survey Methodology. San Antonio, Roswell and El Paso Prospects, Tomingley Gold Operations, Narromine NSW.*
File Location	OzArk Job No.
S:\OzArk EHM Data\Clients\RW Corkery & Co	2550

Document Status **V3.0 FINAL**	Date 29 May 2020
Draft V1.0 Author to editor OzArk 1st internal (Series V1 = OzArk internal edits)	V1.0 SR author 15/4/20 V1.1 BC edit 16/4/20
Draft V2.0 Report Draft for release to client (Series V2 = OzArk and client edits)	V2.0 OzArk to Client 20/4/20 V2.1 OzArk to RAPs 28/4/20
FINAL V3.0 = Final report	V3.0 OzArk finalises 29/5/20
Prepared For	Prepared By
Alkane Resources Limited	Stephanie Rusden Senior Archaeologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 P: 02 6882 0118 F: 02 6882 6030 stephanie@ozarkehm.com.au

OzArk Environment & Heritage

Acknowledgement

OzArk acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

OzArk Environment & Heritage

CONTENTS

OzArk Environment & Heritage

FIGURES

TABLES

OzArk Environment & Heritage

1 INTRODUCTION

1.1 PREAMBLE

OzArk Environment & Heritage (OzArk) has been engaged by Alkane Resources Limited (the proponent) to prepare a survey methodology for the proposed exploration of San Antonio, Roswell and El Paso (SAR) prospects (the Project) at Tomingley, NSW. This methodology is in accordance with Stage 3 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHCRs). The proposal information provided here also complies with Stage 2 of the ACHCRs.

1.2 STUDY AREA

The Study Area is located to the south of the village of Tomingley, approximately 17 kilometres (km) north of Peak Hill and 38 km south of Narromine, within the Narromine Shire Local Government Area (LGA) (**Figure 1-1**). The Study Area encompasses 1,600 hectares (ha) of flat to gently undulating land located to the south of the Tomingley Gold Operations, on either side of the Newell Highway (**Figure 1-2**).

The land is currently utilised for agricultural purposes, consistent with the historical land use since colonial settlement of the area. There is also a history of gold mining associated with the former McPhail Mine and Tomingley Gold Operations immediately north of the Study Area. The Study Area is currently zoned part RU1 - Primary Production and part SP2 - Infrastructure (the Newell Highway) under the Narromine Shire Local Environmental Plan 2011 (LEP).

1.3 THE PROJECT

The Project will likely comprise both open cut mining and underground mining, with underground operations preceding open cut mining operations in a staged mining development. For underground mining operations, access will be obtained via a decline from the existing Wyoming 1 open cut within the Tomingley Gold Operations site, with a ventilation rise located to the northwest of the intersection of the Newell Highway and Kyalite Road. For open cut mining operations, a series of open cuts and waste rock emplacements (either in-pit or out-of-pit) would be constructed in the vicinity of the San Antonio and Roswell Prospects (Error! Reference source not found.). Layout of the Project has yet to be determined but will be fully contained within the Survey Area. The Project would require the realignment of sections of both the Newell Highway and Kyalite Road.

The proponent is currently defining the resource through drilling ahead of commencing the process of making an application for Development Consent, a Mining Lease and a range of other approvals required to enable mining of the identified resource. A *Review of Environmental Factors* (REF) for exploration activities in support of the SAR Project was submitted in November 2019.

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The SAR project will be classified as a State Significant Development (SSD), however, the *Secretary Environmental Assessment Requirements* (SEARs) have not yet been applied for.

Figure 1-1. Map showing the location of the Study Area.

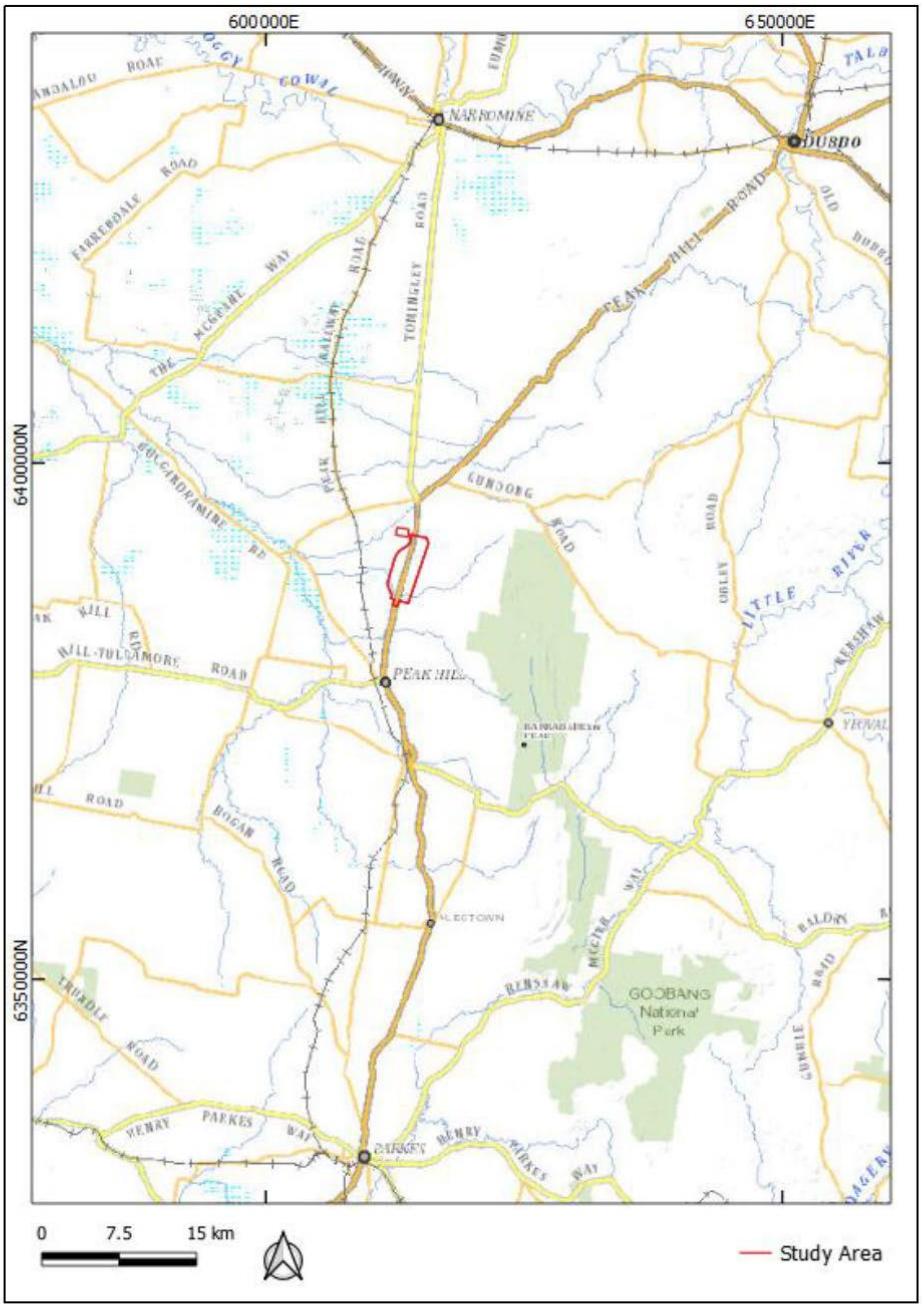

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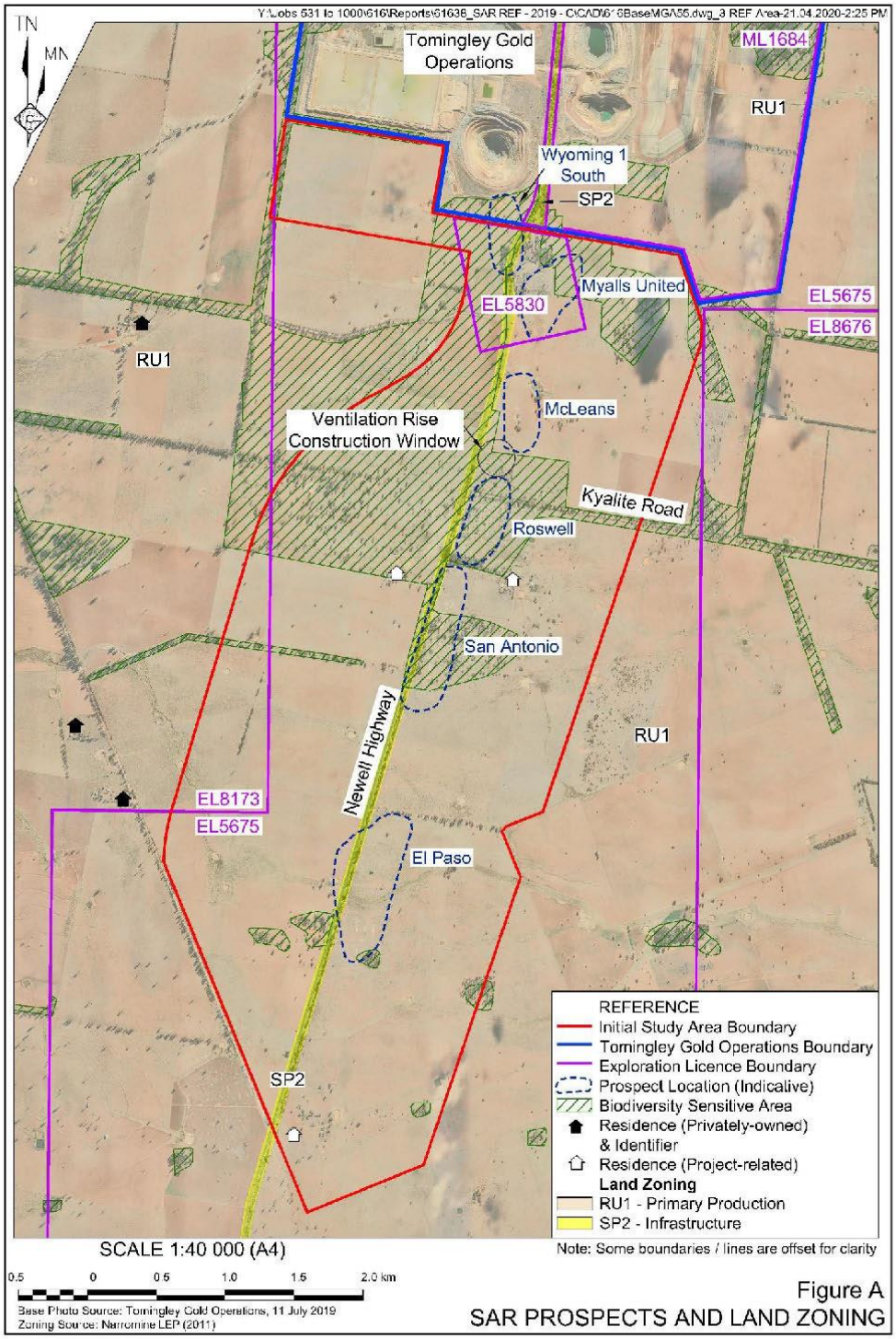
Figure 1-2. Study Area of the Project showing the location of the SAR prospects.



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1.4 CONSULTATION ON THIS METHODOLOGY

Consultation for this proposal has followed the guidelines established in the *Aboriginal cultural heritage consultation requirements for proponents* (ACHCRs, DECCW 2010) whereby an advertisement was placed in the local press and relevant agencies were contacted to ascertain if they were aware of groups or individuals who may have cultural knowledge of the region containing the proposal.

On 26 March 2020, an advertisement was placed in the *Daily Liberal* requesting expressions of interest in being consulted about the Project. In addition, the following agencies were contacted to identify potential stakeholders for the area: Biodiversity and Conservation Division (BCD); Peak Hill Local Aboriginal Land Council (PHLALC); Office of The Registrar, ALRA; National Native Title Tribunal; NTSCORP; Narromine Shire Council; and Central West Local Land Services. Groups or individuals identified by the agencies were contacted on seeking expressions of interest.

As a result, the following groups or individuals registered to be consulted about the proposal. These groups or individuals constitute the RAPs for the Project.

- PHLALC
- Corroboree Aboriginal Corporation
- Tubba-Gah Aboriginal Corporation
- Paul Brydon
- Gunjeewong Cultural Heritage Corporation Heritage Preservation
- Bogan River Peak Hill Wiradjuri Aboriginal Corporation

On 29 April 2020, all RAPs were sent information about the Project and a draft of the survey methodology. RAPs were provided the stipulated 28 days in which to review and comment on these documents as per Stage 3 of the ACHCRs. The closing date for comment was 27 May 2020.

No comments were received from the RAPs on the survey methodology.

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2 ENVIRONMENTAL CONTEXT

2.1 TOPOGRAPHY

The Tomingley area is situated in the physiographic region known as the central-west slopes of New South Wales. It is located just west of the border between the Upper Macquarie River and the Western Plains which is a transitional zone between the Great Dividing Range to the east and the plains of the Darling River to the west (Koettig 1985: 12). The Study Area is located to the northwest of the Herveys Range on the western slopes of the Great Dividing Range.

The topography of the Study Area is typically flat to very gently undulating in the north and west, and undulating with low hills in the east and southeast, a terrain which provides no physical barriers to movement across the landscape. Areas in the central and northern portions of the Study Area consist of gilgai which creates a hummocky micro-relief pattern and therefore are areas with poor runoff.

2.2 GEOLOGY AND SOILS

Understanding land formation processes is an important part of assessing the availability of exploitable resources in the landscape and predicting the ability of that landscape to preserve archaeological material (DECCW 2010).

The Study Area is located near the northern end of a narrow belt of early Ordovician to early Silurian-aged submarine volcanic and shallow intrusive rocks of the Junee-Narromine Volcanic Belt within the Lachlan Fold Belt. Within the Study Area, the basement geology is dominated by the late Ordovician to early Silurian Mingelo Volcanics. Gold occurs in quartz reefs within the sub-surface slates of the Ordovician period.

Sedimentology of the Goonumbla Hills is defined by stony yellow earths, thin brown structured loams on the hills merging with red-brown and red texture-contrast soils on the flats (Mitchell 2002: 60). The Bogan Alluvial Plains consists of red-brown texture contrast soils on the plains with brown and grey cracking clays on the backplains (Mitchell 2002: 49). The primary mode of geomorphic activity within the Study Area is erosion as a result of historical land clearing, cultivation and grazing.

2.3 HYDROLOGY

Bulldog Creek, an ephemeral drainage line, traverses the southern portion of the Study Area (**Figure 2-1**). Bulldog Creek is a tributary of Gundong Creek, located at its closest 330 meters (m) west of the north-western portion of the Study Area. It is noteworthy that historically Gundong Creek terminated in Tomingley as a spring but was diverted through channelling in the nineteenth century and it is this recent creek portion that is north of the Study Area (OzArk 2011).

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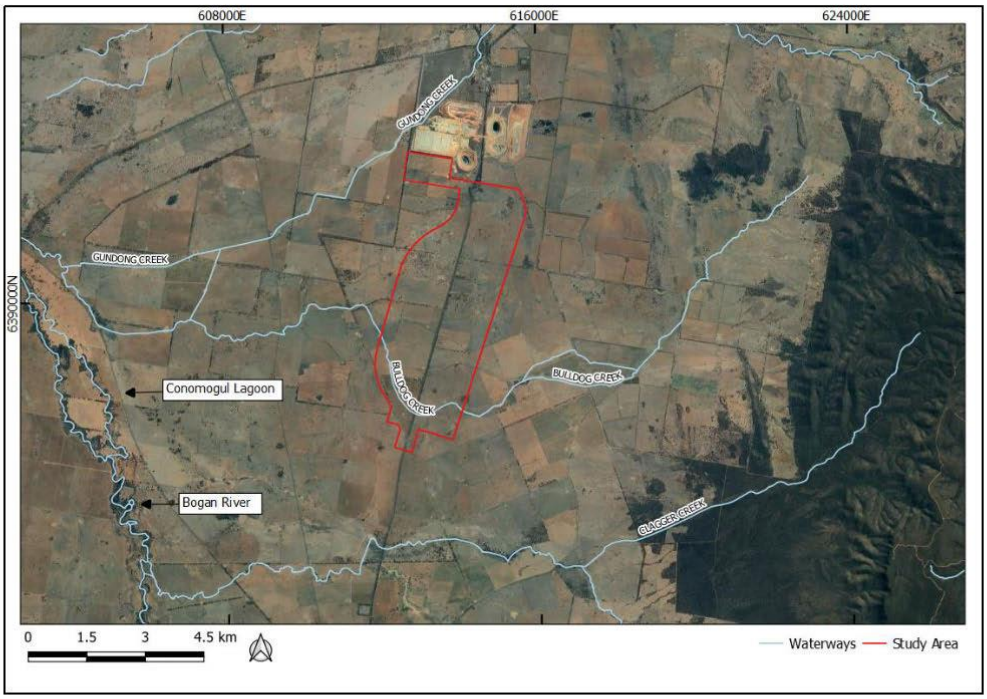
Bulldog Creek and Gundong Creek, flow to the west and southwest and merge with the Bogan River approximately 11 km to the west of the Study Area. The Bogan River flows in a generally north-westerly direction before merging with the Darling River approximately 80 km upstream of Brewarrina.

Figure 2-1. Hydrology of the study area and surrounds.



2.4 VEGETATION

Native vegetation in the study area is highly disturbed due to previous land clearing for agricultural purposes. The majority of the Study Area is currently used for intensive cropping farming. There are, however, several areas with remnant trees across the Study Area generally along transport routes, along drainage lines and on crests.

Prior to historic clearance, vegetation within the Study Area and surrounds would have been consistent with the Floodplains Transitional Woodlands vegetative formation as described by Keith (2004). Tree species included *Eucalyptus microcarpa* (Grey Box) and *E. populnea* subsp. *bimbil* (Bimble Box) throughout with *E. melliodora* (yellow box) and *E. conica* (Fuzzy Box) occurring in the 'damper areas', and *E. camaldulensis* (river red gum) occurring on creek banks. Elevated red soiled gravel ridges supported *E. dwyeri* (Dwyer's red gum), whilst drier soils may support an occasional *Brachychiton populneus* (kurrajong), *Allocasuarina cristata* (belah) or

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Allocasuarina luehmannii (bulloak) but are mostly dominated by *Callitris glaucophylla* (white cypress pine).

2.5 CLIMATE

Climate statistics from the Peak Hill Post Office show the area experiences warm to very warm (hot) summers, with an average rainfall of 561 millimetres (mm), predominately occurring in summer. The average summer maximum temperature is 33.5˚C and maximum winter temperature 19.5˚C (BoM 2020).

2.6 EXISTING LEVELS OF DISTURBANCE

Disturbance, historical or natural, potentially alters the archaeologically record. It can do this in a variety of ways; either directly or indirectly. For example, land clearing directly removes a particular site type: usually scarred trees or stone arrangements. Indirectly, land clearing accelerates soil erosion, potentially resulting in previously buried occupation / activity sites becoming exposed and altered / damaged.

The Study Area has moderate to high levels of disturbance mostly consisting of impacts related to the area's agricultural use. Disturbances across the Study Area are summarised below:

- **Agriculture and Pastoralism.** Farming and grazing are fundamental to the local economy and dominate land-use throughout the area. The Study Area is wholly contained within farming and grazing land which has had the following impacts:
    - **Vegetation removal.** The Study Area has been subject to significant levels of vegetation removal. Culturally modified trees may have been removed during the land clearance phase in the area, thereby distorting the archaeological landscape by removing this site type
    - **Cultivation.** The entirety of the Study Area has been subjected to repeated cultivation. Repeated cultivation since the commencement of European settlement will have altered soil profiles and potentially disturbed the integrity of sites and any potential sub-surface archaeological deposits. Cultivation acts to redistribute artefacts both horizontally and vertically within the soil profile and ultimately destroys the integrity of artefact assemblages within the top 20 to 50 centimetres (cm) of the soil profile. Research into the impacts upon archaeological sites as a result of agricultural practices, termed plough zone archaeology, has demonstrated that artefacts can move in excess of 8 m per season of cultivation (Frink 1984; Gaynor 2001)
    - **Grazing.** The Study Area has been used historically and is currently used for low-intensity livestock grazing. The presence of hoofed livestock is likely to have resulted in trampling and compaction of the ground surface which accelerates soil loss
    - **Farm Infrastructure and remediation works.** The Study Area has an overall low level of disturbance generated by the construction of dams, contour banks, agricultural buildings and fencing. Earthworks associated with contour banking

and dams can reveal lithic artefacts which may have been otherwise concealed by low ground surface visibility (GSV).

- **Dwellings.** A low level of disturbance is generated by the construction of dwellings and associated farming structures located within the Study Area at three locations
- **Transport.** The Newell Highway traverses the central portion of the Study Area. Additional graded roads which traverse the Study Area include McNivens Lane, Back Tomingley West Road and Kyalite Road. A limited number of farm tracks also intersect the Study Area. In the case of unsealed tracks, this disturbance tends to provide exposures, thus enabling the identification of otherwise obscured artefacts
- **Erosion.** Erosion includes sometimes gully erosion and sheet wash erosion, primarily adjacent to waterways. Varying scales of erosion on the archaeological landscape has the capacity to completely remove archaeological sites. However, in the process of erosion, many archaeological sites can become freshly exposed.

2.7 CONCLUSION

The landscape of the survey area is likely to have been hospitable to Aboriginal people, given the temperate climate, accessible topography; however, relative to surrounding landscapes, it does not contain features, such as a permanent water supply (the Bogan River) or shelter (Hervey Ranges) that are most likely to encourage substantial Aboriginal occupation of the landscape. As such, the size and density of sites located within the Study Area are likely to be smaller and sparser than those to the west and south which are in closer proximity to the Bogan River and to the east around the Hervey Ranges.

The high level of ground surface disturbance across the Study Area from activities associated with European occupation such as vegetation clearance, cultivation and grazing would have affected the integrity of any deposit based archaeological sites. As such, unobtrusive sites such as open artefact scatters, if present, are likely to be disturbed. Broad-scale vegetation clearance characteristic of the area reduces the likelihood that culturally or historically modified trees remain *in-situ;* however, the presence of a number of standing mature eucalypts across the Study Area increases the possibility of this site type.

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3 ARCHAEOLOGICAL CONTEXT

3.1 INTRODUCTION

The Study Area is located in an area where the nearby archaeological values are largely known due to the considerable number of previous assessments completed in adjacent landforms.

This survey methodology will summarise limited studies that are most applicable to the Study Area although the predictive model for site location will consider the broader archaeological context of the district.

3.2 ANTIQUITY OF ABORIGINAL OCCUPATION

At the time of colonial settlement, the Study Area was within the territory of people belonging to the Wiradjuri tribal and linguistic group (Tindale 1974 and Horton 1994). The Wiradjuri tribal area is situated within the Murray Darling Basin, covering three primary physiographic divisions: the riverine plains in the west, the transitional western slopes in between and the highlands or central tablelands in the east (White 1986).

The Study Area falls within the central division, being the transitional western slopes into the central tablelands, the heart of Wiradjuri territory. More specifically, the local landscape of the Study Area is considered to be that of the Bogan River Wiradjuri people, whose range included Tomingley and was bounded to the east by the Hervey Ranges (as named by Oxley) now known as Goobang, from the Aboriginal original name for ranges.

While it is most likely that the name—Tomingley—was a variant on the name Tom Inglis, who was a stagecoach driver between Dubbo and Parkes, it is also possible it was a local Aboriginal word. Garnsey, an ethnographer, who recorded extensive details about Aboriginal people in Dubbo, noted the word Tomingley is an Aboriginal word for death adder, although; he had never seen or heard anyone refer to a death adder in the region (Garnsey 1942: 62). It is most likely he found this information in Walker, who recorded the Wiradjuri language in this region. Walker noted that 'Tomingley' means 'deaf adder country' (Walker 1904: 90).

Episodes of early contact between Aboriginal and colonial cultures from the nearby Lachlan Valley (around 30 km south) were documented by the explorers Oxley and Cunningham in May 1817. On the return journey from exploration of the Lachlan, the explorers tracked north of Lake Cargelligo and Condobolin to the west of Parkes before bearing more northeast towards Peak Hill and Tomingley (Whitehead 2003: 290–296). On the 10th and 11th of August the group set up camp west of the Bogan River near Gobundry Mountains along Genaren Creek, reaching almost the Bogan River by the 12th of August and arriving just north of Tomingley on 13th August.

Relating to the travels of August 10, Oxley writes:

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> *We have hitherto seen no other signs of this being inhabited country than the marks usually made by the natives in ascending the trees, and none of these were very recent. It is probable that they may see us without discovering themselves…*
>
> (Whitehead 2003: 298)

While Cunningham (1817) reported that:

> *…we halted and pitched our tent on the site of an old native encampment. Here we saw quantities of horse-mussel shells with which the creek had furnished them and some stones on which they had been sharpening some weapons or instruments, perhaps their mogos or stone hatchets.*
>
> (Whitehead 2003: 299)

Heading east from Genaren Creek on the 11th August, Oxley notes that they came across many transitory encampments of the 'natives' that did not appear to have been used for four to six months and many with mussel shell scatters in association.

August 13 was spent traversing the landscape from Genaren Creek to Tomingley, hoping to intersect the Macquarie River at any moment (although they were further from it than they realised). It appears that it had rained in the preceding days and water still lay in creeks of the area and they camped just north of Gundong Creek near Tomingley Creek, where they note the presence of a spring. Oxley writes of their approach to the area that:

> *On the banks of that burn* (Scottish for creek)*, many heaps of the pearl muscle-shells were found, and marks of flood about eight feet. We have for several days past seen no signs of any natives being recently in this part of the country; the marks on the trees, which were the only marks we saw, being several months old, and never seen except in the vicinity of water. Marks of the natives' tomahawks were to us certain signs of approaching water…*
>
> (Whitehead 2003: 303)

To the south of the Study Area and somewhat later (1835) are accounts of contact with native groups by the Mitchell expedition, which had set out to explore the Bogan River in 1835 (Unger undated: 3; Kass 2003: 6). In April 1835 Mitchell's party encountered a group of natives on the eastern outskirts of what is today the town of Parkes. From this meeting, Mitchell learned that what had been named the Hervey Range by Oxley in 1817 was in fact known to the locals as 'Goobang', which derived from the Aboriginal word *Coleong Coobung*, which meant place of many wattles (Kass 2003: 9). Mitchell's group camped within earshot of the Aboriginal camp and his account is quoted by Unger (nd: 4):

> *The natives who we met here were fine looking men, enjoying contentment and happiness within the precincts of their native woods. Their enjoyment seemed so*

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> *derived from nature, that it almost excited a feeling of regret, that civilised men, enervated by luxury and all its concomitant diseases, should ever disturb the haunts of these rude happy beings. The countenance of the first man who came up to me, was a fine specimen of man in an independent state of nature. He had nothing artificial about him, save the badge of mourning for the dead, a white band (his was very white), round his brow. His manner was grave, his eye keen and intelligent, and, as our people were encamping, he seemed to watch the moment when they wanted fire, when he took a burning stick, which one of the natives had brought, and presented it in a manner expressive or welcome, and an unaffected wish to contribute to our wants. Sat a distance, their gins sat at fires, and we heard the domestic sounds of squalling children.*

When Mitchell's party left their camping spot, several natives reportedly followed them, one of whom speared a large kangaroo, while others used new tomahawks to extract honey from tree branches. It is recorded that the natives accompanied the expedition for four days before retreating upon the appearance of further natives. This was interpreted by Mitchell as the original group of natives having reached their tribal boundary (Unger nd: 5).

Upon reaching the headwaters of the Bogan (southwest of Peak Hill), Mitchell records encountering the tribe of 'Bultje', said to be composed of up to 120 natives of considerable intelligence who could speak some English. He describes that this tribe remove one of the two front teeth of males aged over 14 (Unger nd: 5). Mitchell's accounts of the 'Bogan blacks' provide excellent detail on subsistence, describing this tribe to be reliant more on possums, kangaroo and emus than the lower Darling Aboriginal groups, but with a significant input from freshwater mussels. The root of the 'tao' plant are said to have comprised much of the children's diet.

Anthropological or ethnographic research ceased in the Peak Hill and Tomingley region during the 20th century.

3.3 REGIONAL ARCHAEOLOGICAL CONTEXT

The most relevant research-based studies over the central west and Lachlan Valley were undertaken by Kelton (1996), English et al (1998) and OzArk (2016). These studies provide baseline data for placing past Aboriginal sites within a regional landscape context. The following is a summary of the salient points learned from these studies.

In 1996, Kelton completed research-based assessment of Aboriginal scarred trees and other archaeological sites in the Lachlan Valley region. Kelton highlighted that sites found within the Lachlan Valley reflect diversity and different levels of past Aboriginal occupation, hunter-gatherer lifestyle and technology, as well as varying forms of resource extraction. Research into site registrations in the Lachlan Valley display that those with the greatest frequency are open campsites and scarred trees. Around 220 Aboriginal scarred and carved trees were recorded in

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the Lachlan Valley by 1996, commonly found on yellow box, grey box, river red gum, fuzzy box and bimble box (Kelton 1996). According to Kelton, scarred trees can be expected to occur over almost all landform units, however, frequency tends to increase with proximity to water. Kelton also noted differences in the types of culturally modified trees concluding that scars result from what may be considered 'normal' routine domestic purposes associated with the hunter-gatherer lifestyle, and carving which results from more culturally complex traditions, including the marking of burials and or ceremonial sites (also known as Bora Grounds). The second most numerous site type, the open campsite, was noted at 210 locations in 1996 (Kelton 1996). Within the Lachlan Valley, open campsites tend to be located in close proximity to reliable water sources such as rivers, creeks, billabongs and lakes, and gilgai formations, playa lakes, ephemeral drainages, and usually at elevated terrace locations, or along non-flood prone, elevated ground nearby these formations.

In 1998, English et al undertook survey of Goobang National Park which includes the Hervey Ranges, located 8 km east of the Study Area, and described a settlement pattern similar to the ones described above (English et al 1998: 196). Results of this assessment recorded 30 open camp sites representing both short- and long-term occupation sites. Artefacts from these sites numbered 928 and were predominantly made from volcanic stone and quartz. Also recorded were 28 modified trees, thought to not represent all likely to be present considering the wooded nature of Goobang National Park and therefore reflecting the amount of coverage feasible over such a large area (42,080 ha). One large axe grinding groove site was recorded comprising 13 elongated grinding grooves over three outcropping boulders, assessed as a significant site as it is the only one recorded in Goobang National Park and is in good condition. A quarry site accessing volcanic stone identified as rhyolite was also found. A 2001 report issued by the NSW National Parks and Wildlife Service (NPWS) details the findings of this survey, shedding some insight to the nature of settlement patterns in the region and noting the importance of the Hervey Ranges. These investigations note a widespread use of the resources in the Hervey Ranges with the watercourses of the lower slopes and undulating plains seeing the most extended and repeated occupation. It also records the importance of the Hervey Ranges to the Wiradjuri as a travelling route, landmark and its possibility of having important ceremonial value.

More recently in 2016, OzArk was engaged by the Central West Local Land Services (CWLLS) to formulate and test a predictive model for Aboriginal site location within Travelling Stock Reserves (TSRs) across the CWLLS area. In formulating a predictive model for site location, Mitchell (2002) landscapes were used to understand the underlying landform type. The resolution of the Mitchell landscape units was too fine to be of use and OzArk (2016) used a higher-level classification within the Mitchell landscape units to describe the landscapes within the CWLLS area. Landscapes were divided into the following types:

- Channels and floodplains

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- Alluvial plains
- Slopes
- Uplands
- Downs.

Previously recorded AHIMS sites were plotted against these landscape types and the following observations made:

- A high number of sites (n=876) were located within slopes landscapes, however, this result could be due to the fact that Dubbo is located within a slopes landscape and the highest number of sites in the CWLLS area is recorded in and around Dubbo
- The highest density of sites is within channels and floodplains landscapes (n=927)
- Alluvial plains landscapes have the third highest density of sites (n=770)
- Relatively small numbers of sites are recorded in uplands (n=5) and plateau (n=34) landscapes
- A moderate number of sites are recorded in downs landscapes (n=255). Three or four clusters of sites exist in downs landscapes, which may have skewed the data. If the veracity of all site recordings in this category could be verified, it is suspected that the actual number of sites in downs landscapes would be lower.

OzArk (2016) divided the CWLLS area into two stream orders—major watercourses (normally named rivers) and minor watercourses (normally named creeks and their larger tributaries)—and buffers were established for each watercourse type as follows:

- Drainage 1 buffer: 200 m either side of a major watercourse
- Drainage 2 buffer: 100 m either side of a minor watercourse.

As such, the OzArk (2016) CWLLS predictive model made predictions based on the landscape type and distance to watercourses. The predictive model was tested by assessing 32 TSRs within the CWLLS area located in a variety of landscape types with variable distances to water. As a result of the assessment, 59 sites were recorded. Twenty-six (44%) of the recorded sites were modified trees, 22 (37%) were artefact scatters and 11 (19%) were isolated finds. The majority of recorded sites were located in channels and floodplains landscapes (35 sites or 59% of all sites), followed by 10 in slopes landscapes, four in alluvial plains landscapes and one in a downs landscape. No sites were recorded in uplands or plateau landscapes.

Table 3-1 demonstrates that the most archaeologically sensitive landscape in the CWLLS area is channels and floodplains, followed by slopes landscapes. Other landscape types have a low representation but demonstrate that low densities of sites exist in other landscape types.

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Table 3-1: Association of all recorded sites to landscape units (OzArk 2016).

Landscape unit	Number of sites	Percentage of total (n=59)
Channels and floodplains	36	61
Alluvial plains	6	10
Slopes	14	23
Downs	1	2
Uplands	2	4
Plateau	0	0

Site types associated with the landscapes most-frequently recording sites (channels and floodplains and slopes) show that channels and floodplains landscapes are more likely to contain modified trees and that slopes landscapes are more likely to contain artefact scatters and isolated finds (**Table 3-2**).

Table 3-2: Frequency of site types in association with landscape types (OzArk 2016).

Site type	Channels and floodplains	Slopes	Alluvial Plains
Artefact scatter	11 (30.5%)	7 (50%)	3 (50%)
Isolated finds	4 (11%)	3 (21%)	3 (50%)
Modified trees	21 (58.5%)	4 (29%)	0 (0%)

In terms of drainage buffers, OzArk (2016) found that 27 sites (or 46% of all sites) were recorded with the Drainage 1 buffer and 10 sites (or 17% of all sites) were recorded within the Drainage 2 buffer. Therefore, more than 63% of all sites were recorded within the two drainage buffers, with a clear bias toward Drainage 1 buffers.

3.4 PREVIOUS ASSESSMENTS NEAR THE STUDY AREA

Wiradjuri heritage in the Parkes–Peak Hill–Narromine region has been documented through many development-related heritage assessment projects. The following review of studies undertaken over this region help to provide a backdrop for the type of sites likely to occur within the Study Area.

3.4.1 McPhail Mine

An Environmental Impact Statement was prepared in 1995 for the proposed reprocessing of tailings from the original McPhail Mine (Cook 1995), immediately north of the Study Area. No physical heritage assessment was undertaken in the face of this proposal due to the conclusion that the site of the tailings had already been substantially disturbed during original mining operations hence leaving a low likelihood for the presence of archaeological remains (Cook 1995: 21). The fact that the site contained no surface water and no evidence of 'native activity' (Cook 1995: 21) was also mentioned.

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3.4.2 Northparkes Mine

A large development within the local region is Northparkes Mine (NPM), situated 24 km southwest of the Study Area, close to the headwaters of the Bogan River. Assessment of this area began in 1986 with a survey over the Goonumbla Mining Lease as it was then known (Stone 1986). A total of 16 sites were recorded as a result of this assessment consisting of 14 artefact scatters, of which one was associated with a modified tree, and one further isolated find. Overall, these sites were noted as being small and in poor condition, either disturbed by ploughing or erosion. Fifteen of these sites were located along the Bogan River or one of the two tributaries assessed during the study. Seven of the sites were within 1 km of the confluence of Goonumbla Creek and the Bogan River.

Subsequent survey at NPM was undertaken (Nicholson 1990) to assess new proposed impacts to an area not previously assessed by Stone (1986). The study area comprised flat to gently undulating land at the north-eastern boundary of the mining lease over previously cleared paddocks that had been either ploughed or grazed. Dense grass reduced visibility and hence site detection, and as a result, the survey was focussed on fence lines and the areas around dams which provided limited windows of visibility and resulted in coverage of around 4% of the impact area. No archaeological sites were recorded as a result of this assessment. The lack of sites was not considered surprising due to the distance from permanent water and the type of landscape assessed.

Again, to facilitate continuation of operations at NPM, an Aboriginal heritage assessment was required over areas proposed as extensions to the existing mining operations, predominantly over portions of Limestone National Forest and nearby agricultural lands (Appleton 1996). The survey area was noted as comprising about 60 per cent cypress pine, although it was likely to have been box dominated dry sclerophyll open woodland in prehistory. The area contains an elevated depression in the northern portion and undifferentiated gentle slopes down towards Goonumbla Creek in the southern portion. Prior land-use impacts within the survey area were noted as including logging, grazing, and in some locations, ploughing. Survey effort was focussed on areas around such features as erosion scars, tracks and despite the variable visibility, survey coverage was assessed as effective. Four archaeological sites were recorded as a result of this assessment, three being isolated finds and one being a possible modified tree. The overall paucity of archaeological material was interpreted as relating to the fact that the study area was dry sclerophyll woodland with no specific water source or other resources that would concentrate Wiradjuri occupation and was more likely used for activities such as foraging.

In 2006 reinvestigation was again required (Paton 2006). The aims of this assessment included the relocation and assessment of previously recorded sites, survey of areas to be impacted by the current proposal and the delineation of zones of potential archaeological sensitivity within the study area. The study area was noted as being highly modified with the only area not completely

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cleared and disturbed being that of the Limestone National Forest, despite it having been logged in the past. Surveying was undertaken in transects which targeted the zones. Overall survey coverage of the proposed impact areas was determined as high, being 45–50%. Three new sites were recorded as a result of this assessment, one small open site and two isolated finds. In terms of zones of archaeological sensitivity, Paton divided the mine site into four zones:

- Zone 4 — zero sensitivity (disturbed by mining impacts)
- Zone 3 — very low sensitivity (flat waterless terrain – 35% of the study area)
- Zone 2 — low sensitivity (Limestone National Forest – 10% of the study area)
- Zone 1 — medium sensitivity (Goonumbla Creek – 5% of the study area).

It was noted that the Zone 1 area provides potential for sites close to the water course on flat, elevated terrain. These are most likely to be surface scatters although there is an assessed low potential for stratified sub-surface archaeological deposits.

In 2008 OzArk carried out archaeological test and salvage excavations in Zone 1 where a new conveyor was planned to be built (OzArk 2008). The aim of the excavation program was to determine the presence and nature of archaeological deposits in this part of Zone 1 so that management recommendations concerning the building of the conveyor could be made. The research methodology stated that if results of the test program warranted, limited salvage was to be undertaken. As part of the excavation program, a spoil heap was sieved to retrieve cultural material. This spoil heap had been created when a pad for a drilling rig was accidentally cleared in 2007. As this area was located within Zone 1, the sieving of the piled soil was included in the research design of the excavation program as the Wiradjuri community wished to retrieve artefacts potentially within it.

The results of the excavation program and accompanying geomorphological assessment indicated that Zone 1 was impacted in the past by both agricultural land use and mining infrastructure and was assessed as being disturbed over most of the area investigated by the excavation program. These disturbances included the building of roads, installation of overhead electricity lines, underground water mains and ploughing for crops. In addition, the area has been cleared of native vegetation. This disturbance was noted in the excavated pits, which were shallow (around 10–20 cm before the B-Horizon [clay] was reached) and the shallow topsoils were impregnated with intrusive rock (brought in as road surfaces), recent charcoal (from vegetation clearing) and no archaeological stratigraphy was noted in any pits. Artefact densities across the area were low and although artefacts were recorded it was extremely difficult to determine if any of these were from *in situ* deposits, although it was assessed to be unlikely. Artefacts recovered from the excavations were typical of the region and consisted mostly of unmodified flakes.

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3.4.3 Marsden-Parkes Natural Gas Pipeline

A series of 11 sites recorded by Navin Officer (1997) extend along the Marsden to Dubbo natural gas pipeline, which follows the Narromine to Parkes rail line. These sites comprise six isolated finds and five artefact scatters. One of the artefacts scatters, 35-6-0070, was recorded in association with a possible hearth. Recorded materials included quartz, silcrete and chert. All artefact scatters were recorded within 200 m of a creek line, including Gundong and Burrabadine Creeks.

3.4.4 Newell Highway Pavement Rehabilitation at Tomingley

OzArk (2003) completed an archaeological assessment for the Roads and Traffic Authority (now Transport for NSW [TfNSW]) along a 4.5 km section of the Newell Highway immediately south of Tomingley. Approximately 2.5 km of this assessment area is located within the Study Area. The assessment area was described as being flat, and low-lying with no hydrological features and over 500 m from a permanent water source. Four Aboriginal sites were located during the survey. All sites included scarred trees on grey box (*E. microcarpa*) located on the eastern side of the Newell Highway. The recording of scarred trees was unexpected, as they are outside their expected zone of location (i.e. close to creek lines) being found on flat plains approximately 0.5 to 1 km from reliable water.

3.4.5 Tomingley Gold Project

OzArk (2011) completed an archaeological assessment for the Tomingley Gold Project. The assessment area encompassed 776 ha of land to the north of the Study Area (referred to as the Mine Site Study Area), as well as a 46 km pipeline extending from mine site to Narromine (the TNWP Study Area) and a 20 km electricity transmission line extending to Peak Hill (the PHTETL Study Area). The landform of the three assessment areas is flat and relatively low-lying. Creeks of the area tend to be temporary and from the southern portions of the Mine Site Study Area, flow west into the Bogan catchment and closer to Narromine begin to flow north / northeast into the Macquarie catchment. Overlaying site locations with the general landform unit divisions across the broader region shows most open sites are associated with the alluvial valley floors (close to a drainage features) and the gentle toe slopes of the adjacent flat to undulating plains. They are generally located close to drainage lines and, where distant to water, are more likely to be smaller camp sites or one-off activity sites.

Survey results

A total of 60 Aboriginal sites were recorded during survey including 54 culturally modified trees (43 scarred, nine possibly scarred, one resource gathering and one carved); three artefact scatters (one with associated potential archaeological deposit [PAD]), two isolated finds and one ceremonial / dreaming site) (**Table 3-3**).

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Table 3-3: Summary of the survey results within the three assessment areas.

	Culturally modified trees	Artefact scatter	Isolated find	Ceremonial and dreaming site
Mine Site Study Area	15 (11 scarred, three possibly scarred, one resource gathering and one carved).	2	2	0
TNWP Study Area	36 (29 scarred, six possibly scarred, one scarred tree and possible ceremonial and dreaming site)	1 (with PAD)	0	1
PHTETL Study Area	Three scarred trees	0	0	0

Test excavation

TWNP-OS1 with PAD was identified on a river terrace / aeolian dune landform 50 m south of an old Macquarie River palaeochannel. Aboriginal artefacts were found on the eroding edge of this landform closest to the palaeochannel and included including flakes, cores and scrapers manufactured from quartz, indurated mudstone, chert and granite. The uniform appearance of the sands suggested that the crest of the terrace may have been an aeolian, source bordering sand sheet, that may have been active when the climate was drier during the last glacial.

A test excavation program was completed 1–2 February 2011 over six excavation pits confined to the area of TNWP-OS1 with PAD that will be impacted by the TGP water pipeline.

Major findings of the archaeological test program were:

- The lithic assemblage of the excavation consists of a total of 121 artefacts. One hammer stone was recorded, along with several cores
- No archaeological stratification was noted in any of the excavation pits
- Artefact densities ranged from medium to very low across the excavation area with maximum densities of 27.2 artefacts per cubic metre of excavated material
- The excavation assemblage is dominated by quartz with 71.1% of all excavated artefacts of this material. The other dominant raw material used was chert with 14% of the artefacts being from this material. The remaining 14.9% of material came from a mix of silcrete, rhyolite, mudstone, and other fine-grained siliceous materials
- In most cases, the artefacts recorded in the excavations came from Spit 1 (0–20 cm) with a few artefacts from spits 2 and 3. Therefore it is evident that most of the material was concentrated close to the surface
- None of the test excavation squares excavated at site TWNP-OS1 displayed evidence of a complex site features. No features were recorded from the excavations
- The test excavation program has established that site NTWP-OS1 with PAD has, at its eastern margins, a low artefact density, shallow deposits and a high likelihood of prior disturbance

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- As such, in the area where the TGP water pipeline is proposed to be located, the site possesses low scientific significance and the findings demonstrate that further archaeological investigation is unwarranted

The test excavations did establish that there is a likelihood of further Aboriginal artefacts in the area of TNWP-OS1 with PAD beyond those areas that were test excavated, including in the area of the water pipeline (i.e. between the test excavation pits). These artefacts are likely to be in the top 20 cm of soil.

Discussion

The sites recorded during the survey were consistent with the predictive model. The largest open site (TNWP-OS1 with PAD), which displayed a diversity of raw material and artefact types, was identified close to the Macquarie River palaeochannel, while smaller sites (TGP-OS1 and OS2) were identified adjacent to the area thought to have been a spring at Tomingley in prehistory. Aboriginal modified trees were most prevalent in locations close to drainage features, with between 60% and 63% recorded within 100 m of drainage features or water sources.

The lack of artefact scatters in the Mine Site Study Area close to more permanent water sources, such as the northern portion of Gundong Creek was attributed to the fact that the majority of this creek line within the Mine Site Study Area is in fact a post-contact period channel. It was considered likely that the northern portion of this creek may be more original as scarred trees are certainly clustered in that area.

The high frequency of scarred trees was somewhat unexpected, comprising 90% of recorded sites. This predominance was thought to reflect the practise of maintaining remnant, almost unmodified, roadside vegetation corridors and wind breaks along property fence lines. The frequency of modified trees (scarred, carved, boundary markers and women's birthing trees) indicates both significant use of the practice of scarring, as well as providing evidence of a densely occupied area, at least in the last 500 years.

3.4.6 HW17 Newell Highway, Trewilga Realignment

OzArk (2012) was commissioned by Roads and Maritime (TfNSW) to conduct an Aboriginal heritage assessment of several sections of the Newell Highway between Parkes and Peak Hill, immediately west of Trewilga and 33 km north of the current survey area. One Aboriginal site (Trewilga–Open Site 1 [T-OS1] with PAD) was re-recorded as part of the 2012 assessment and was noted as extending the full width of the proposed impact corridor, both north and south of Ten Mile Creek. The PAD associated with this site was thought to include the presence of further artefactual material, despite the fact that the site was assessed as being disturbed by ploughing. The PAD was subject to a three-day test-excavation program from 26 March–28 March 2013. No *in situ* archaeological deposits were encountered in the excavation, with the few artefacts

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retrieved coming from disturbed contexts. As such, no further investigation or sub-surface salvage program was recommended. The findings of the investigation indicated that there was a very low-density artefact scatter at T-OS1.

3.4.7 Parkes to Narromine Inland Rail Project

Umwelt Australia Pty Limited (Umwelt 2017) completed the Aboriginal cultural heritage assessment for the Parkes to Narromine Inland Rail project. The assessed area was 106 km long and the rail corridor is general 40 m wide. The majority of the proposal area is located within the Bogan Alluvial Plains landscape, with the Goonumbla Hills landscape concentrated primarily in the southern portion of the proposal area. The Boggy Cowal landscapes are present within the northern portion of the proposal area as are the Narromine Hills, with the Bimbi Plains comprising a very small proportion of the northern part of the proposal area.

As a result of previous archaeological investigations undertaken in the region, a total of 19 archaeological sites have been recorded within 50 m of the proposal area. The majority of the sites contain stone artefacts. In general terms, the numbers of artefacts identified within these sites are low and typically contain less than five artefacts. The two largest sites (in terms of quantity of artefacts) are associated with Ten Mile Creek and Burrabadine Creek, both of which are relatively major watercourses in the area. An artefact scatter at Ten Mile Creek was also assessed as having the potential to contain additional artefacts in a sub-surface context. Other sites including three scarred trees and a potential quarry for basalt located outside the proposal area.

During the survey, it was noted that the current rail corridor has been subject to extensive disturbance, with areas within the rail corridor assessed as having low archaeological potential. However, eight areas were identified as having moderate or higher archaeological potential within the sections of the proposal area outside the current rail corridor. These areas include the four previously recorded archaeological sites identified during the survey.

3.5 LOCAL ARCHAEOLOGICAL CONTEXT

A search of the AHIMS database on 14 April 2020 returned 98 records for Aboriginal heritage sites within a 30 km x 30 km search area over the study area (GDA Zone 55 Eastings: 599493–629493; Northings: 6378338–6408338 with no buffer) (see **Table 3-4** for the site types and frequencies; results mapped on **Figure 3-1**).

Of the recorded 98 sites, two are located within the Study Area based on the coordinates provided by AHIMS. However, site 31-6-0036 has been erroneously registered with AHIMS and plots within the Study Area when it is in fact in the Menindee Lakes area[1]. This site will be omitted from further

[1] OzArk will contact AHIMS to ensure the coordinates of this site are corrected on the database.

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analysis and it will be considered that the search area contains a total of 97 previously recorded sites.

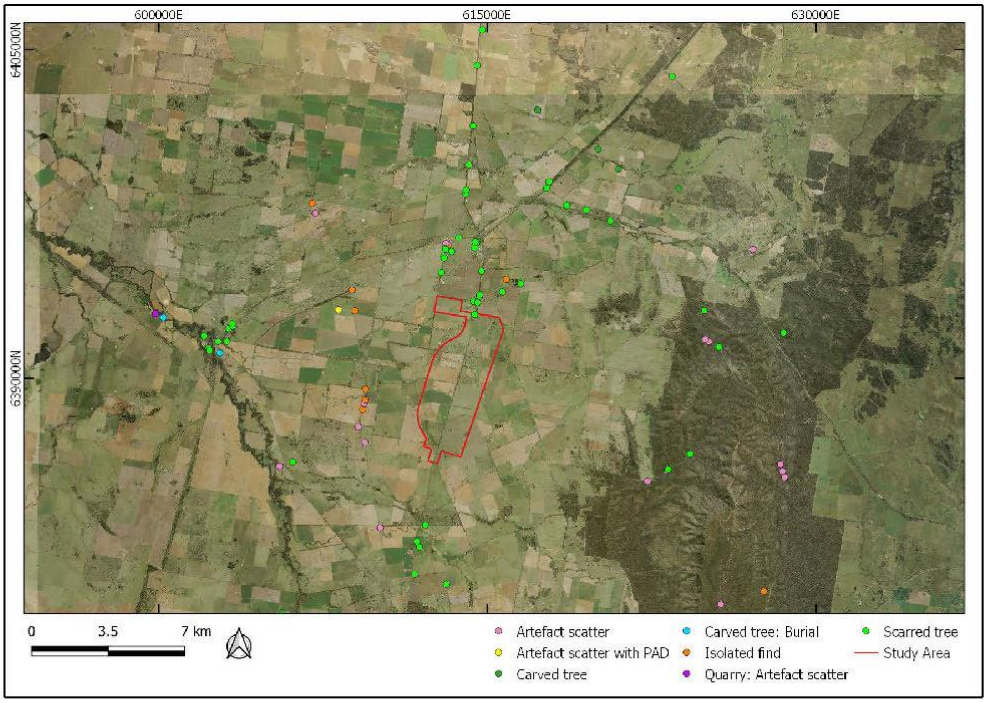
Based on the above, only one previously recorded site is located within the Study Area: site 35-6-0142, a scarred tree recorded by OzArk in 2003 (**Section 3.4.3**) located in the north of the Study Area at the South Tomingley Rest Area, east of the Newell Highway.

As shown in **Table 3-4**, culturally modified trees are the dominant recorded site type in the local area. Of the culturally modified trees, 66 are scarred trees and seven are carved trees. Two of the carved trees have been recorded in association with potential burials.

Table 3-4: AHIMS site types and frequencies.

Site Type	Number	% Frequency
Culturally modified trees (scarred or carved)	73	75%
Stone artefact scatter	12	13%
Isolated finds	8	8%
Culturally modified trees; burial	2	2%
Stone artefact scatter with PAD	1	1%
Stone quarry with artefacts	1	1%
Total	**97**	**100%**

Figure 3-1. AHIMS sites in relation to the Study Area.



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Looking more closely at these site recordings and the assessments that recorded them provides a clearer picture of: the level assessment the area has undergone; the range of sites recorded; the landform they were recorded in; and disturbance levels etc. Review of these sites is provided from Narromine in the north to Peak Hill in the south and excludes those already summarised in **Section 3.4**.

Within the searched area the most north-eastern occurring site (35-3-0148) is a scarred tree occurring on the AHIMS as a one-off recording by Stapleton along Momo Road. The auspices of this recording are uncertain, but it may have been documented by an amateur with no associated report.

A few kilometres to the south there are several carved trees recorded along Tomingley and Fiddlers Creeks (35-6-0006, 0012, 0013 and 0021). Three of these four were registered by Bell (1979), while the fourth was recorded by Edmonds. Of these, two of the Tomingley Creek modified trees (35-6-0012, 0013) and possibly also the third (35-6-0006) are likely to be those first referred to by Etheridge in 1918. Against his recording of Tomingley Creek, Etheridge notes that three carved trees were recorded for this locality and that the area is said to have contained a large number of graves. The trees were apparently removed to the Australian Museum, however, records as to which trees these were have not been kept and hence there is no further data available on the glyphs these trees possessed (Etheridge 1918: 41).

Slightly to the south is a group of three scarred trees (35-3-0101, 0102 and 0103) recorded by Bluff, an interested amateur, along the road to Obley, with a further two recorded on the Newell Highway near the Obley Road turn-off (35-3-0058 and 0059). It is believed that the latter two trees have had Section 90 permits enacted for their removal and they are currently stored in shelters by the side of the road.

Immediately north of Tomingley, and slightly west along a road reserve, a further two scarred trees were recorded by NPWS. These trees appear to have the same co-ordinates on the AHIMS; although the fact they are referred to as ST1 and ST2 respectively indicates that there are two trees present, maybe close to one another. These trees apparently bear canoe scars.

South and west of Tomingley is a modified tree (35-6-0047) recorded along the Bogan River by Bluff. This site plots close to an open camp site called Conmomugul Lagoon (43-30028), apparently recorded as part of the Goobang National Park assessment. A group of three sites recorded south and east of Tomingley fall within the Goobang National Park. These comprise two artefact scatters and one scarred tree (35-6-0073, 0104 and 0105).

A group of four sites (35-6-0133, 0134, 0135 and 0136) all apparently modified trees along / near the Newell Highway immediately north of Peak Hill were recorded by Mills. Again, the manner in which these sites were recorded is unknown.

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3.6 ARCHAEOLOGICAL CONTEXT: CONCLUSION

Due to the history of archaeological investigation near the Study Area, there have been a number of sites recorded in the Tomingley area (**Figure 3-1**). These research and development driven studies show that the region's most frequently occurring evidence of Aboriginal activity are culturally modified trees, particularly scarred trees. To a lesser extent, a number of carved trees have also been recorded. The previous studies have shown in a number of cases that culturally modified trees are more likely to be located closer to substantial watercourses and drainage lines, however, as noted by Kelton (1996) and confirmed by OzArk 2003 and 2011, they can be found over almost all landform units, even those distant from water.

Artefact scatters are more likely to be located near permanent and semi-permanent watercourses, particularly on flat or gently sloping landforms, terraces, or on the crests saddles and benches of ridge and spur landforms. Artefact scatters in the area range considerably in size and density from manifestations of several artefacts through to sites containing in excess of 50 artefacts. Larger, more complex scatters are more common within 200 m of the Bogan River, while low-density sites are more common within 100 m of semi-permanent creeks. Scatters found on landforms similar to the Study Area are generally low-density with 10 or less artefacts and consist largely of un-modified flakes.

To date, the dominant raw lithic material at identified sites is quartz, with additional materials recorded including sandstone, silcrete, chert, granite, volcanic and fine-grained siliceous materials.

Quarries for the procurement of raw materials used to manufacture stone tools are possible if suitable sources of outcropping stone exist, however, this site type is recorded in a low frequency in the region. Quarries in this area are more likely to be basalt quarries.

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4 PREDICTIVE MODEL

4.1 PREDICTIVE MODEL FOR THE STUDY AREA

Across Australia, numerous archaeological studies in widely varying environmental zones and contexts have demonstrated a high correlation between the permanence of a water source and the permanence and/or complexity of Aboriginal occupation. Site location is also affected by the availability of and/or accessibility to a range of other natural resources including: plant and animal foods; stone and ochre resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

In formulating a predictive model for Aboriginal archaeological site location within any landscape it is also necessary to consider post-depositional influences on Aboriginal material culture. In all but the best preservation conditions very little of the organic material culture remains of ancestral Aboriginal communities survives to the present. Generally, it is the more durable materials such as stone artefacts, stone hearths, shell, and some bones that remain preserved in the current landscape. Even these however may not be found in their original depositional context since these may be subject to either (a) the effects of wind and water erosion/transport—both over short- and long-time scales—or (b) the historical impacts associated with the introduction of European farming practices. Scarred trees, by their nature, may survive for up to several hundred years but rarely beyond.

The archaeological studies undertaken in the vicinity of the Study Area provide an insight into the nature and distribution of archaeological sites within the area. However, the location of sites can only reflect what has been identified, usually as a result of infrastructure/development-driven projects, thus presenting the site data as clustered or on linear alignments. Generally, sites have been recorded in proximity to a recognised water source, in locations that have been subject to reduced landform disturbance, and on gentle, elevated landforms. However, landform disturbance may also explain why Aboriginal objects become revealed on the ground surface, such as within modified and disturbed landforms.

The OzArk (2016) CWLLS predictive model is most relevant to the Study Area in determining its archaeological potential. A small portion of the Study Area includes a Drainage 2 buffer area (**Figure 4-1**), in the vicinity of a minor watercourse, Bulldog Creek. In terms of landscape types, the Study Area is composed of slopes (Goonumbla Hills) and plains (Bogan Alluvial Plains) (**Figure 4-1**). The CWLLS predictive model predicts higher numbers of sites within the slopes landscapes when compared to plains landscapes, particularly within Drainage 2 buffers. Artefact sites (including isolated finds and artefact scatters) are the most likely site types to be encountered within the Study Area, and are more likely within the slopes landscapes, although

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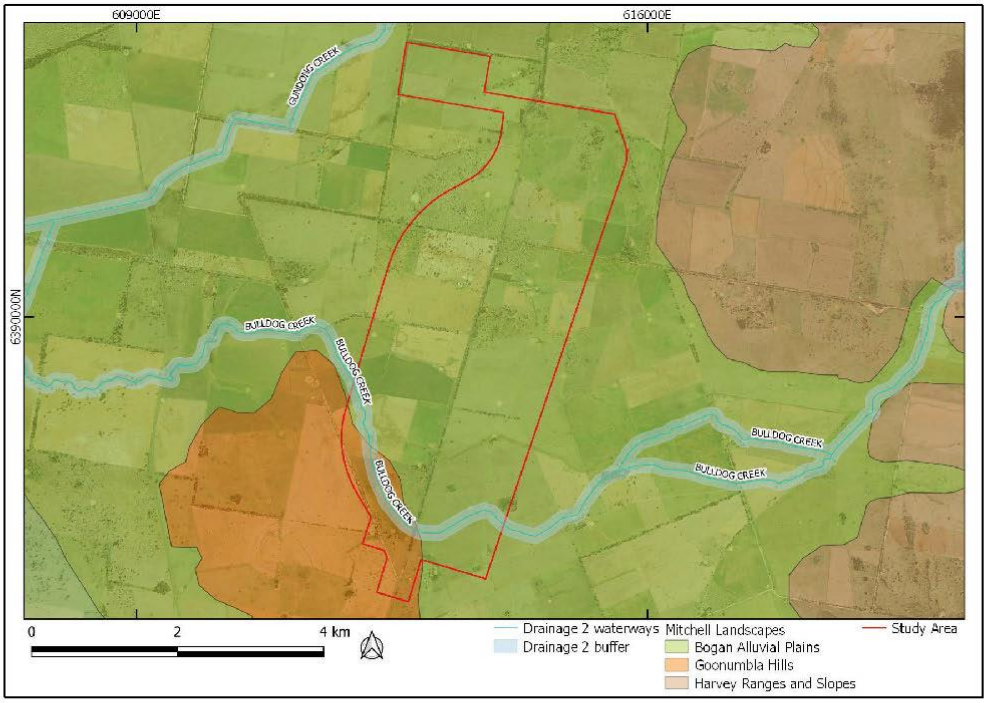
they are also predicted to occur in lower numbers within the plains landscapes. The likelihood of recording scarred trees is significantly lower within the slopes/plains landscapes (**Table 3-2**).

Figure 4-1. Areas of the Study Area within 100 m of a Drainage 2 buffer.



Knowledge of the environmental contexts of the study area and a desktop review of the known local and regional archaeological record, the following predictions are made concerning the probability of those site types being recorded:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact; the remnant of a now dispersed and disturbed artefact scatter; or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
    - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Study Area.
- Open artefact scatters are here defined as two or more artefacts, not located within a rock shelter, and located no more than 50 m away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short- or long-term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can

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vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.

Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.

Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.

- Artefact scatters comprise only 14% of recorded sites within 15 km of the Study Area, however, according to OzArk (2016), this site type is the most likely site to be recorded, particularly within 100 m of Bulldog Creek on eroded exposures and adjacent flat and lower slope landforms.

  Findings from the historical documents, largely the journals of early explorers including Oxley, describe larger camps of up to 100 Aboriginal people along the Bogan River, and 'transitory encampments' along semi-permanent creek lines. As the Study Area only contains a semi-permanent waterway, the ethnographic information suggests that only small, less-complex artefact scatters will be recorded.

  Artefact scatters are likely to be in a secondary context from disturbances such as erosion and ploughing. It is likely that any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used due to the lack of a permanent or semi-permanent water source and the undifferentiated landforms present. Artefacts are most likely to be manufactured from a variety of materials including quartz, chert, sandstone, silcrete, granite, volcanic and fine-grained siliceous materials.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently, the distinction between European and Aboriginal scarred trees may not be clear.

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- Vegetation within the study area includes remnant eucalypt species. These stands of native vegetation may include trees of a type, age and size well suited to scar-producing activities. While the likelihood of recording this site type increases with proximity to water, Kelton (1996) found that modified trees can be found within all landforms. This site type therefore may be encountered, and it is also noted that this site type was the predominant site type recorded in landforms immediately north of the Study Area that are distant from water (OzArk 2003 and OzArk 2011).

- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically, these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.
    - This site type could be recorded within the study area should suitable rock outcroppings be available. Outcropping rock present within the study area is likely to be quartz or volcanics and is likely to be present on the isolated hills within the Study Area.

- Hearths/ovens are often used by Aboriginal people for the preparation of food and would generally be located in the vicinity of available resources, such as water sources to procure fish and shellfish, and on elevated ground to avoid impact from environmental threats.
    - This site type is considered possible in areas where A-Horizon soils are relatively undisturbed. However, given the high levels of disturbance across the Study Area, the likelihood of identifying this site type is significantly reduced.

- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.
    - Potential burials have been identified in the local area in association with carved trees along the banks of the Bogan River (**Figure 3-1**). These sites are more likely to be found on elevated sandy contexts or in association with rivers and major creeks. No such landscape features exist with the Study Area and therefore burials are unlikely to occur.

- Bora/Ceremonial sites are places which have ceremonial or spiritual connections. Ceremonial sites may comprise of natural landscapes or have archaeological material. Bora sites are ceremonial sites which consist of a cleared area and earthen rings.
    - This site type does not necessarily follow landform predictability and are, overall, a rare site type with a low likelihood of being present and remaining extant.

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4.2 RESEARCH QUESTIONS

Several research questions can meaningfully be applied to the investigation of the study area. These research questions include:

- What resources were available to the Aboriginal people using the Study Area (food, stone and water)?
- What tasks were Aboriginal people undertaking at the sites?
- Did the Aboriginal people use the Study Area at any particular time of the year?
- Are there hearths in the area? And if so, do they contain remains (animal/plant) that may indicate what people were cooking/eating?
- Are there burials in the area?
- Is there evidence to suggest that Aboriginal people were using the area earlier than the mid to late Holocene?
- Can dates be obtained for the Aboriginal use of the area?
- What resources were transported to the area and where?

The survey methodology set out in **Section 5** will be framed to help answer these questions; should sites of sufficient significance be encountered within the study area.

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5 SURVEY METHODOLOGY

5.1 ASSESSMENT APPROACH

The Aboriginal cultural heritage assessment of the study area will follow the *Code of Practice for the Investigation of Aboriginal Objects in New South Wales* (Code of Practice; DECCW 2010b). The field inspection will follow the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011).

5.2 SURVEY AIMS

The aim of any archaeological survey is not to locate each artefact in a landscape but to undertake investigations so that the archaeological potential and archaeological characteristics of all landforms within a study area are known. Therefore, the aims of the survey will be to:

- Conduct pedestrian transects across targeted landforms in the Study Area so that their archaeological potential can be determined
- Evaluate whether the predictive model set out in **Section 4.1** is valid
- Determine if the research questions set out in **Section 4.2** can be answered
- Determine if any portions of the Study Area require test excavation to understand the archaeological potential at a particular location
- Undertake sufficient assessment in order to satisfy Sections 2.2, 2.4 (as it pertains to scientific values), 2.5, 2.6, and 2.7 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Collecting sufficient data so that the results can be presented in an ACHAR as set out in Section 3 in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (OEH 2011)
- Undertaking survey and record keeping satisfying Requirements 1–13 of the Code of Practice.

5.3 SURVEY METHODOLOGY

Standard archaeological field survey and recording methods will be employed in this assessment (Burke & Smith 2004) and will follow the Code of Practice. The field survey will take place over six days.

As highlighted in **Section 2** and **3**, greater Aboriginal archaeological potential tends to exist on landforms within 200 m of permanent and ephemeral water sources, along access or trade routes, and areas with suitable flora/fauna and shelter. Archaeological potential is generally reduced on landforms disturbed by erosion and historical impacts (e.g. farming and infrastructure installation). As such, during the field assessment, greater survey effort will be expended on landforms deemed to have greater Aboriginal archaeological potential. 'Full pedestrian survey' refers to

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systematic transects walked by surveyors spaced approximately 20 m apart throughout the landform or area being surveyed. 'Targeted pedestrian survey' refers to transects walked by surveyors spaced approximately 20 m apart that will not cover the entire area but instead will focus on understanding the archaeological potential of representative landforms within these areas.

As such, the field assessment will include:

- Full pedestrian survey will occur in areas with minimal disturbance and good ground surface visibility within landforms possessing Aboriginal archaeological potential, i.e. areas within 200 m of Bulldog Creek, elevated landforms and areas with remnant vegetation (**Figure 5-1**)
- Targeted pedestrian survey will occur in all other areas: i.e. areas more than 200 m from watercourses; areas with poor ground surface visibility; landforms with low archaeological potential; areas of gilgai and areas with significant prior disturbance (**Figure 5-1**)
- All trees deemed to be of sufficient maturity to contain cultural modification will be inspected, as well as any areas with outcropping rock
- Some areas may not be physically surveyed if the Registered Aboriginal Parties (RAPs) and OzArk staff agree they are too disturbed or possess a very low likelihood of sites.

In the field, OzArk staff will identify, record and evaluate physical (i.e. archaeological) evidence. Site recording will capture all the information required to complete current AHIMS site recording forms (e.g. site location, site boundary, site plan, representative photographs, artefact recording and feature recording). RAPs will participate in the survey, identifying Aboriginal objects, determining the cultural significance of Aboriginal objects and identifying cultural places or non-physical site types within the study area. OzArk staff understand that cultural knowledge may not be provided in some instances due to cultural sensitivities (e.g. men's and/or women's places). Under these circumstances, to assess the potential impacts, OzArk staff will need to be told, only in general terms, why a particular place is important, and what the significance of the impact will be. OzArk staff will liaise with RAPs on a case-by-case basis to determine how to record the location in a culturally sensitive manner.

5.4 TEST EXCAVATION

It is possible that the survey may identify landforms where test excavation under the Code of Practice (Requirements 14–17) is required. Should such landforms be identified during the survey, the test excavation methodology will be prepared as a separate document that will be circulated to all RAPs for review and comment.

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Figure 5-1: Aerial showing the proposed survey areas.

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APPENDIX 3: AHIMS SEARCH RESULT

Office of Environment & Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-6-0104	Goobang OS-3 Goobang National Park	AGD	55	623087	6385592	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Anthony English					Permits		
35-6-0105	OS-8 Goobang National Park	AGD	55	622196	6385128	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Bill Allen,Anthony English					Permits		
35-6-0062	MD 45 Tomingley CK1;Parkes-Narromine Railway;	GDA	55	607150	6397540	Open site	Destroyed	Artefact : -	Open Camp Site	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer,Artefact - Cultural Heritage Management - Rose Bay,I					Permits	1251	
35-6-0063	MD 46 Tomingley CK2;Parkes-Narromine Railway;	GDA	55	607000	6397990	Open site	Destroyed	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer,Artefact - Cultural Heritage Management - Rose Bay,I					Permits	1250	
35-6-0064	MD 41 Bulldog CK3;Parkes-Narromine Rail line;	AGD	55	609250	6388670	Open site	Valid	Artefact : -	Open Camp Site	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1251	
35-6-0065	MD 43 Bulldog CK5;Parkes-Narromine Rail line;	GDA	55	609110	6387800	Open site	Destroyed	Artefact : -	Open Camp Site	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer,Artefact - Cultural Heritage Management - Rose Bay,I					Permits	1251	
35-6-0066	MD 40 Bulldog CK2;Parkes-Narromine Rail line;	AGD	55	609310	6388850	Open site	Valid	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1250	
35-6-0067	MD 38 Tomingley West Rail 1;Parkes-Narromine Rail line;	AGD	55	608840	6392900	Open site	Valid	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1250	
35-6-0068	MD 39 Bulldog CK 1;Parkes-Narromine Railway;	AGD	55	609320	6389330	Open site	Valid	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1250	
35-6-0069	MD 37 Tomingley West Rail 2;Parkes-Narromine Rail Line;	AGD	55	608700	6393850	Open site	Valid	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1250	
35-6-0070	MD 20 Burrabadine Creek Parkes-Narromine Railway	AGD	55	610000	6383000	Open site	Valid	Artefact : -	Open Camp Site	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1251	
35-6-0071	MD 44 Bulldog CK 6;Parkes-Narromine Rail Line;	AGD	55	609300	6386900	Open site	Valid	Artefact : -	Open Camp Site	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1251	
35-6-0072	MD 42 Bulldog CK 4;Parkes-Narromine Rail Line easement;	AGD	55	609180	6388400	Open site	Valid	Artefact : -	Isolated Find	1997
	Contact	Recorders	Kerry Navin,Mr.Kelvin Officer					Permits	1250	
35-6-0073	ST 18 Goobang National Park	AGD	55	623143	6385653	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4641
	Contact	Recorders	Anthony English					Permits		
35-6-0074	ST 17 Goobang National Park	AGD	55	624142	6386362	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4641
	Contact	Recorders	Anthony English					Permits		
35-6-0075	Goobang OS-6 Goobang National Park	AGD	55	628360	6385580	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Bill Allen					Permits		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-6-0076	Goobang OS-7 Goobang National Park	AGD	55	628456	6385298	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	C Wall					Permits		
35-6-0077	Goobang OS-4 Goobang National Park	AGD	55	625537	6379513	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Anthony English					Permits		
35-6-0078	Goobang OS-5 Goobang National Park	AGD	55	628270	6385890	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	C Peckham					Permits		
35-6-0079	Goobang OS-2 Goobang National Park	AGD	55	624990	6391500	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Anthony English,C Wall					Permits		
35-6-0080	Goobang OS-1 Goobang National Park	AGD	55	624820	6391600	Open site	Valid	Artefact : -	Open Camp Site	4641
	Contact	Recorders	Bill Allen					Permits		
35-6-0081	IF-1;Goobang National Park;	AGD	55	627500	6380100	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Bill Allen					Permits		
35-6-0095	ST-13 Goobang National Park	AGD	55	624788	6392917	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4641
	Contact	Recorders	Anthony English					Permits		
35-6-0096	ST-16 Goobang National Park	AGD	55	625460	6391250	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	4641
	Contact	Recorders	C Wall					Permits		
35-6-0138	Bulgandramine, Bogan Floodplain	AGD	55	602160	6391199	Open site	Valid	Modified Tree (Carved or Scarred) : 3		
	Contact	Recorders	Rosemary Stapleton					Permits		
35-3-0148	Momo Road	AGD	55	623316	6403598	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Rosemary Stapleton					Permits		
35-6-0129	Bogan River-Tomingly	AGD	55	603063	6392077	Open site	Valid	Modified Tree (Carved or Scarred) : 3		
	Contact	Recorders	Miss.Rebeeca Ogden-Brunell					Permits		
35-6-0130	Bogan River-Tomingley 2	AGD	55	603081	6392089	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Miss.Rebeeca Ogden-Brunell					Permits		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-6-0131	Bogan River-Tomingley 3	AGD	55	603252	6392211	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Miss.Rebeeca Ogden-Brunell					Permits		
35-6-0136	BC-ST-4	AGD	55	611780	6382120	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Mrs.Robynne Mills					Permits		
35-6-0139	NHT-ST3	AGD	55	614531	6393577	Open site	Valid	Modified Tree (Carved or Scarred) : -		98723
	Contact Peak Hill LALC	Recorders	Doctor.Jodie Benton					Permits		
35-6-0140	NHT-ST2	AGD	55	614542	6393630	Open site	Valid	Modified Tree (Carved or Scarred) : -		98723
	Contact Peak Hill LALC	Recorders	Doctor.Jodie Benton					Permits		
35-6-0141	NHT-ST1	AGD	55	614618	6394718	Open site	Valid	Modified Tree (Carved or Scarred) : -		98723
	Contact Peak Hill LALC	Recorders	Doctor.Jodie Benton					Permits		
35-6-0142	NHT-ST4	AGD	55	614306	6392735	Open site	Valid	Modified Tree (Carved or Scarred) : -		98723
	Contact Peak Hill LALC	Recorders	Doctor.Jodie Benton					Permits		
35-6-0144	St 2 Peak Hill	AGD	55	627400	6378700	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact Sarah Colley	Recorders	Bill Allen					Permits		
43-3-0028	Conmomugul Lagoon;	AGD	55	605400	6385810	Open site	Valid	Artefact : -	Open Camp Site	98332
	Contact	Recorders	L Kingham					Permits		
35-6-0060	TWST1;	AGD	55	613580	6396240	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Mike Nolan,C Wall					Permits		
35-6-0061	TWST2;	AGD	55	613580	6396240	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Mike Nolan,C Wall					Permits		

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Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-3-0048	Bulgandramine 2	AGD	55	602200	6391100	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Warren Bluff					Permits		
35-6-0004	Bulgandramine Bridge	AGD	55	602672	6390972	Open site	Valid	Modified Tree (Carved or Scarred) : -, Burial : -	Burial/s,Carved Tree	65,98332
	Contact	Recorders	David Bell,Harry Keed					Permits		
35-6-0016	Bulgandramine 3	AGD	55	599731	6392772	Open site	Valid	Stone Quarry : -, Artefact : -	Quarry	98332
	Contact	Recorders	Glen Morris					Permits		
43-3-0029	Bulgandramine 7	AGD	55	601950	6391750	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	L Kingham					Permits		
35-3-0058	Obley Turnoff	AGD	55	617700	6398800	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		
35-3-0059	Obley Turnoff 2	AGD	55	617600	6398500	Open site	Valid	Modified Tree (Carved or Scarred) : 1	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		
35-6-0003	Pine Lagoon;Hazelbean;	AGD	55	600098	6392592	Open site	Valid	Modified Tree (Carved or Scarred) : -, Burial : -	Burial/s,Carved Tree,Scarred Tree	65,98332
	Contact	Recorders	David Bell,Fred McCarthy,Lindsay Black,Carl Von Schill,R.J Agnew,Harry Keed					Permits		
35-6-0006	Tomingley;Meroo;	AGD	55	623617	6398479	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	65
	Contact	Recorders	Liz Edmondson					Permits		
35-6-0012	Tomingley Creek;	AGD	55	620867	6399367	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	65
	Contact	Recorders	David Bell					Permits		
35-6-0013	Tomingley Creek;	AGD	55	619945	6400272	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	65
	Contact	Recorders	David Bell					Permits		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-6-0021	Fiddlers Creek;	AGD	55	617187	6402073	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	
	Contact	Recorders	David Bell					Permits		
35-6-0022	Mingelo;	AGD	55	605525	6379120	Open site	Valid	Modified Tree (Carved or Scarred) : -	Carved Tree	
	Contact	Recorders	David Bell					Permits		
35-6-0046	Kangaroo Pool;	AGD	55	628400	6391900	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Warren Bluff					Permits		
35-6-0047	Bogan River;	AGD	55	606000	6386000	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Warren Bluff					Permits		
35-3-0047	Bulgandramine 1	AGD	55	603000	6391500	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Warren Bluff					Permits		
35-3-0049	Tanners creek;	AGD	55	627000	6395700	Open site	Valid	Artefact : -	Open Camp Site	1333
	Contact	Recorders	Warren Bluff					Permits		
31-6-0036	KAL8;	AGD	55	612700	6390800	Open site	Valid	Artefact : -	Open Camp Site	1352
	Contact	Recorders	Doctor.Jeannette Hope					Permits		
35-6-0048	Bulgandramine 5	AGD	55	602600	6391500	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	1333
	Contact	Recorders	Warren Bluff					Permits		
35-3-0101	Obley Road;	AGD	55	620500	6397000	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		
35-3-0102	Obley Road;	AGD	55	619400	6397500	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		
35-3-0103	Obley Road;	AGD	55	618500	6397700	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
35-3-0104	Bogan Road;	AGD	55	606000	6378600	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	Recorders	Warren Bluff					Permits		
35-6-0132	Bogan River -Tomingley 4	AGD	55	603248	6392309	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Miss.Rebeeca Ogden-Brunell					Permits		
35-6-0133	BCS1	AGD	55	612060	6383120	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Mrs.Robynne Mills					Permits		
35-6-0134	BC/ST/2	AGD	55	611680	6382370	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Mrs.Robynne Mills					Permits		
35-6-0135	BC/ST/3	AGD	55	611570	6380890	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	Recorders	Mrs.Robynne Mills					Permits		
35-6-0173	TGP-IF1	GDA	55	613197	6396077	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0174	TGP-IF2	GDA	55	615867	6394529	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0175	TGP-OS1	GDA	55	613105	6396157	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0176	TGP-OS2	GDA	55	613056	6395630	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0177	TGP-ST1	GDA	55	613071	6395945	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0178	TGP-ST2	GDA	55	613087	6395894	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0179	TGP-ST3	GDA	55	613368	6395798	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0180	TGP-ST4	GDA	55	613004	6395579	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0181	TGP-ST5	GDA	55	612901	6394846	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0182	TGP-ST6	GDA	55	613026	6395498	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0183	TGP-ST7	GDA	55	614364	6393524	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0184	TGP-ST8	GDA	55	614553	6393485	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0185	TGP-ST9	GDA	55	614551	6393461	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0186	TGP-ST10	GDA	55	615687	6393944	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0187	TGP-ST11	GDA	55	614517	6396210	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0188	TGP-ST12	GDA	55	614515	6396204	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0189	TGP-ST13	GDA	55	614382	6395982	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley
Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0190	TGP-ST14	GDA	55	614427	6395965	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0191	TGP-ST15	GDA	55	616528	6394328	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0161	WETL-OS1 with PAD (same as 36-4-0113)	GDA	55	608208	6393131	Open site	Deleted	Artefact : -, Potential Archaeological Deposit (PAD) : -		101691
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0160	TNWP-ST11	AGD	55	614740	6407444	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0165	TNWP-ACD1	AGD	55	614649	6406572	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0164	PHETL-ST1	GDA	55	613118	6378918	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0165	PHETL-ST2	GDA	55	613125	6380607	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0167	TNWP-ST1	GDA	55	614439	6396237	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0168	TNWP-ST2	AGD	55	613903	6398250	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0169	TNWP-ST3	AGD	55	613915	6398413	Open site	Valid	Modified Tree (Carved or Scarred) : 1		

Report generated by AHIMS Web Service on 14/04/2020 for Stephanie Rusden for the following area at Datum :GDA, Zone : 55, Eastings : 599493 - 629493, Northings : 6378338 - 6408338 with a Buffer of 0 meters. Additional Info : Survey. Number of Aboriginal sites and Aboriginal objects found is 98

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Tomingley

Client Service ID : 496975

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0170	TNWP-ST4	AGD	55	613915	6398412	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0171	TNWP-ST5	AGD	55	614039	6399566	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-6-0172	TNWP-ST6	AGD	55	614230	6401347	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0166	TNWP-ST7	AGD	55	614420	6404107	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0167	TNWP-ST8	AGD	55	614632	6406434	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0168	TNWP-ST9	AGD	55	614649	6405720	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		
35-3-0169	TNWP-ST10	AGD	55	614673	6406480	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact	Recorders	Doctor.Jodie Benton					Permits		

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