TECHNICAL REPORT

7

Aboriginal Cultural Heritage Assessment Report

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Inland Rail – Illabo to Stockinbingal

Aboriginal Cultural Heritage Assessment Report

Report prepared for ARTC

August 2022

2-0001-220-ECH-00-RP-0002

Sydney Office Level 6, 372 Elizabeth Street Surry Hills NSW Australia 2010 T +61 2 9319 4811
Canberra Office 2A Mugga Way Red Hill ACT Australia 2603 T +61 2 6273 7540
GML Heritage Pty Ltd ABN 60 001 179 362

www.gml.com.au

Contents Page

Appendix E
GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design, Draft Report, prepared for WSP and Parsons Brinckerhoff, October 2018

Appendix F
GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design for Test Excavations, Draft Report, prepared for WSP and ARTC, February 2019

Appendix G
GML Heritage Pty Ltd, ARTC Inland Rail, I2S Revised Alignment—Archaeological Research Design, Aboriginal Cultural Heritage, prepared for WSP and ARTC, December 2020

Appendix H
Context sheets for Test Units (TU) excavated during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix I
Photo log for photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix J
Photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix K
Aboriginal Heritage Information Management System (AHIMS) site cards for Aboriginal sites recorded prior to and during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

List of Figures

List of Tables

Abbreviations and Glossary

ACHAR	Aboriginal cultural heritage assessment report
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ATSIHP Act	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth)
ARTC	Australian Rail Track Corporation Ltd
Burra Charter	Australian best heritage practice reference that provides guidance for the conservation and management of places of cultural significance (cultural heritage places)
CSSI	Critical State Significant Infrastructure
DECC	NSW Department of Environment and Climate Change (now EES and Heritage NSW)
DECCW	NSW Department of Environment, Climate Change and Water (now EES and Heritage NSW)
DPE	NSW Department of Planning and Environment (formerly Department of Planning, Industry and Environment (DPIE))
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EES	NSW Environment, Energy and Science Group within DPE
ESD	Ecologically Sustainable Development
GML	GML Heritage Pty Ltd
Harm	Under the NPW Act 'harm' is defined as follows: *any act or omission that—* *(a) destroys, defaces or damages the object or place, or* *(b) in relation to an object—moves the object from the land on which it had been situated, or* *(c) is specified by the regulations, or* *(d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),* *but does not include any act or omission that—* *(e) desecrates the object or place, or* *(f) is trivial or negligible, or* *(g) is excluded from this definition by the regulations.*
ICOMOS	International Council on Monuments and Sites
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
mAHD	Metres above Australian Height Datum
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NT Act	*Native Title Act 1993* (Cth)

OEH	NSW Office of Environment and Heritage (now Heritage NSW)
PAD	Potential Archaeological Deposit
Proposal site	*The area that would be directly affected by construction and operation of the proposal. It includes the location of proposal infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of the storage areas/compounds sites, etc., that would be used to construct that infrastructure.*
RAP	Registered Aboriginal Party
RTS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements

1.0 Introduction

1.1 Overview

The Australian Government has committed to delivering a significant piece of national transport infrastructure by constructing a high performance and direct interstate freight rail corridor between Melbourne and Brisbane. Inland Rail involves the design and construction of a new inland rail connection, about 1,700kms long, between Melbourne and Brisbane. Inland Rail is a major national proposal that will enhance Australia's existing national rail network and serve the interstate freight market.

Australian Rail Track Corporation Ltd (ARTC) is seeking approval to construct and operate the Illabo to Stockinbingal section of Inland Rail ('the proposal'), which has a total extent of about 42.5kms, and consists of about 39km of new, greenfield single track standard gauge railway and associated infrastructure between Illabo and Stockinbingal.

The proposal requires approval from the NSW Minister for Planning under Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal is also a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and requires approval from the Australian Government Minister for the Environment.

This report has been prepared by Inland Rail Design Joint Venture (WSP/Mott Macdonald) / GML Heritage Pty Ltd (GML) as part of the environmental impact statement (EIS) for the proposal. The EIS has been prepared to accompany the application for approval of the proposal, and addresses the Secretary's Environmental Assessment Requirements (SEARs) from the Secretary of the (then) NSW Department of Planning, Industry and Environment (DPIE) (now the Department of Planning and Environment (DPE)), issued on 30 April 2021.

1.2 The Proposal

The proposal is located between Illabo and Stockinbingal within the Riverina region of NSW. The location of the proposal is shown in Figure 1.1.

1.2.1 Key Features

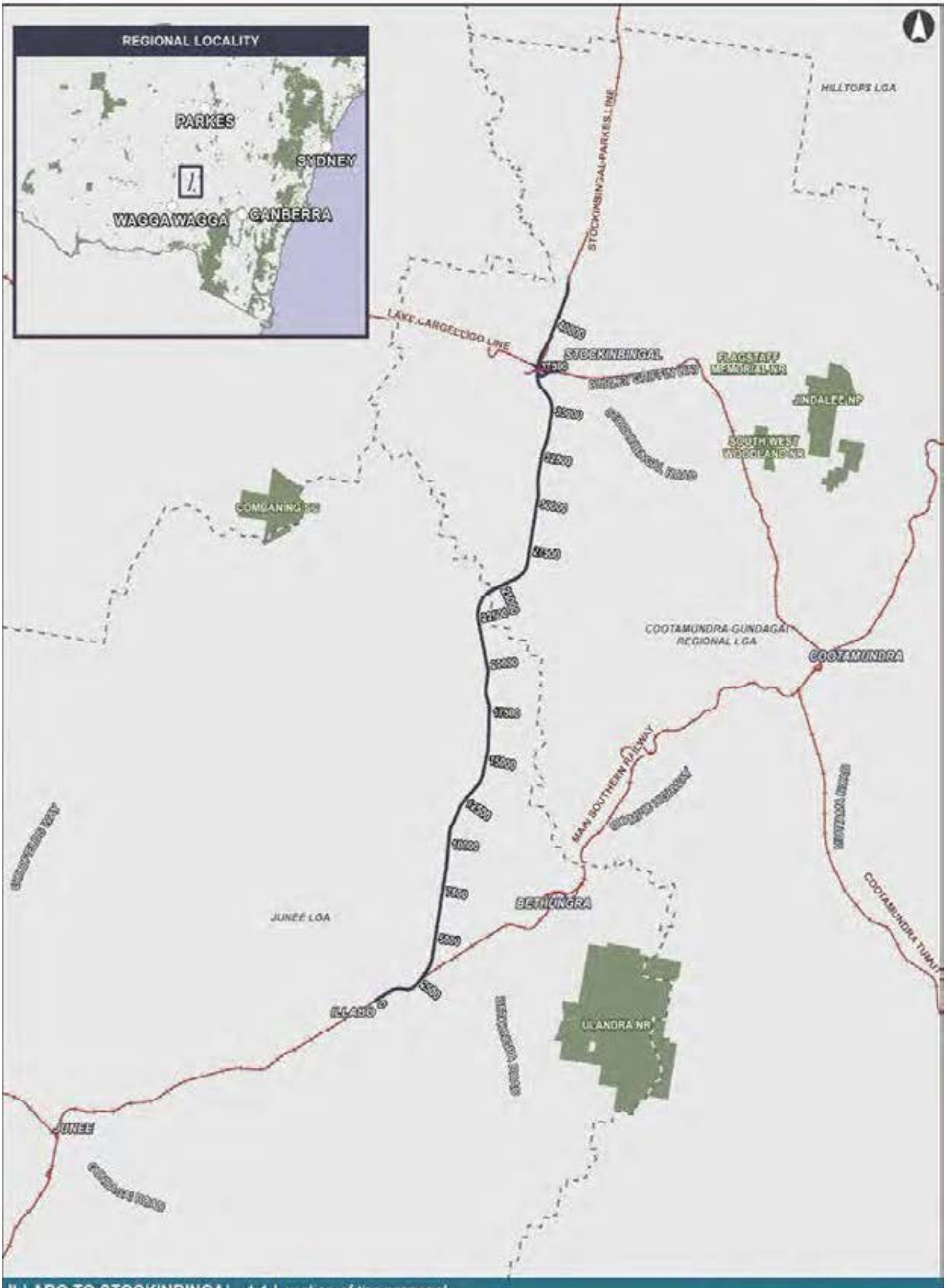
The key features of the proposal (which would be confirmed during detailed design) are shown in Figure 1.2 and include:

- a total extent of about 42.5km, including about 39km of new, greenfield single track standard gauge railway between Illabo and Stockinbingal, including:
  - a combination of track vertical alignments on existing ground level, on embankments and in cuttings
  - 8 new bridges at watercourses, two road overbridges and one grade separated (road over rail) at Burley Griffin Way
  - one crossing loop and associated maintenance siding
  - construction of new level crossings and alterations of existing level crossings (at public roads and private accesses)

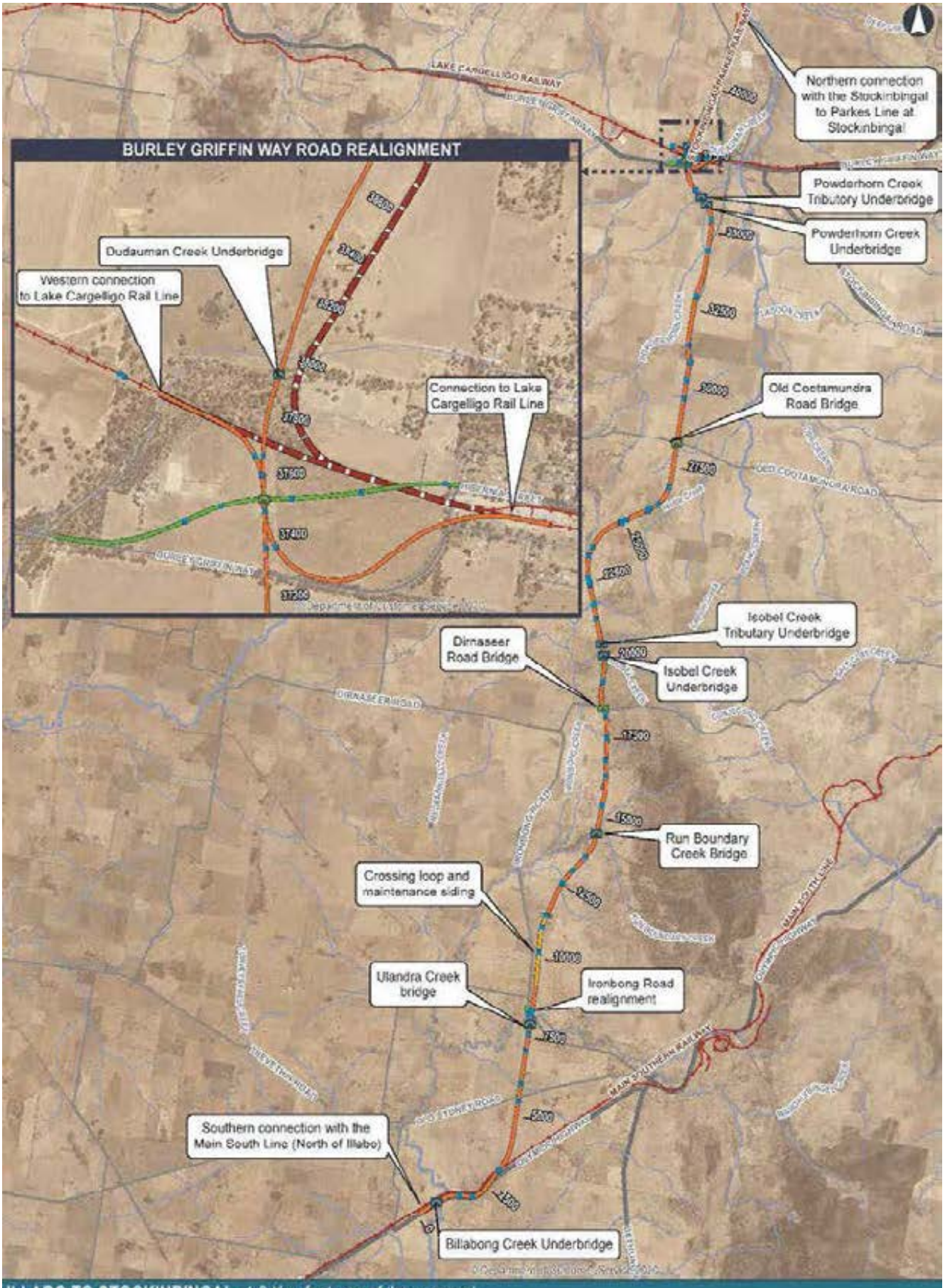
  - stock underpasses and other vehicular crossings on private land crossings to allow for the movement of livestock and vehicles across the rail line
  - installation and upgrade of about 88 new and existing cross drainage culverts below the rail formation and 27 longitudinal drainage culverts below level crossings
  - removal of redundant sections of track along the existing Stockinbingal to Parkes line and Lake Cargelligo line at Stockinbingal.
- upgrades of about three kms of existing track for the tie-in works to the existing Main South rail line at Illabo, and tie-ins to the Stockinbingal to Parkes rail line at Stockinbingal
- construction of about 1.7km of new track to maintain the existing connection of the Lake Cargelligo rail line either side of the proposal
- realignment of a 1.4km section of the Burley Griffin Way to provide a road over rail bridge at Stockinbingal
- realignment of Ironbong Road to allow for safe sight lines at the new active level crossing.

Associated infrastructure would include signalling and communications, signage, fencing and services and utilities. The construction and operation of the proposal would also require the following works:

- construction access roads and access tracks
- watercourse crossings
- temporary changes to the road network
- construction compounds.



ILLABO TO STOCKINBINGAL 1.1 Location of the proposal



ILLABO TO STOCKINBINGAL 1.2 Key features of the proposal

0 1 2 3 km

Coordinate System: GDA 1994 MGA Zone 55

Date: 7/03/2021 Paper: A3

Author: IRDJV Scale: 1:120,000

Data Sources: ARTC, NSWSS, ESRI

Key features of proposal

- New track/track upgrade
- 4225 Chainage (distance in metres from southern limit of the proposal)
- Crossing Loop & Maintenance Siding
- Burley Griffin Way Road realignment
- Culvert
- Bridge (road crossing)
- Bridge (water crossing)

Existing features

- Sub-arterial road
- Arterial road
- Existing Rail
- Major Watercourse
- Minor Watercourse
- Redundant sections of rail to be decommissioned

INLAND RAIL ARTC

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC) in partnership with the private sector

1.3 Timing and Operation

Subject to approval of the proposal, construction of the proposal is planned to start in mid-2024 and is expected to be completed by mid-2026.

The proposal would form part of the rail network managed and maintained by ARTC. Train services would be provided by a variety of operators. It is estimated the Illabo to Stockinbingal section of Inland Rail would be trafficked by an average of 6 trains per day (both directions) from commencement of operations in late 2026, increasing to about 11 trains per day (both directions) in 2040.

The new rail line will be a faster, more efficient route that bypasses the Sydney rail network and will enable the use of double stacked trains (up to 6.5m high) along its entire length.

The trains would be diesel powered, and would be a mix of grain, intermodal (freight), and other general transport trains up to 1,800m in length.

The proposal is expected to be operational, as part of Inland Rail as a whole, once all 13 sections are complete, which is estimated to be in 2027. Prior to that, regional rail movements may occur on the Illabo to Stockinbingal section once complete.

1.4 Scope and Purpose of the Report

This report has been prepared to specifically address the SEARs issued by (then) DPIE on 30 April 2021. The SEARs relevant to Aboriginal cultural heritage, and references to sections where they have been addressed in the report are presented below in Table 1.1.

This report fulfils the requirements of an Aboriginal Cultural Heritage Assessment Report (ACHAR) in accordance with the Office of Environment and Heritage (now Heritage NSW) *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (2011).[1]

The objectives of this assessment were to:

- undertake identification of Aboriginal community members who can speak for the Country within which the project is located;
- involve the Aboriginal community in the cultural heritage assessment process;
- consult with the Aboriginal community and determine their opinions with respect to the project and its potential ‘harm’ to cultural heritage;
- understand the range and type of Aboriginal heritage values and places within the study area;
- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- prepare a cultural heritage values assessment for all identified aspects of Aboriginal cultural heritage, as identified within this report;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;
- aim to minimise impacts to Aboriginal cultural heritage through sensible and pragmatic site and land management;

- determine where impacts are unavoidable and develop a series of impact mitigation strategies that benefit Aboriginal cultural heritage and the proponent; and
- provide clear recommendations for the conservation of Aboriginal heritage values and mitigation of any potential impacts to these values.

Table 1.1 List of Sections Addressing SEARs.

Key Issue	Requirement	Section
8. Heritage *The design, construction and operation of the project facilitates, to the greatest extent possible, the long-term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places.* *The design, construction and operation of the project avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.*	*The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of:* *a. Aboriginal places and objects, as defined under the National Parks and Wildlife Act 1974 and in accordance with the principles and methods of assessment identified in the current guidelines;* *b. Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan;* *c. environmental heritage, as defined under the Heritage Act 1977;* *d. items listed on the National and World Heritage lists;* *e. heritage items, areas of cultural significance and conservation areas identified in environmental planning instruments applicable to the project area; and* *f. heritage items in relevant Section 170 Heritage and Conservation Registers.*	Section 8—Impact Assessment Sections 4–7—Assessment Assessment of non-Aboriginal heritage is included in Chapter 15 of the EIS.

Key Issue	Requirement	Section
	Where impacts to State or locally significant heritage items are identified, the assessment must: *a. include a statement of heritage impact for all heritage items (including significance assessment);* *b. consider impacts to the item of significance caused by, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, visual amenity, landscape and vistas, curtilage, subsidence and architectural noise treatment (as relevant);* *c. outline measures to avoid and minimise those impacts in accordance with the current guidelines; and* *d. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria).*	Section 8—Impact Assessment Sections 9—Mitigation Measures Note: non-Aboriginal heritage is not covered as part of this assessment. For assessment of non-Aboriginal heritage refer to the EIS.
	Where archaeological investigations of Aboriginal objects are proposed, these must be conducted by a suitably qualified archaeologist, in accordance with Section 1.6 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (Department of the Environment, Climate Change and Water [DECCW 2010]).	Section 5 and Appendix C and D

Key Issue	Requirement	Section
	Impacts to Aboriginal objects and/or places must be assessed and documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR). Consultation must be undertaken with Aboriginal people in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). The ACHAR must: *a. document the outcomes of consultation with Aboriginal people and outline measures proposed to mitigate impacts, and document the significance of cultural heritage values for Aboriginal people who have a cultural association with the land;* *b. identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the project;* *c. document the outcomes of the archaeological surface survey and test excavation to inform the need for targeted test excavations;* *d. assess and document impacts on Aboriginal cultural heritage values and demonstrate attempts to avoid impacts 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 the assessment must be documented and notified to the AHIMS register; and* *e. outline procedures to be followed if Aboriginal objects, burials or skeletal material are found at any stage of the life of the project to formulate appropriate measures to manage unforeseen impacts.*	Section 2.3, Section 3.4 and Sections 4–7—Assessment

1.4.1 Previous Assessment of the Proposal

The proposal and its surrounding environment have previously been assessed in the form of an Aboriginal Objects Due Diligence Desktop Assessment (hereon referred to as Due Diligence) report undertaken in 2016 (Appendix A).[2] That assessment covered an area of 35km x 20km centred on a preliminary alignment of the proposal and concluded that the study area has the potential to possess Aboriginal heritage, archaeological sites, places, objects, landscapes and/or values.

The current assessment report takes into account revisions to the proposal. It reviews the findings of the 2016 Due Diligence report and expands the investigation to test the predictive modelling and assumptions from that report, and to confirm the presence or absence of Aboriginal heritage in the study area.

It provides a significance assessment of any identified archaeological Aboriginal sites, places, landscapes and/or other values. An impact assessment and management recommendations are provided to assist ARTC with its future responsibilities for the management of Aboriginal cultural heritage within the study area.

1.5 Structure of this Report

Table 1.2 Overview of Report Structure—Section Numbers and Content.

Section Numbers	Context
Section 1	Introduction This section provides an introduction to the ACHAR, presenting an overview of the proposal, its key features and timing, and an outline of the report structure.
Section 2	Legislation and Policy Framework This section presents the legislation and policy documents relevant to this ACHAR.
Section 3	Methodology This section outlines the methodology used to undertake this ACHAR. It also documents the Aboriginal community consultation process.
Section 3	Existing Environment This section provides an assessment of the existing environment, including topography, soil landscape, hydrology, and previously recorded Aboriginal heritage sites.
Section 5	Aboriginal Archaeological Assessment This section discusses the results of the surveys and archaeological test excavations.
Section 6	Synthesis and Implications This section presents an analysis of the results obtained during the surveys and archaeological test excavations, and places this in context with the wider archaeological landscape.
Section 7	Cultural Heritage Values and Statement of Significance This section examines the cultural heritage values of the sites assessed in this ACHAR and provides a statement of significance for these.
Section 8	Impact Assessment This section considered the impacts the proposal will have on Aboriginal cultural heritage values, including direct, indirect, and cumulative impacts.
Section 9	Avoiding and Mitigating Harm This section discusses mitigation measures to reduce the harm the proposal will have on Aboriginal cultural heritage values.
Section 10	Recommendations and Conclusions This section presents the final outcomes and recommendations of this ACHAR.
Section 11	Appendices

1.6 Authors

This report has been prepared by the following people:

Person	GML Position	Qualification	Project Role
Jodi Cameron	Senior Heritage Consultant, Archaeologist	Bachelor of Science Bachelor of Arts (Honours) Archaeology	Project Manager, Excavation Director, report author

Person	GML Position	Qualification	Project Role
Lara Tooby	Heritage Consultant, Archaeologist	Bachelor of Arts (Honours) Archaeology	Report author
Janene May	Heritage Consultant, Archaeologist	Bachelor of Arts (Honours) Archaeology Graduate Certificate in Environmental Science	Report author
Martin Rowney	Principal, Archaeologist	Bachelor of Arts (Honours) Prehistoric Archaeology	Project Director, Excavation Director, report review.

Jodi Cameron and Martin Rowney—who were Excavation Directors for the project—meet Heritage NSW's criteria for excavation directors. All other archaeologists who participated in the test excavations were suitably qualified to undertake such work (Section 5.3.2).

1.7 Endnotes

1 NSW Office of Environment and Heritage (now Heritage NSW), *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, 2011.

2 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

2.0 Legislation and Policy Framework

The following statutory controls are relevant to the assessment and discussed in the following sections:

- Commonwealth:
  - *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) (ATSIHP Act)
  - *Native Title Act 1993* (Cth) (NT Act).
- NSW:
  - *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act)
  - *National Parks and Wildlife Act 1974* (NSW) (NPW Act)
  - *Native Title (New South Wales) Act 1994*
  - *NSW Aboriginal Land Rights Act 1983*.

Relevant guidelines and policy made under the above legislation are discussed further in section 2.3.

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The objective of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to protect and manage prescribed Matters of National Environmental Significance (MNES). Under the EPBC Act, proposed 'actions' that have the potential to significantly impact on MNES, the environment of Commonwealth land, or that are being carried out by a Federal Government agency, must be referred to the then Federal Minister for the Environment for assessment.

As a result of the potential for impacts on protected matters, the proposal was referred to the (then) Australian Minister for the Environment in June 2018 (EPBC Referral No 2018/8233). On 6 August 2018, the (then) Australian Government Department of the Environment and Energy notified that the proposal is a controlled action, with the controlling provisions being 'listed threatened species and communities' (under section 18 & 18A of the EPBC Act).

There are no MNES matters relating to Aboriginal heritage within 10 kilometres of the proposal site.

2.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) protects areas and/or objects that are significant to Aboriginal and Torres Strait Islander people and which are under threat of destruction. A significant area or object is defined as one that is of particular importance to Aboriginal people, according to Aboriginal tradition. The legislation must be invoked by or on behalf of an Aboriginal or Torres Strait Islander person or organisation.

This legislation would be relevant in relation to specific significant cultural sites identified during the assessment process and where potential impacts to these sites could not be mitigated adequately.

2.1.3 Native Title Act 1993

Native Title describes the recognition by the Australian legal system of rights and interests of Aboriginal and Torres Strait Islander people to land and waters according to their traditional laws and customs. Native Title was first recognised in the Australian legal system in 1992 by the High Court.

Native Title includes rights of possession, occupation, use and enjoyment of traditional Country. It may include the right to access an area of land or the right to participate in decisions concerning how the land or waters are used by other people.

The Native Title Act 1993 (NTA Act) establishes the framework for the protection and recognition of Native Title. The Australian legal system recognises Native Title where:[1]

- *the rights and interests are possessed under the traditional laws acknowledged, and the traditional customs observed, by the Aboriginal peoples or Torres Strait Islanders;*
- *the Aboriginal peoples or Torres Strait Islanders, by those laws and customs, have a connection with the land or waters; and*
- *the rights and interests are recognised by the common law of Australia.*

The NTA Act gives Indigenous Australians who hold Native Title rights and interests the right to be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land. Indigenous Australians have been able to negotiate benefits for their communities, including in relation to employment opportunities and heritage protection.

Consultation with the National Native Title tribunal for this project established that there were no Native Title Determination Applications, Determinations of Native Title or Land Use Agreements over the study area.

2.2 NSW Legislation

2.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) establish a framework for the assessment and approval of developments in NSW. They also provide for the making of environmental planning instruments, including state environmental planning policies (SEPPs) and local environmental plans (LEPs), which determine the permissibility and approval pathway for development proposals and form a part of the environmental assessment process. In accordance with the provisions of the EP&A Act, the proposal is State Significant Infrastructure),

SSI may also be declared to be critical State significant infrastructure (CSSI) in accordance with section 5.13 of the EP&A Act, if it is of a category that, in the opinion of the Minister for Planning, is essential for the State for economic, environmental or social reasons. The proposal was declared as CSSI in 2021.

Under section 5.14 of the EP&A Act, the approval of the Minister for Planning is required for State significant infrastructure (including CSSI), and an EIS has been prepared under Division 5.2 of the EP&A Act.

Subject to section 5.23 of the EP&A Act, the requirement for approvals under other legislation, including Aboriginal Heritage Impact Permits (AHIPs) in accordance with the NPW Act, do not apply where planning approval is granted for the project.

2.2.2 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) provides for the conservation of certain Aboriginal 'objects' consisting of any material evidence of the Indigenous occupation of New South Wales. The Act also enables under Section 84 the declaration of 'Aboriginal places' which is a place that, in the opinion of the Minister administering the NPW Act, is or was of special significance with respect to Aboriginal culture.

Part 6 of the NPW Act, provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm—including destroying, defacing, damaging an Aboriginal object or declared Aboriginal place. It is an offence to harm an Aboriginal object or declared Aboriginal Place, unless a defence applies.

The NPW Act defines an Aboriginal object as:

> *Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.*

Protection of Aboriginal objects and places applies irrespective of the level of their significance or issues of land tenure. Sites of traditional significance that do not necessarily contain material remains may be gazetted as 'Aboriginal Places' and thereby be protected under the NPW Act.

A strict liability offence applies for harm to an Aboriginal object or declared Aboriginal Places. This means that, unless a defence applies, even if an Aboriginal object is unwittingly harmed, a crime has been committed and prosecution can still occur. The definition of 'harm' under the NPW Act includes destroying, defacing, damaging or moving an Aboriginal object or declared Aboriginal Place. The strict liability offence of harming Aboriginal objects has a number of defences. The two defences relevant to the proposed development are the statutory defence of due diligence through complying with an adopted industry code, or compliance with the conditions of an AHIP.

Under Section 87(1) and 90 of the NPW Act, a proponent would usually require an AHIP should the carrying out of the project harm any Aboriginal object or Aboriginal place and another defence does not apply.

However, Section 5.23 of the EP&A Act provides that an AHIP is not required for approved SSI projects and that the provisions of any Act (including the NPW Act) which prohibit the carrying out of the project without an AHIP do not apply.

The Aboriginal heritage assessment process to satisfy the SEARs is generally consistent with the NSW Aboriginal heritage assessment requirements outlined by the former OEH in their *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*[2]; however, an AHIP is not required.

2.2.3 Native Title (New South Wales) Act 1994

The *Native Title (New South Wales) Act 1994* (NTNSW Act) was introduced to ensure that the laws of NSW are consistent with the Commonwealth NTA Act. It validates past and intermediate acts which may have been invalidated because of the existence of native title.

There are no Native Title Determination Applications, Determinations of Native Title or Land Use Agreements over the study area.

2.2.4 Aboriginal Land Rights Act 1983 (NSW)

The *Aboriginal Land Rights Act 1983* (NSW) (ALR Act) was established to provide land rights for Aboriginal people in NSW. The Act provides a system for Aboriginal people to lodge claims for certain Crown lands. The Act provides a land compensatory regime which recognises that land is of spiritual, social, cultural an economic importance to Aboriginal people. The Act establishes the NSW Aboriginal Land Council (NSWALC) and a network of over 120 autonomous Local Aboriginal Land Councils (LALCs) and requires these bodies:

a) to take action to protect the culture and heritage of Aboriginal persons in the LALC's area, subject to any other law; and

b) to promote awareness in the community of the culture and heritage of Aboriginal persons in the LALC's area.

LALCs constituted under the ALR Act can make land claims. The Registrar of the ALR Act has responsibility for maintaining the Register of Aboriginal Land Claims under section 166 of the Act.

Consultation with the Office of The Registrar, Aboriginal Lands Right Act for this project established that there were no current Aboriginal Land Claims over the study area.

2.3 Relevant policy and guidelines

The SEARs include references to a range of guidelines and administrative forms. The following guidelines are applicable to this ACHAR and discussed further in the following sections:

- NSW Office of Environment and Heritage (now Heritage NSW), Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW, 2011
- DECCW (now Heritage NSW), Aboriginal cultural heritage consultation requirements for proponents, 2010
- DECCW (now Heritage NSW), Code of practice for archaeological investigation of Aboriginal objects in NSW, 2010
- NSW Heritage Office, Skeletal Remains: Guidelines for Management of Human Remains under the Heritage Act 1977, 1998
- Australia ICOMOS, The Burra Charter—The Australia ICOMOS Charter for Places of Cultural Significance, 2013

2.3.1 *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011)

The purpose of this document is to provide guidance on the process for investigating and assessing Aboriginal cultural heritage in NSW and Heritage NSW's requirements for an Aboriginal cultural heritage assessment report.

Part 6 of the NPW Act, administered by Heritage NSW, provides specific protection for Aboriginal objects and declared Aboriginal places by establishing offences of harm. This guidelines document sets of the process for assessing Aboriginal objects, their context, sites and places. The investigation and assessment of Aboriginal cultural heritage is undertaken to explore the harm of a proposed activity on

Aboriginal objects and declared Aboriginal places and to clearly set out which impacts are avoidable, and which are not.

A range of processes are set out to include consultation with the Aboriginal community, undertaking due diligence assessments and more complex assessments, assessing significance, assessing harm, preparing detailed investigation reports and presenting mitigation measures.

2.3.2 *Aboriginal cultural heritage consultation requirements for proponents* (DECCW, 2010a)

The Aboriginal cultural heritage consultation requirements for proponents 2010 (the 'consultation requirements') is the guiding document for consulting with the Aboriginal community in NSW for heritage assessment projects. These guidelines are premised on the principle that Aboriginal people are the primary source of information about the value of their heritage and how this is best protected and conserved and must have an active role in cultural heritage assessment and planning.

The purpose of the consultation requirement document is to set out actions for consulting with Aboriginal communities as part of the heritage assessment process to assist with determining potential impacts of proposed activities on Aboriginal objects and places and to inform decision making for any application for approvals.

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

- *affording an opportunity for Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal objects(s) and/or place(s) in the area of the proposed project to be involved in consultation so that information about cultural significance can be provided to DECCW to inform decisions regarding applications for an AHIP*
- *providing Aboriginal people who hold cultural knowledge relevant to determining the significance of Aboriginal objects (s) and/or place(s) in the area of the proposed project with the opportunity to participate in decision making regarding the management of their cultural heritage by providing proponents information regarding cultural significance and inputting into management options*[3]

The consultation requirements include four key stages:

1. To identify, Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the area of the proposed project, to notify them of the project and to register them as an Aboriginal party to the project.
2. To provide registered Aboriginal parties with information about the scope of the proposed project and the proposed cultural heritage assessment process
3. To facilitate a consultation process whereby registered Aboriginal parties can provide to culturally appropriate information to the assessment and input into the research methodology, to assist in the assessment of cultural significance and input into the management of the identified cultural heritage.
4. To prepare and finalise an Aboriginal cultural heritage assessment report with input from registered Aboriginal parties.

2.3.3 *Code of practice for archaeological investigation of Aboriginal objects in NSW*, (DECCW, 2010b)

The DECCW (now Heritage NSW) Code of Practice for archaeological investigations of Aboriginal objects in NSW 2010, (the Code of Practice) establishes the requirements for undertaking test

excavation as part of an archaeological investigation without an AHIP, or where an AHIP is likely to be made.

Test excavations that are compliant with the requirements of the Code of Practice are excluded from the definition of harm under the NPW Act. The Code has been developed to support the process of investigating and assessing Aboriginal cultural heritage by specifying the minimum standards for archaeological investigation undertaken in NSW under the NPW Act. Where an Aboriginal cultural heritage assessment requires an archaeological investigation to be undertaken, this must be done in accordance with the requirements of this Code.

2.3.4 *Skeletal Remains: Guidelines for Management of Human Remains under the Heritage Act 1977* (NSW Heritage Office, 1998)

The NSW Heritage Office guidelines, Skeletal Remains: Guidelines for Management of Human Remains under the Heritage Act 1977, were developed to address situations where disturbance of skeletal remains occurs, including situations where disturbance happens inadvertently through an accidental discovery or chance find during construction work. The guidelines cover circumstances for where the human remains may be either Aboriginal, or non-Aboriginal and are not recent in origin. They also set out the relevant legislative frameworks that apply along with management procedures including community consultation procedures and expectations, principles of conservation practice and re-interment, and archaeological investigation.

2.3.5 *The Burra Charter—The Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS, 2013)

The Burra Charter[4] provides a best practice standard for managing and conserving cultural heritage places in Australia.

The Charter recognises that conservation is integral to the sustainable management of culturally significant places and is an ongoing responsibility. It sets out key principles, processes and practices for the management of heritage places, to guide those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians. The Burra Charter provides specific guidance for physical and procedural actions that should occur in relation to significant places.

2.4 Endnotes

1 Australian Law Reform Commission, Sydney, NSW, 'Defining Native Title', Review of the Native Title Act 1993 (DP 82), viewed 6 July 2018 <https://www.alrc.gov.au/publications/establishing-native-title-rights-and-interests>.

2 NSW Office of Environment and Heritage (now Heritage NSW), *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, 2011

3 NSW Office of Environment and Heritage (now Heritage NSW), *Aboriginal cultural heritage consultation requirements for proponents 2010.*

4 The Australia ICOMOS, 2013, *The Burra Charter—The Australia ICOMOS Charter for Places of Cultural Significance*.

3.0 Methodology

3.1 Overview

The general methodology for this assessment comprised a combination of desktop assessment relating to the existing environment, site investigations including survey and test excavation and Aboriginal community consultation. Data gathering through these processes allowed an assessment of the nature, extent and significance of the Aboriginal cultural heritage environment.

Outcomes from the updated desktop assessment and the field survey will inform the ongoing design process. The locations of identified Aboriginal objects and sites, along with refined areas of sensitivity, will be provided to the project design team to assist in design re-evaluation to avoid sites, objects and areas of sensitivity where possible. Where this is not possible, recommendations will be provided on areas that will need further investigation as part of the process of formulating mitigation and management measures.

3.2 The Study Area

The proposal itself is about 42.5km, including about 39km of new, greenfield single track standard gauge railway between Illabo and Stockinbingal.

The study area is approximately 160km northwest of Canberra and 310km west of the NSW coast. Stockinbingal is within the Cootamundra–Gundagai Regional local government area (LGA) and Illabo is within Junee LGA. The proposal crosses a number of property boundaries (as outlined in Appendix B).

The study area includes a 250m wide corridor centred on the proposal alignment, which was established early in the design phase to inform the consideration of options and alternatives for the proposal. Sections of this corridor were selected for survey based on the results of the desktop assessment. As a result of changes in the proposal design, it is noted that some parts of the study area deviate slightly from the corridor, including areas subject to survey. These areas were further assessed based on existing assessment data and additional surveys completed where warranted.

For the purposes of contextualising the archaeological investigation, the study area also includes a nominal area of approximately 42km north-south by 20km east-west for database searches, covering the plains through which the proposal is aligned and portions of the Bethungra and Dudauman Ranges.

3.3 Desktop Assessment

The desktop assessment phase comprised the following steps:

- Review of existing heritage and environmental reports for all Aboriginal heritage assessments that have been undertaken in the region surrounding the study area;
- Review of cultural background information through Aboriginal heritage assessments reports and other anthropological sources;
- A search of the Aboriginal Heritage Information Management System (AHIMS) database for the region surrounding the study area;
- Review of environmental context information such as land use history, geology, soils and hydrology of the study area and its surrounds; and

- Preparation of a predictive model for the occurrence of possible Aboriginal cultural sites in and around the study area.

The aim of the desktop assessment was to establish baseline information, identify gaps, and inform the ongoing investigation methodology. A key outcome of this process was the preparation of a predictive model for the occurrence of possible Aboriginal cultural sites and area of cultural heritage sensitivity in the study area. This predictive model was used to inform the locations of field survey for the assessment.

An assessment methodology, the Aboriginal Archaeological Research Design (AARD), identifying the need for targeted site inspections and further research was then prepared based on the outcomes of the desktop assessment, and predictive modelling.

3.4 Survey

A number of site surveys were conducted along targeted sections of the proposal alignment for the assessment. The survey included the participation of representatives of the Aboriginal community. The aim of the survey was to undertake a visual assessment of areas of the site investigation zones that were assessed through the desktop assessment as having potential archaeological sensitivity. The survey work focused on 11 zones identified during the desktop assessment.

Initial survey was conducted between Monday 26 and Friday 30 November 2018, with subsequent targeted surveys on 30 January 2019, and 10 November 2020.

Details of these survey areas and results are discussed below in Section 5.1.

3.5 Aboriginal Community Consultation

In New South Wales, Aboriginal cultural heritage assessments are generally undertaken following requirements outlined by Heritage NSW (formerly OEH) in their *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*[1]. This guide contemplates that Aboriginal community consultation would be undertaken for any assessment of Aboriginal heritage in order to enable a proper assessment of Aboriginal (heritage) 'values', especially those Aboriginal memories, stories and associations between the Aboriginal people and their traditional lands or Country. Aboriginal people frequently express an enduring connection to their Country, a connection that transcends generations, both past and present. The connection is frequently expressed as a sense of belonging, which may manifest through physical objects or place; alternatively, it may be presented as an intangible idea, where an appreciation of an unseen quality or non-materialistic value connects a place in the landscape, tradition, observance, custom, lore, belief and/or history to the person or group describing the item, event or value. The notion of intangible, social, or community values is essential to Aboriginal people as 'the effective protection and conservation of this heritage is important in maintaining the identity, health and wellbeing of Aboriginal people'

In order to gather social and community views and opinions with respect to Aboriginal heritage and identify and address Aboriginal heritage values, Heritage NSW requires proponents to adhere to the guideline document *Aboriginal cultural heritage consultation requirements for proponents 2010* (the consultation requirements).[2]

GML recognises and acknowledges the continuing Indigenous ownership of the traditional knowledge, traditional cultural expressions, practices, innovations and intellectual property rights in the materials provided by Registered Aboriginal Parties (RAPs), on which research and assessments in our reports

may be based, and endeavours to protect the privacy, integrity and wellbeing of participants in this research.

3.5.1 The Process of Consultation

The consultation requirements set out a process involving identification, registration, engagement and consultation with Aboriginal peoples who may hold cultural knowledge relevant to determining the significance of an Aboriginal object and/or place.

Adherence with guidelines involves following a number of stages, which includes:

1. Notification of the Project: Informing appropriate agencies and Aboriginal people about the nature and scope of the proposal.
2. Presentation of Information: Understanding what might be present in the landscape and its cultural significance.
3. Gathering Information: Determining the potential impacts and the proposed strategies to deal with them.
4. Review of Draft Report: Reviewing the report.[3]

Aboriginal groups are invited to register interest as a party to consultation. This includes placing local press advertisement(s), seeking responses from the RAPs on the proposed assessment methodology, and providing the RAPs with an opportunity to comment on the assessment reports and recommendations. The guidelines specify timeframes for each stage of the consultation process. Further details pertaining to these stages are described below.

The complete log of all communications between GML and RAPs and all letters, responses and details pertaining to this consultation are provided in Appendix C and D.

3.5.2 Stage 1: Notification of Project

The aim of Stage 1 is to 'identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places in the area of the proposed project'.[4] The identification process involves:

- Sending letters to select government agencies to determine relevant Aboriginal stakeholder groups to contact.
- Placing notices in local press, inviting Aboriginal people who hold relevant cultural knowledge to register in the process of community consultation.

The outcome of Stage 1 is a list of Aboriginal people who have registered to be involved in consultation—the 'Registered Aboriginal Parties' (RAPs). The RAP is to be involved for the remainder of the project; no Aboriginal consultation outside of the RAPs is required.

Letters requesting contact details for Aboriginal people or organisations who may hold cultural knowledge and may identify heritage issues relevant to the study area were sent via email on 17 September 2018 to:

- the Heritage NSW regional office (Regional Operations South Branch)
- LALC Local Aboriginal Land Council(s) (Young; Wagga Wagga)

- Office of The Registrar, Aboriginal Lands Right Act 1983
- National Native Title Tribunal
- Native Titles Service Corporation
- local council(s) (Junee; Cootamundra-Gundagai; Wagga Wagga)
- Local Catchment Authority (Riverina Local Land Services).

Responses were received from the following groups:

- the Heritage NSW regional office (Regional Operations South Branch)
- National Native Title Tribunal (NNTT)
- Cootamundra Gundagai Regional Council
- Office of The Registrar, Aboriginal Lands Right Act 1983
- Local Catchment Authority (Riverina Local Land Services).

Subsequently, those Aboriginal groups and people who were identified during the Step 1 notifications were contacted via letter or email on 9 October 2018, providing information regarding the project and inviting them to register an interest (Step 2 notifications). A notification was also placed in local newspaper *The Riverina Leader* on 26 September 2018, inviting registrations of interest by Aboriginal people with cultural knowledge relevant to the project area.

3.5.2.1 Registered Aboriginal Parties

Following notification of the project, the following Aboriginal people or groups listed below registered an interest in the project. In line with the outcomes of Stage 1 following Heritage NSW 2010, Appendix C,[5] the RAPs are:

This table removed due to sensitive data

A copy of the notification and the details of RAPs were provided to Heritage NSW and the (Wagga Wagga, Young, Brungle/Tumut) LALC on 25 October 2018.

3.5.3 Stage 2: Presentation of Information

The aim of Stage 2 is:

> *To provide registered Aboriginal parties with information about the scope of the proposed project and the proposed cultural heritage assessment process.*[6]

A letter outlining the project, project impacts, timeline and milestones was sent to all RAPs in conjunction with the beginning of Stage 3 as outlined below.

3.5.4 Stage 3: Gathering Information

The aim of Stage 3 is:

> *To facilitate a process whereby registered Aboriginal parties can:*
>
> *(a) contribute to culturally appropriate information gathering and the research methodology*
>
> *(b) provide information that will enable the cultural significance of Aboriginal objects and/or places on the proposed project area to be determined*
>
> *(c) have input into the development of any cultural heritage management options.*[7]

As part of the Gathering Information stage a number of survey and test excavation fieldwork sessions were conducted. The staging of multiple fieldwork sessions was due to changes in the design of the proposal. As a result, three updated project methodology reports were provided to RAPs for comment. A summary of the issuing of the project methodologies and the fieldwork sessions is outlined in Table 3.1 below.

Table 3.1 Issues of Project Methodology documents and Fieldwork sessions

Project Methodology / Fieldwork	Issue date to RAPs	Fieldwork Session
Project Methodology—Aboriginal Archaeological Research Design (AARD) for Survey	26 October 2018	
Fieldwork—Survey		26 to 30 November 2018
Fieldwork—Additional Survey – Men's business site		30 January 2019
Project Methodology—AARD for Test Excavation	25 February 2019	
Fieldwork—Test Excavation		6 to 22 May 2019; and 24 September to 2 October 2019.
Project Methodology—Revised Alignment AARD	4 November 2020	
Fieldwork—Survey for Scarred Trees		10 November 2020
Fieldwork—Test Excavation Zone 11 East		7 to 10 December 2020

The following section provides further detail on the issuing of the project methodologies, RAP responses and the fieldwork consultation.

3.5.4.1 Project Methodology—Survey

Included with the Stage 2 letter, a methodology for undertaking field assessment and a request for any information on culturally sensitive areas of local traditional knowledge relating to the study area was sent to all RAPs. As per Heritage NSW requirements, a period of 28 days was allowed for the RAPs to respond to the proposed project methodology.

Each group was provided with written details of the proposal and a survey sampling strategy, by post and/ or email, on 26 October 2018.

Table 3.2 summarises the RAPs' feedback to the project documentation. Further details of the consultation process are provided in Appendix D.

Table 3.2 RAP Feedback on the Project Methodology.

This table removed due to sensitive data

This table removed due to sensitive data

3.5.4.2 Fieldwork—Survey

Field survey was conducted between Monday 26 and Friday 30 November 2018. During the survey GML archaeologists discussed local Aboriginal heritage values and patterning with the community representatives. This provided an understanding of the local perspective for Aboriginal habitation and subsistence patterns, as well as understanding some local intangible values. The methodology was reviewed again with the Aboriginal stakeholders on the day of the survey.

The survey work was attended by representatives from [names redacted].

During the archaeological survey of the study area, a number of the RAP community members identified the possible location of an area believed to be a men's business site. Further discussion with the group elicited the notion that the area may be a men's business site, and that further discussion and confirmation of that possibility should be sought from [name redacted], who had been unable to attend the survey work.

3.5.4.3 Fieldwork—Additional Survey

To review the concern about the men's business site, [name redacted] attended a site inspection on 30 January 2019 for that purpose and observed that while there are a number of men's business sites elsewhere within the local region, the area that was tentatively identified during the survey was not one of those specific sites.

3.5.4.4 Fieldwork—Scarred Tree Survey

Following the identification of a possible scarred tree during the test excavation program, a survey to confirm the presence of the scarred tree and identify any further trees was undertaken on 10 November 2020. [Name redacted] participated in this survey, as the initial identifier of the tree in question. All RAPs were updated about this survey and were taken to inspect the scarred tree during the Zone 11 East test excavations – see below.

3.5.4.5 Project Methodology—Test Excavation

After the survey was undertaken, an updated assessment methodology for test excavation was prepared, and provided to all of the RAPs by post and email on 25 February 2019 with responses requested by the 25 March 2019, providing 28 days for review in accordance with the consultation requirements.

Table 3.3 summarises the RAPs' feedback to the project documentation.

Table 3.3 RAP Feedback on the Project Methodology.

This table removed due to sensitive data

This table removed due to sensitive data

Further details of the Aboriginal consultation undertaken for the study area are provided in Appendix C.

3.5.4.6 Fieldwork—Test Excavation

The test excavation program was undertaken in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code of Practice).[8]

Archaeological test excavation is permitted under the Code of Practice without the need to obtain a permit under Section 90 of the NPW Act. That is, it is excluded from the definition of 'harm' under the NPW Act provided that the subsurface investigations are not carried out in the following areas:

- in or within 50m of an area where burial sites are known or are likely to exist;
- in or within 50m of a declared Aboriginal place;
- in or within 50m of a rock shelter, shell midden or earth mound;
- in areas known or suspected to be Aboriginal missions or previous Aboriginal reserves or institutes; and/or
- in areas known or suspected to be conflict or contact sites.

As described by the Heritage NSW, the purpose of test excavation is to:

> *… collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample derived from sub-surface investigations. Test excavations contribute to the understanding of site characteristics and local and regional prehistory and they can be used to inform conservation goals and harm mitigation measures for the proposed activity.*[9]

This section provides details of the archaeological test excavation in accordance with Requirements 14–17 of the Code of Practice. It includes the method for test excavation. It has been designed to meet the specific sampling and systematic grid requirements, test excavation unit size and excavation processes outlined under Requirement 16a.

Aboriginal community consultation was undertaken in accordance with NPW Regulation (2009) subclause 80C(6)[1] prior to the methodology being prepared and continued throughout the project.

Test excavation for the assessment was undertaken between 6 May and 22 May 2019, 24 September and 2 October 2019.

Test Excavation included representatives from [names redacted].

The test excavation aimed to:

- Identify Aboriginal cultural heritage within the study area through detailed investigation of areas of predicted archaeological sensitivity.
- Ensure Aboriginal cultural and archaeological constraints and opportunities are adequately identified and appropriately managed throughout the life of the project.
- Consult with the Aboriginal community regarding the cultural significance of the study area.
- Ensure that any risks to Aboriginal heritage values (both intangible and tangible) are appropriately identified and mitigated.

All participants were involved in identifying Aboriginal objects, recording sites and determining the potential archaeological extent of deposits. At the completion of the test excavation an open discussion was held, during which the objects were recorded, and the archaeological potential and required test and/or salvage excavation was discussed and agreed upon by all present. The outcomes of this consultation underwrite this heritage assessment.

Table 3.4 provides a summary of all RAP submissions made during fieldwork (including survey) in relation to the project and Aboriginal cultural heritage values. Table 3.5 summarises how these submissions have been addressed or incorporated within the assessment by GML.

Table 3.4 RAP Comments During Fieldwork with Respect to Cultural Heritage Values Within or Associated with the Study Area.

This table removed due to sensitive data

[1] Consultation commenced under the 2009 regulations which were replaced in 2019, and commenced operation in September 2019.

Table 3.5 GML Responses to RAP Comments.

This table removed due to sensitive data

3.5.4.7 Project Methodology—Revised Alignment Test Excavation

Due to revisions in the design of the proposal, further test excavation was required at the north end of the study area. A revised project methodology was issued on 4 November 2020 to outline an approach to additional test excavations in a new part of the study area – Zone 11 East.

3.5.4.8 Fieldwork— Revised Alignment Test Excavation

The final session of test excavation was undertaken in Zone 11 East between 7 and 10 December 2020.

During this session, the selected RAPs re-inspected a recently identified scar tree (ARTC19) which was close to the proposal site. It was generally agreed that this tree was a cultural significance and that avoidance of it should be the first approach to its management.

Once again, all participants were involved in identifying Aboriginal objects, recording sites and determining the extent of potential archaeological deposits. At the completion of the test excavation an open discussion was again held, to discuss the results of the work, the cultural values and mitigation measures.

3.5.5 Stage 4: Review of Draft Report

The aim of Stage 4 is:

> *To prepare and finalise an Aboriginal cultural heritage assessment report with input from registered Aboriginal parties.*[10]

The RAPs were provided with a copy of this draft report (Issue D) for review and comment on 11 June 2021. In accordance with the Heritage NSW consultation guidelines, they were given 28 days to provide comment on the draft report. The review period concluded on Friday 9 July 2021. Only one response was received from RAPs, as noted in Table 3.6 below.

Table 3.6 RAP Comments on the draft ACHAR.

This table removed due to sensitive data

The original correspondence in regard to the review of the draft report is included in Appendix D.

3.5.6 Requirements for Future Aboriginal Consultation

Copies of the final report will be sent to all RAPs. Any future work relating to the Aboriginal archaeological mitigation, or any significant changes to the development, should include consultation with the RAPs.

3.6 Impact Assessment

The impact assessment process relies on the identification of Aboriginal culture heritage sites and places, an assessment of their significance and an understanding of whether or not the proposal can be designed to avoid those places. Impacts can be assessed a both direct and indirect, and mitigation measures are formulated to account for the nature of the impact.

3.6.1 Assessing Significance

Assessing the cultural significance of a place means defining the reasons why a place is culturally important. In NSW, the significance of Aboriginal sites is assessed based on the social or cultural values of a place, its historical associations, its scientific or archaeological values and its aesthetic values. Details of the assessment processes for these values are outlined in the Heritage NSW Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW, 2011.

3.6.2 Assessing Impacts

The impact of any development proposal on Aboriginal heritage can be defined as the harm to, the diminution of, or the removal of the attributes and reasons for its significance. The harm to, diminution or removal of significance can result from changes to sites, places and their context, and can be measured as being either direct or indirect. The Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, 2011, refers to these processes as 'harm'.

Direct impacts are generally mitigated through project redesign, but where this cannot be achieved, mitigation measures typically include collection of surface artefacts and sites by the Aboriginal community along with salvage archaeological excavations.

3.7 Endnotes

1 NSW Office of Environment and Heritage (now Heritage NSW), *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, 2011

2 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

3 List taken from Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney, p 10.

4 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

5 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

6 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

7 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

8 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* pp 24–28.

9 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 24.

10 Department of Environment, Climate Change and Water 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*, Sydney.

4.0 Existing Environment

4.1 Land Use History

The study area traverses multiple working farms, as well as the township of Stockinbingal, roads and rail. The land has undergone significant changes over time including vegetation clearance, construction of roads, tracks, dams, fences, and ploughing for crops. The natural landscape within lengthy tracts of the study area has been impacted by these activities. Some sections of the study area are also currently being used for stock grazing, which has a less obvious impact to zones of potential archaeological sensitivity, although still creates impacts through erosion. These impacts create other disturbances which reduce the potential for Aboriginal archaeological sites across the study area, and therefore have an important bearing on the assessment of the archaeological resource.

4.2 Archaeological and Cultural Context

4.2.1 Known Aboriginal Objects and/or Places

A detailed assessment of physical Aboriginal objects and places surrounding the current study area was undertaken.

On 17 July 2018, GML undertook a search of the Heritage NSW Aboriginal Heritage Information Management System (AHIMS) database from GDA Zone 55, eastings 566209–582392 to northings 6145993–6182214, covering a rectangular area of approximately 30km north–south and 16.5km east–west centred on the study area (Client Service ID 358060). This search area had the same coordinates as the AHIMS extensive search report, undertaken on 1 March 2016 for the Due Diligence[1] reporting.

The 2018 search identified 72 Aboriginal sites, which is an increase from the 34 listed sites identified in the Due Diligence AHIMS extensive search report. Since March 2016, an additional 38 sites had been recorded including artefact scatters, modified trees, a waterhole and an axe grinding groove.

Due to revisions of the study corridor, two additional basic AHIMS searches were required—one on 18 September 2018, covering an area of approximately 3.5km north–south and 6.5km east–west, and the second on 17 October 2018 covering an area of approximately 2.6km north–south and 2.4km east–west (Client Service ID 371210 and ID 377094 respectively).

Both of these additional searches confirmed there were no previously recorded Aboriginal sites in these extended areas, and therefore the 17 July 2018 extensive search results could be relied upon to show all of the known sites in the study area.

On 23 February 2021, GML undertook two update searches of the AHIMS database (Client Service IDs 570248 and 570264). While the search covered a slightly wider area, only sites identified within the same search area previously used were analysed. These sites were considered to be in close proximity to the proposal. Recently recorded sites identified during survey and assessment of the proposal were included in these updated results. The total number of recorded sites within the equivalent original search area is 93.

The results of the search are shown in Table 4.1. Figure 4.1 outlines the combined search areas, Figure 4.2 provides an overview of the results, whilst Figure 4.3 to Figure 4.7 show detailed locations.

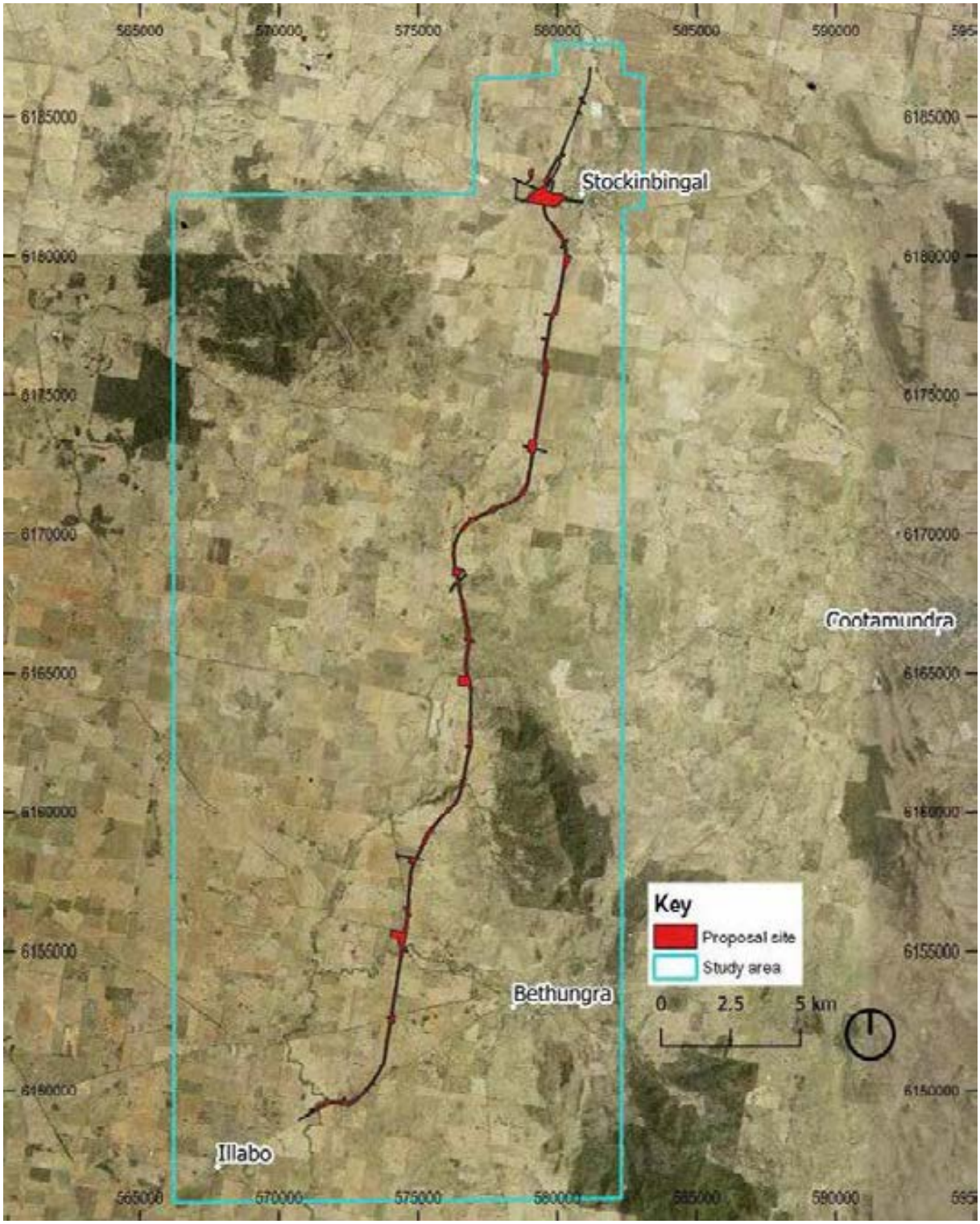


Figure 4.1 The Proposal site and Study area showing AHIMS search boundaries discussed below. (Source: NSW LPI with GML additions, 2021)

Table 4.1 Results of the AHIMS Search.

Site Feature	Frequency	Percentage %
Grinding Groove	1	1.1
Modified Tree (Carved or Scarred)	33	35.4
Potential Archaeological Deposit	9	9.7
Stone Arrangement	1	1.1
Stone Artefact Site	48	51.6
Waterhole	1	1.1
Total	**93**	

The results of the AHIMS search show that stone artefact sites are the most common within the region, making up 51.6% of all sites. Stone based sites and artefacts naturally preserve best in the archaeological record. Modified trees are also a dominant site type in this region (35%). One modified tree is within the study area and four others are in close proximity to the study area. This range of site types suggests that the region was used in multiple ways. Stone artefact sites are commonly associated with resource (food) procurement, processing and discard. Modified trees are also associated with broader traditions and cultural practices.

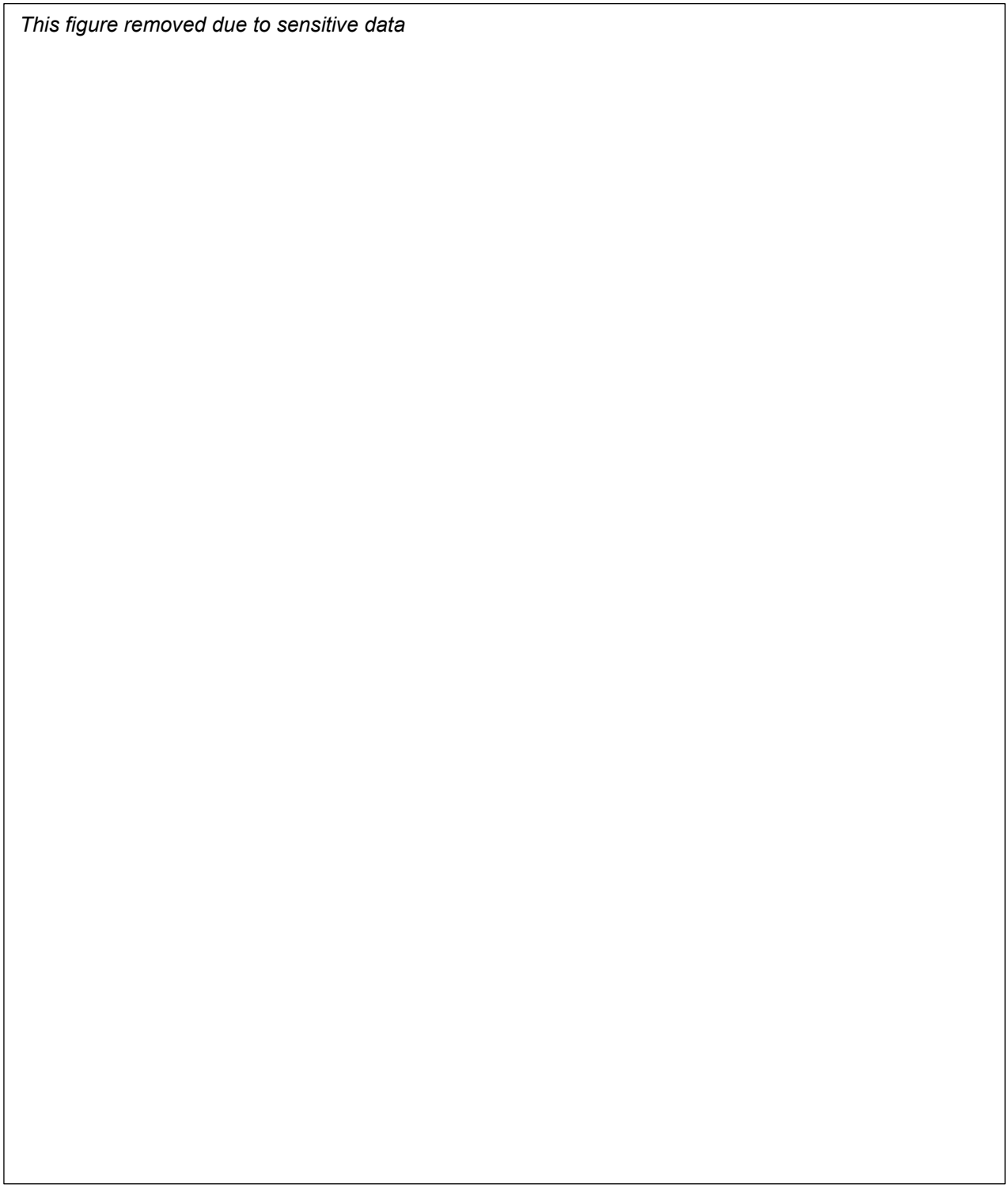


Figure 4.2 Overview AHIMS results in relation to the proposal. (Source: NSW LPI with GML additions, 2021)

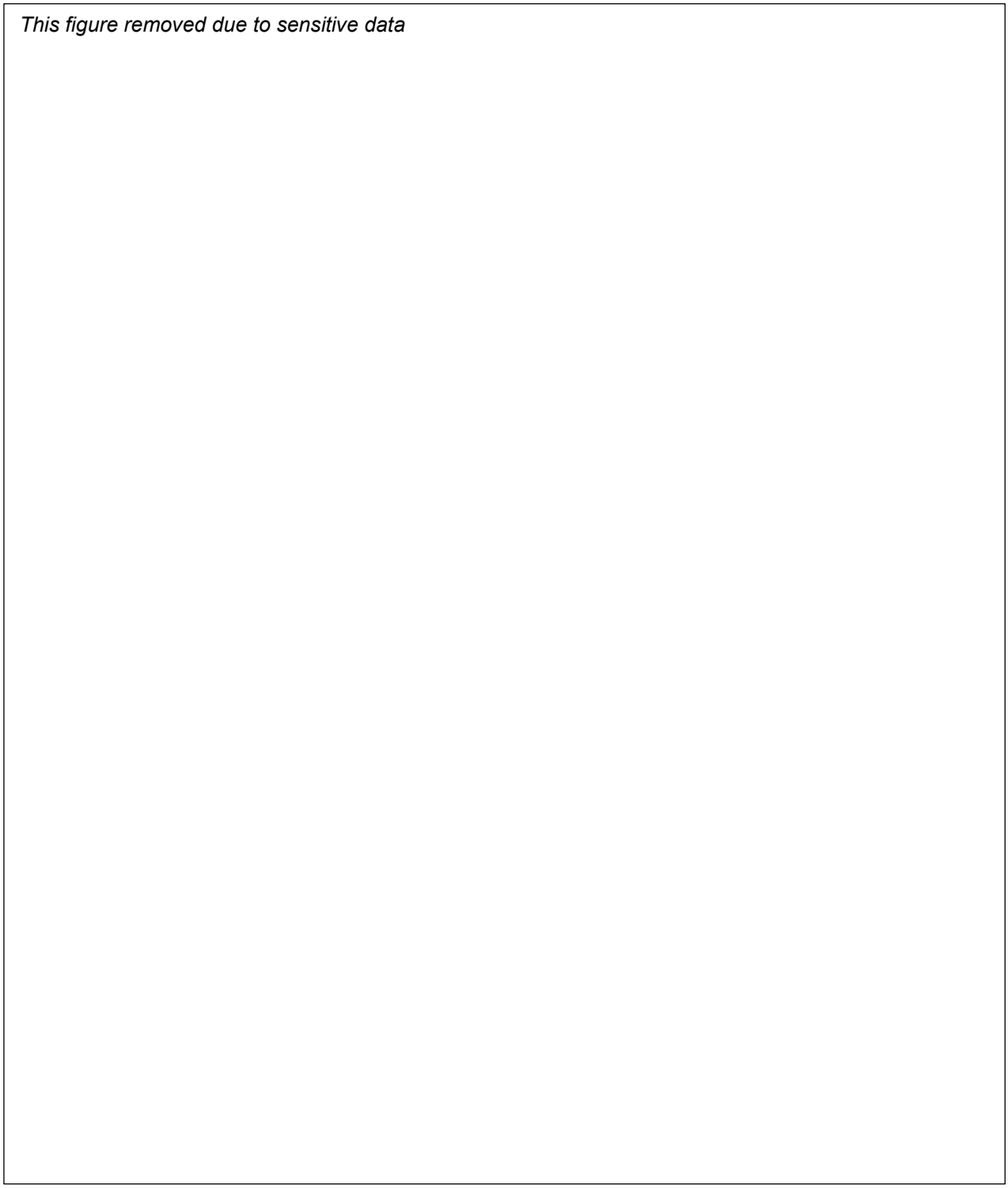


Figure 4.3 Detailed AHIMS search results which intersect with the proposal near Billabong Creek. (Source: NSW LPI, with GML additions, 2021)

This table removed due to sensitive data

Figure 4.4 Detailed AHIMS search results which intersect with the proposal near Ulandra Creek. (Source: NSW LPI, with GML additions, 2021)

This table removed due to sensitive data

Figure 4.5 Detailed AHIMS search results which intersect with the proposal near Run Boundary Creek. (Source: NSW LPI, with GML additions, 2021)

This table removed due to sensitive data

Figure 4.6 Detailed AHIMS search results which intersect with the proposal in the middle of the proposal site near the southern end of Ironbong Creek. (Source: NSW LPI, with GML additions, 2021)

Figure 4.7 Detailed AHIMS search results which intersect with the proposal near Dudauman Creek. (Source: NSW LPI, with GML additions, 2021)

4.2.2 Ethnohistory

The study area lies within the traditional lands of the Wiradjuri language group.[2] The Wiradjuri group occupies the largest geographic area of New South Wales of all Aboriginal groups.[3]

The Regional Histories of New South Wales states that the name 'Wiradjuri' means 'people of the three rivers', these rivers being the Macquarie, Lachlan and Murrumbidgee.[4] These three rivers were key resource zones for the Wiradjuri people, providing a stable, abundant and varied supply of food provisions including shellfish and fish such as Murray cod.

The study area lies between 30km and 66km north of the Murrumbidgee, being the closest of these three rivers. The study area is also close to the south-eastern boundary of the Wiradjuri Country, which borders the south-eastern highlands.[5] Wiradjuri Country between the Murrumbidgee and the Lachlan Rivers covers mainly undulating plains over a distance of approximately 180km with minor flanking ranges to the east. A range of smaller permanent and ephemeral creeks cross the plains providing freshwater sources. Where the Wiradjuri people lived further from the main rivers, the aquatic food resources were supplemented with kangaroos and emus hunted for their meat, as well as fresh fruit, nuts, yam daisies, wattle seeds and orchid tubers.

The Wiradjuri people generally moved around in small groups, using the river flats, open land and waterways with some regularity through the seasons as indicated by the scattered archaeological evidence in the region.[6] Journeying 100km and more to the southeast would have provided a range of additional resources from the southern alps and the Brindabella Ranges.

The Wiradjuri people carved trees to create shields, coolamons and canoes from the bark. Scarred trees were also selected specifically as markers, or signposts, within the cultural landscape to show areas of abundant resources or where people congregated.[7] Carved trees were also used to mark the burial sites of celebrated men whose passing had great effect on the community.[8] Often, only one tree was carved at each burial site; however, in some cases up to five carved trees have been identified for one burial.[9]

The arrival of Europeans in the areas in the early 1800's had a devastating impact on the traditional Wiradjuri lifestyle:

> *Clashes between the new European settlers and the local Aboriginal people were common around the Murrumbidgee and even further north, particularly between 1839 and 1841. These violent incidents have been termed the 'Wiradjuri wars' and involved removal of cattle and spearing of stockmen by the Wiradjuri people in response to killing of their people as well as loss of their fishing grounds and significant sites following invasion by the new settlers.*[10]

Wiradjuri people continue to occupy the local region around the Murrumbidgee, Lachlan and Macquarie rivers and the surrounding towns.

4.2.2.1 Cultural Information Provided During Consultation

This section removed due to sensitive data

4.2.3 Review of Relevant Local Literature

A number of archaeological studies have been undertaken in the region surrounding the study area. Those works and reports that relate to the current study area have been summarised below.

4.2.3.1 Inland Rail – Illabo to Stockinbingal—Due Diligence—Niche Environment and Heritage, 2016[11]

Niche undertook a desktop Due Diligence assessment for the study area based on a preliminary version of the proposal. The assessment included an extensive AHIMS search over an area of 35km x 20km centred on the proposal alignment. A site visit was not undertaken as part of the assessment. Niche concluded that there were numerous landscape features within the assessed study area which contained moderate to high potential for Aboriginal objects and sites. Since the assessment, the proposal footprint has been updated and extended beyond the study area covered by Due Diligence assessment.

4.2.3.2 Young to Wagga Wagga Looping Gas Pipeline—Heritage Assessment—AECOM, 2010[12]

AECOM undertook an assessment, including survey, of the 61km pipeline route Stage 1—Bethungra to Wagga Wagga. The study area for the Wagga Wagga to Young gas pipeline ran adjacent to the current study area at the Illabo end of the corridor and was approximately 20km to the east at the Stockinbingal end. The pipeline was 24km longer than the current study area and passed close to the southern end of the current study area. The landforms and landscape features traversed in AECOM's assessment would be similar to the conditions of the current study area.

Thirty-six Aboriginal cultural heritage sites (30 artefact scatters and six isolated finds) were identified during the survey. The impact assessment found that 29 sites would be impacted by the pipeline project. The significance assessment found all sites that were to be impacted had low scientific significance but high cultural significance.

The analysis of these sites noted a number of site distribution patterns associated with landforms and environmental elements mainly associated with water sources. In particular, they noted that relatively few sites recorded were in close proximity to a reliable water source with a stream order of four or higher. Most of the sites were in fact located within the vicinity of lower order, ephemeral streams, and two-thirds of all sites were located within 50m of a water course, with 200m being the maximum distance from water for the sites recorded for this study.

The landform data recorded along with those 36 sites reveals that 26 of the sites are associated with flat or low-gradient landforms including valley flats, plains and lower slopes, while five were in mid-slope contexts and five were in crest or ridge contexts.

One of AECOM's observations was that the environmental conditions would have favoured main creek lines and smaller adjoining tributaries as primary zones for occupation. This observation was partly borne out by its findings, although with less emphasis on the main creek lines and more on the ephemeral water courses.

AECOM assessed the predictive modelling as showing that the most likely Aboriginal site occurrences would be open artefact scatters and areas of subsurface archaeological potential within 200m of high order creeks and rivers on a range of landforms including creek banks, creek flats and terraces, and also on lower slopes and ridges overlooking water sources. Smaller open sites were also predicted to occur near ephemeral low order streams but were unlikely to occur where those water sources were first order streams with no defined channel.[13]

The assessment concluded that the modelling generally confirmed Dan Witter's 1980s[14] model that Aboriginal land use in this general area was associated with well-watered areas.

4.2.3.3 Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales—Due Diligence—Tom Knight, 2011[15]

Tom Knight undertook a Due Diligence assessment for a 120m section of a fire trail in Ulandra Nature Reserve to inform and advise maintenance works. Knight observed that Ulandra Nature Reserve contained multiple AHIMS sites, six being within one kilometre of the study area. Knight relocated one previously recorded site (AHIMS #50-5-0068) within the study area and concluded that no other Aboriginal cultural heritage sites existed within the section of the fire trail. AHIMS site 50-5-0068 had previously been salvaged and works on the fire trail were able to proceed following the conditions of an AHIP.

This Due Diligence assessment covered an area to the southeast of the current study area. Ulandra Nature Reserve is approximately 12km from the current study area and would be representative of the current study area prior to land clearing and European occupation.

Knight also reviewed a range of other archaeological assessments which had been undertaken in the Ulandra Nature Reserve, including a survey undertaken by Paton and Hughes in 1985 in which seven artefact scatters and 15 isolated finds were recorded. Notable among these recordings was that most were within a valley context while only a comparatively smaller number of sites were recorded on ridges and slopes. Knight concluded that open valleys in the area were generally more heavily used than the surrounding ridge tops. The availability of water had a marked influence on the likely location of artefact scatter sites and therefore 'most archaeological evidence would subsequently be found in association with low gradient, well drained locations adjacent to water sources such as stream banks, terraces and footslopes'.[16]

4.2.3.4 Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work Within Ulandra Nature Reserve and Adjacent Areas, Near Bethungra, NSW—Aboriginal Cultural Heritage Report—Charles Dearling Archaeological and Cultural Heritage Consultants, 2007[17]

This assessment included works in and surrounding the Ulandra Nature Reserve undertaken by Charles Dearling Archaeological and Cultural Heritage Consultants between 2002 and 2007. The archaeological works were in response to essential repairs required on Transgrid transmission lines which passed through the Ulandra Nature Reserve.

The initial assessment of the study area in 2002 identified 28 Aboriginal cultural heritage sites, comprising 22 artefact scatters and six isolated finds, within the Ulandra Nature Reserve.[18] The scatters were generally small containing less than 10 artefacts each, although the largest scatter contained 48 artefacts comprising mainly debitage with cores and a small number of formalised tool types, all made from quartz, chert and siltstone.

Further survey in 2004 resulted in another seven artefact scatters and three isolated finds being recorded. A total of 146 artefacts were recorded from these sites, most of which were found along low-gradient spur crests.

Based on these surveys, Dearling hypothesised that the occupation of this area was largely characterised by low-gradient, well-drained locations in close association with water sources such as stream banks, terraces and foot slopes.

Of the Aboriginal cultural heritage sites found during the previous two surveys, 13 sites would be impacted by Transgrid's proposed project works. Before works commenced, an AHIP was issued to Transgrid and artefact collection was undertaken. Five of the larger sites contained a total of 1,495 artefacts. The assessment recommended further programs of collection under the AHIP, as required by additional repair works.

This body of works indicates that artefact-based Aboriginal cultural heritage sites are common across the region and are strongly correlated with low-gradient slopes and terraces close to water, with less emphasis on ridge and crest environments. There are a number of locations across the current study area that reflect these landform criteria.

4.2.4 Summary

Overall the previous archaeological studies in the local area all support a similar model of Aboriginal cultural heritage site distribution which focuses around water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

Artefact sites, including scatters and isolated finds, are the dominant findings. The majority of artefacts were made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.

All studies note that scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

4.3 Environmental Context

The nature and availability of resources, including water, flora and fauna, and suitable raw materials for the manufacture of stone tools and other items, had (and continues to have) a significant influence on the way in which people utilise the landscape.

Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials, whether Aboriginal or non-Aboriginal, whilst current vegetation and erosional regimes affect the visibility and detectability of sites and objects. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

4.3.1 Soils

The study area passes through 12 soil landscapes and crosses six names watercourses.[19] The soils, landforms and landscape features of each landscape are summarised below and in Figure 4.8.

4.3.1.1 Bethungra (bt) Erosional[20]

Landscape

Rolling to steep hills formed on Silurian volcanic rocks. Elevation 320–730m, local relief 70–260m, slopes from 10–32% up to 40% in some steeper terrain. Partially to extensively cleared eucalypt woodlands.

Soils

Very shallow (<25cm), moderately well-drained Paralithic Leptic Rudosols (Lithosols) on upper slopes, crests and along ridgelines. Moderately deep (<100cm), moderate to imperfectly drained Reticulate Dystrophic Red Kurosols (Red Podzolic Soils) and Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on mid to lower slopes. Moderately deep (<100cm), poorly drained Bleached-Mottled

Mesotrophic Brown Chromosols (Yellow Podzolic Soils) on lower slopes. Deep (>100cm), poorly drained mottled Eutrophic Brown Sodosols (Solodic Soils) along creek lines and in depressions.

4.3.1.2 Comerford (cz) Erosional[21]

Landscape

Undulating low hills and rises formed on Devonian igneous and sedimentary rocks. Elevation 280–370m and <448m near Dirnaseer Road, local relief 20–80m, slopes 3–10% and <15% on steeper terrain. Extensively cleared, mid–high open eucalypt woodland.

Soils

Shallow (<50cm), well-drained Paralithic Leptic Rudosols (Lithosols) and Basic Paralithic Orthic Tenosols (Earthy Sands) on crests and ridgelines. Moderately deep (<100cm), imperfectly drained Mottled Magnesic Red Kurosols (Red Podzolic Soils; Solodic Soils) on mid to upper slopes. Mottled Eutrophic Red Chromosols (Red Podzolic Soils) on upper to lower slopes, and Mottled Eutrophic Brown Dermosols (Brown Podzolic Soils) on lower slopes.

4.3.1.3 Eurongilly (er) Transferral[22]

Landscape

Gentle to undulating rises and footslopes formed on Quaternary colluvium. Elevation 220–300m, local relief <30m, slopes <5%. Extensively cleared mid–high open eucalypt woodlands.

Soils

Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Non-calcic Brown Soils; Redbrown Earths) on mid to upper slopes. Deep (>100cm), imperfectly drained Haplic and Mottled Red and Brown Chromosols (Brown Podzolic Soils), imperfectly drained Haplic and Bleached Red Kurosols (Red Podzolic Soils), moderately well-drained Haplic Eutrophic Red and Brown Dermosols (Brown Podzolic Soils), and moderately well-drained Haplic Eutrophic Red Kandosols (Red Earths) on mid to lower slopes. Deep (>100cm), imperfectly and poorly drained Bleached-Mottled Mesotrophic Brown Chromosols and Sodosols (Yellow Podzolic Soils; Solodic Soils) on lower slopes to drainage lines.

4.3.1.4 Frampton (fr) Transferral[23]

Landscape

Gentle to undulating colluvial rises, foot slopes and plains formed on recent Quaternary colluvium derived from Silurian volcanics. Elevation 200–400m, local relief <30m, slopes <6%. Extensive to totally cleared mid–high open eucalypt woodlands.

Soils

Shallow (<50cm), moderately well-drained Palic Paralithic Tenosols (Earthy Sands) on upper slopes adjacent to Bethungra Range. Deep (>100cm), imperfectly drained Mottled Calcic and Eutrophic Red Chromosols (Red-brown Earths; Non-calcic Brown Soils) and Mottled and Mottled-Sodic Mesotrophic Red Dermosols (Non-calcic Brown Soils) on mid to upper slopes, along with deep (>100cm), moderately well-drained Haplic Red Kandosols (Red Earths). Deep (>100cm), imperfectly drained Mottled Eutrophic Yellow and Brown Chromosols (Yellow and Brown Podzolic Soils) and Eutrophic Yellow Sodosols (Solodic Soils) on lower slopes. Deep (>100cm), poorly drained Bleached-Mottled Dystrophic Brown Chromosols (Brown Podzolic Soils) in drainage depressions.

4.3.1.5 Ironbong Creek (ig) Alluvial[24]

Landscape

Gently undulating alluvial plains formed on Quaternary alluvium. Elevation 220–340m, local relief <9m, slopes <2%. Extensively cleared eucalypt woodlands.

Soils

Moderately deep (>50cm), imperfectly drained Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on terraces. Moderately deep (>50cm), imperfectly drained Haplic Eutrophic Red Kandosols (Red Earths), and deep (>100cm) imperfectly drained Hypocalcic Mottled-Subnatric Brown Sodosols (Solodic Soils) on surrounding plains. Deep (>100cm), imperfectly drained Haplic Mesotrophic Brown Kandosols and Rudosols (Alluvial Soils) along creek lines.

4.3.1.6 Narraburra (nr) Stagnant Alluvial[25]

Landscape

Broad alluvial plains formed on Quaternary alluvium. Wind-blown sand deposits and prior stream formations occur throughout the plains. Elevation 227–280m, local relief <9m, slopes <9%. Extensively cleared mid–high open eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Rudosols (Alluvial Soils) and poorly drained Bleached Mesotrophic Sodosols (Solodic Soils; Soloths) along current creek floodplains and in drainage depressions. Deep (>100cm), well-drained Basic Stratic Rudosols (Earthy Sands) adjacent to some creek lines. Deep (>100cm), Bleached-Mottled Mesotrophic Red Chromosols and Haplic Magnesic Red Kurosols (Red Podzolic Soils) on adjacent levees and plains. Deep (>100cm), imperfectly drained Bleached Hypocalcic Red Chromosols and Mottled Calcic Brown Chromosols (Red-brown Earths) on surrounding plains. Brown Dermosols (intergrades of Brown Podzolic Soils to Non-calcic Brown Soils) are also present. Deep (>100cm), imperfectly drained Endocalcareous-Endohypersodic Crusty Red Vertosols (Red Clays) and imperfectly drained Endocalcareous Grey Vertosols (Grey Clays) also occur on back plains.

4.3.1.7 Oakville (oe) Transferral[26]

Landscape

Gently undulating foot slopes and plains formed on recent Quaternary colluvium. Elevation 260–360m, local relief <30m, slopes <5%. Extensively cleared eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Mottled Eutrophic Red Chromosols (Red Podzolic Soils) and Bleached-Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on upper to lower slopes. Deep (>100cm), moderately well-drained Eutrophic Subnatric Red Sodosols (Solodic Soils) on some midslopes. Deep (>100cm), poorly drained Mottled Eutrophic Brown Sodosols (Solodic Soils) in drainage depressions and along creek lines.

4.3.1.8 Reynolds (ry) Transferral[27]

Landscape

Gentle to undulating foot slopes and plains formed on recent Quaternary alluvium and colluvium derived from intermediate Ordovician volcanics. Elevation 275–320m, local relief <20 m, slopes <4%. Extensive to totally cleared eucalypt woodlands.

Soils

Deep (>100cm), well-drained Haplic Mesotrophic Red Dermosols and Chromosols (structured Red Earths; Brown and Red Podzolic Soils) on mid to upper slopes. Deep (>100cm), imperfectly drained Mottled Mesotrophic Brown Chromosols (Brown Podzolic Soils) on lower slopes.

4.3.1.9 Stony Hill (sl) Erosional28

Landscape

Undulating low hills and rises formed on Silurian sedimentary rocks. Elevation 280–420m, local relief 9–40m, slopes from 3–10% up to 25% on some steeper terrain. Extensively cleared mid–high open eucalypt woodlands.

Soils

Soils are variable and complex. Shallow (<50cm), well-drained gravelly Paralithic Leptic Rudosols (Lithosols) on mid to upper slopes and crests. Moderately deep (>50cm), imperfectly drained Basic Paralithic Bleached-Leptic Tenosols (Earthy Sands) and shallow (<50cm), well-drained gravelly Acidic Red Kandosols (Red Earths) on some upper slopes. Shallow (<50cm), imperfectly drained Mottled Dystrophic Red Dermosols and Chromosols (Brown Podzolic Soils) and well-drained Haplic Mesotrophic Red Kandosols (Red Earths) on mid to lower slopes.

4.3.1.10 Temora (te) Erosional29

Landscape

Undulating low hills and rises formed on Ordovician volcanics. Elevation 260–336m, local relief 20–50m, slopes 3–10% and <25% on steeper slopes. Extensively to totally cleared mid-high open Eucalypt woodlands.

Soils

Shallow (<25cm) Acidic Paralithic Leptic Rudosol (Lithosol) and moderately deep to deep (50–150cm), well-drained Haplic Calcic Red Chromosols (Red-brown Earths) on upper slopes and crests. Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), well-drained Haplic and Sodic Calcic Eutrophic Red Chromosols and Dermosols (Non-calcic Brown Soils; Red-brown Earths; structured Red Earths) also on midslopes.

4.3.1.11 Twins Range (ti) Erosional[30]

Landscape

Undulating to rolling low hills, hills and plateau formed on Silurian volcanics. Elevation 360–530m, local relief 30–120m, slopes 3–11% and <20% on steeper terrain. Extensively cleared low to mid–high open eucalypt woodlands.

Soils

Shallow (<25cm), well-drained Acidic Paralithic Orthic Tenosols (Earthy Sands) and moderately deep (<100cm), imperfectly drained Mottled Mesotrophic Red and Brown Chromosols (Red Podzolic Soils) on hillcrests. Very deep (>1.5m), imperfectly drained Mottled to Mottled-Sodic Mesotrophic Red Chromosols (Red Podzolic Soils), moderately deep (<100cm), moderately well-drained Haplic Red Kandosols (Red Earths) and shallow (<50cm), imperfectly drained Haplic Eutrophic Grey Dermosols to moderately deep Haplic Calcic Red Dermosols and Chromosols (Red-brown Earths) on mid to upper slopes. Deep (>100cm), poorly drained Bleached-Mottled Eutrophic Brown and Yellow Chromosols (Yellow Podzolic Soils) and Haplic Hypocalcic Red Dermosols (Red-brown Earths) on mid to lower slopes. Moderately deep (<100cm) to deep (>100cm), poorly drained Bleached-Mottled Red and Brown Eutrophic Sodosols (Solodic Soils) and Orthic Tenosols (Earthy Sands) on lower slopes and flats.

4.3.1.12 Wattle Valley (wv) Erosional[31]

Landscape

Undulating valley consisting of low hills, rises, colluvial foot slopes and flats formed on Silurian volcanic and plutonic rocks. Elevation 320–540m, local relief 20–60m, slopes 3–15% and <20% on steeper terrain. Extensively to totally cleared mid–high open eucalypt woodlands.

Soils

Moderately deep (>50cm) Mottled Mesotrophic Red Kurosols (Red Podzolic Soils) on upper slopes and crests. Shallow to moderately deep (<70cm), moderately well-drained Haplic Mesotrophic Brown Kandosols (Red Earths) on upper slopes. Deep (>100cm), imperfectly drained Bleached-Mottled Mesotrophic Red Kurosols and Brown Chromosols (Red and Brown Podzolic Soils) and moderately deep (<100cm) Haplic Mesotrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), imperfectly drained Eutrophic Mottled-Subnatric Brown Sodosols (Solodic Soils) on alluvial flats and in drainage depressions.

4.3.2 Summary of the Soils Landscape

The landscapes along the project corridor fall into three soil groups: Erosional, Transferral and Alluvial. Erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Alluvial soil landscapes vary between moderately deep and deep across all landforms.

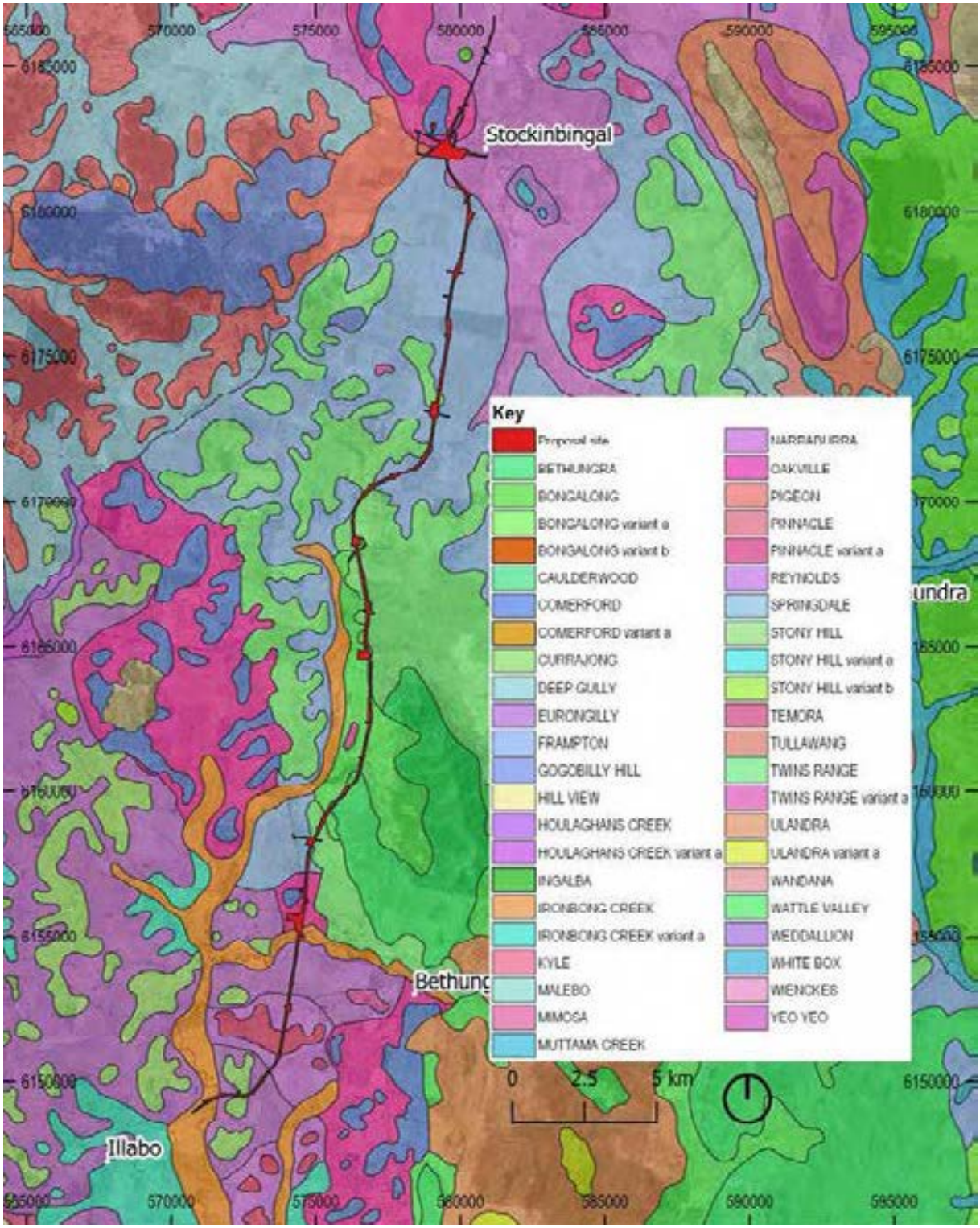


Figure 4.8 Soil landscapes of the study area. (Source: NSW LPI with GML additions, 2021)

4.3.3 Hydrology

The study area is within the catchments of both the Murrumbidgee River and Lachlan River (Lower and Upper) (Figure 4.9). At the southern end of the study area, the proposal crosses four ephemeral watercourses—Billabong, Ulandra, Run Boundary and Isobel Creeks. All of these watercourses drain the Bethungra ranges, located to the east of the study area, and flow to the south towards the Murrumbidgee River.

Billabong Creek is the main watercourse draining to the south for approximately 30km until it joins the Murrumbidgee River near Mundarlo. Ironbong, Isobel, and Run Boundary Creeks are all third order watercourses, while Ulandra is a fifth order watercourse. The central part of study area is drained to the south from Ironbong Creek, with Isobel, and Run Boundary Creeks joining its course at it flows towards Billabong Creek. In addition to these watercourses, other tributaries in the near area to Billabong Creek are Redbank Fall Creek and Turveys Fall Creek, both to the west. As Billabong Creek crosses the southern part of the study area it is a sixth order watercourse, although it is still of an ephemeral nature, having been dry in recent years.

The northern part of the study area runs alongside Powder Horn Creek, an ephemeral third order watercourse crossing it approximately 1.5km south of Stockinbingal. Powder Horn Creek drains the low undulating plains south of Stockinbingal, where it joins Bland Creek. To the west of Stockinbingal, the proposal crosses Dudauman Creek, an ephemeral third order watercourses which drains the low ranges in the Combaning Conservation Area. Dudauman Creek flows north to join Bland Creek and Noonans Creek northeast of Stockinbingal. Bland Creek continues to drain to the northwest, and is joined by numerous other small first, second and third order watercourses until it leads into Lake Cowal approximately 100km directly to the northwest of the study area.

Bland Creek runs parallel to the study area, between 2km and 3km to the east. Draining from the northern end of the Bethungra Ranges, it is also a dry, ephemeral first order watercourse in this area but increases to a third order watercourse approximately 5km north of Stockinbingal.

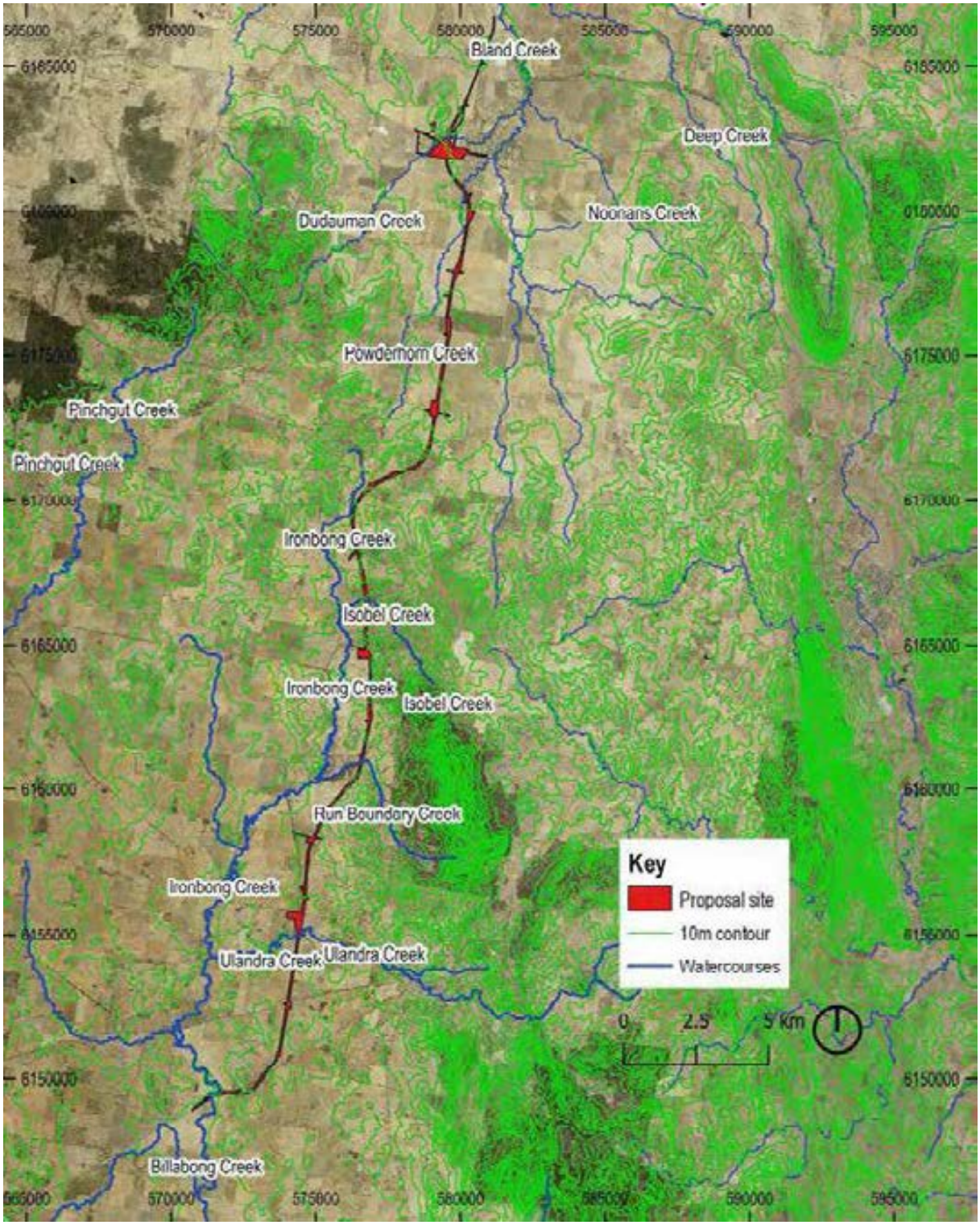


Figure 4.9 Hydrology and contour lines across the study area. (Source: NSW LPI with GML additions, 2021)

4.4 Summary of Landscape Context

The AHIMS results indicate that the region surrounding the current study area contains multiple Aboriginal cultural heritage sites, the majority of which are stone artefacts and modified trees. The majority of those sites are in close proximity to creek lines and many are on the same soil landscapes as those that are crossed by the current study area.

As discussed above, the current study area crosses 12 soil landscapes. They fall into three soil groups: Erosional, Transferral and Alluvial. Erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Alluvial soil landscapes vary between moderately deep and deep across all landforms.

Prior to European occupation, the study area would have been covered in open eucalypt woodlands which would have minimised erosion and artefact movement. Modified trees may be found in any soil landscape, in areas with mature vegetation. During and post land clearing, modified trees may have been destroyed and stone artefacts in erosional landscapes may have been displaced from their original discard point. Artefact movement down slopes is common in these situations. However, soil landscapes with deep soil profiles are generally more stable and artefacts in these areas often undergo less displacement.

Therefore, despite recent agricultural activity, it can be predicted that artefacts may be found in the majority of the Transferral and Alluvial landscapes and in the mid to lower slopes of Erosional landscapes within the study area. Agricultural activity is likely to have resulted in the disturbance of artefact sites within the upper 200-300mm of the soil profile, but those at greater depths are likely to remain relatively intact due to the general absence of zones of deep (300mm+) disturbance on the landscape. Where mature trees have survived land clearing activities, there may remain specimens that have been modified by Aboriginal people in the past.

4.5 Aboriginal Archaeological Potential

Findings from other archaeological reports in the local area include general predictive modelling statements for the distribution of Aboriginal cultural heritage sites in the area based on background data and ground survey.

These include the notion that Aboriginal occupation sites, denoted by artefact scatters, will mainly be present in association with water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

These predictions can also be related to the current study area due to the similarity of the landforms and environment. The study area is mainly low-relief undulating plains with variations in elevation from approximately 260m AHD grading up to approximately 400m AHD. Key changes in topography occur to the southwest of the proposal where the it touches on the lower toe-slopes of a 700m-high range which is linked to the Ulandra Nature Reserve to the south. The section of the study area starting approximately 10km north of Illabo and extending for approximately 15km shadows the western side of this range, crosses two ephemeral creek lines (Run Boundary Creek and Isobel Creek) and runs parallel to the permanent watercourse, Ironbong Creek. It also covers the most undulating part of the landscape, crossing a range of low-gradient toe-slopes and moderately elevated terraces within the vicinity of the water courses and near a range of ephemeral watercourses in between.

This stretch of the study area is the most likely to contain Aboriginal occupation sites due to its high correlation with landforms and watercourses as outlined in the predictive modelling.

This overall view supports the preliminary modelling noted in the 2016 desktop Due Diligence[32] which concluded with the identification of a range of sensitive areas within 200m of watercourses. This general statement can be refined further with reference to the specifics of the landforms within the study area.

Key predictive modelling statements include:

- Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams such as Billabong Creek, Dudauman Creek and Ironbong Creek—although sites may also occur in close proximity to ephemeral watercourse such as Run Boundary Creek, Isobel Creek and Ulandra Creek.
- Aboriginal occupation sites are most likely to occur on low-gradient, well-drained landforms in close proximity to those water sources. This therefore indicates that the area of proposal with the highest potential for sites to occur is the 15km stretch starting 10km north of Illabo.
- Artefact sites, including scatters and isolated finds, are the dominant findings. The majority of artefacts are made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.
- Scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

Figure 4.10 shows the areas of sensitivity based on these predictive statements. These predictive statements were used to inform the survey strategy and in turn the test excavation, discussed further in Section 5.0.

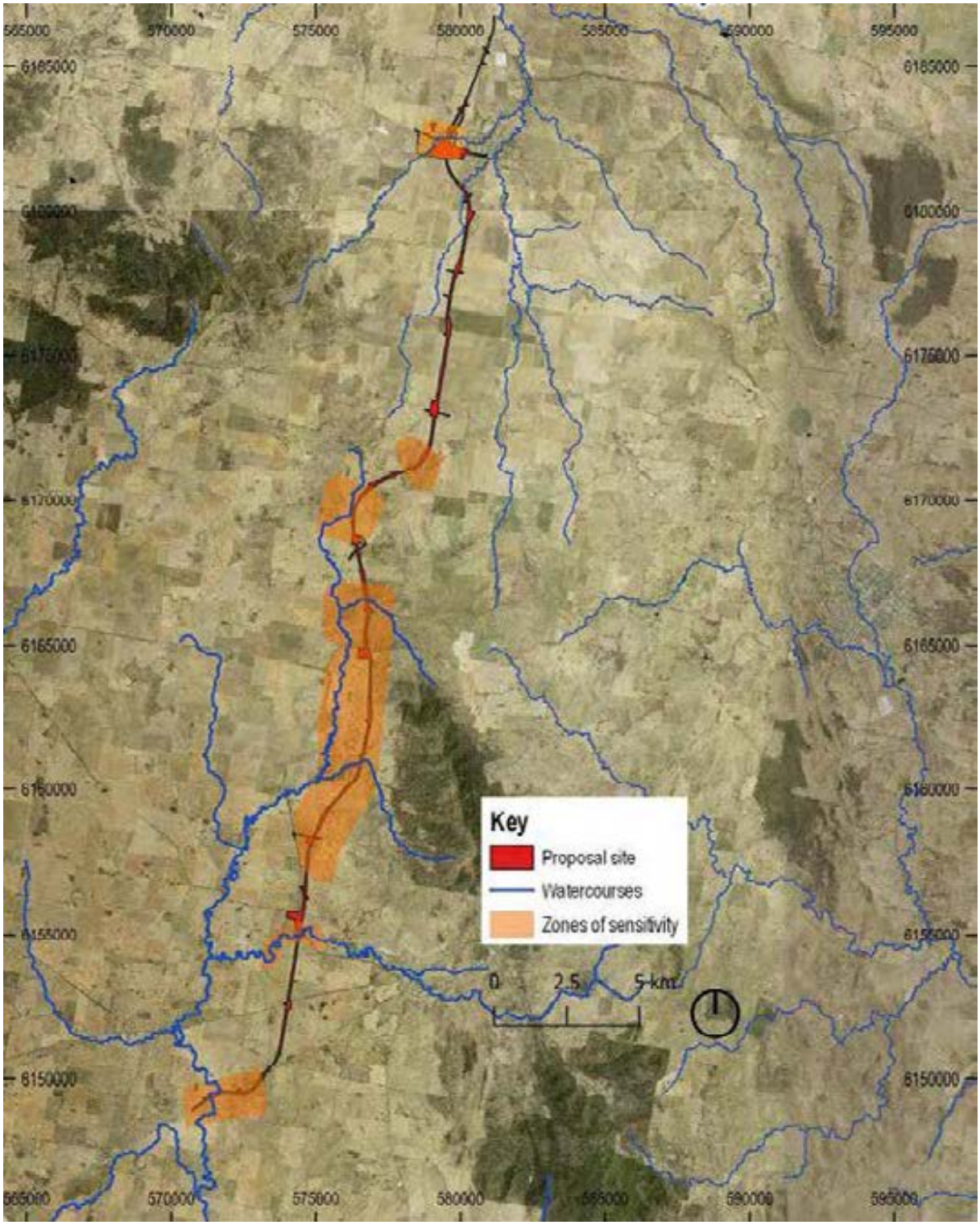


Figure 4.10 Zones of archaeological sensitivity requiring further investigation. (Source: GML, 2021, based on Niche 2016)

4.6 Endnotes

1 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal, Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

2 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 – Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.

3 Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8; NSW Office of Environment and Heritage, *South Western Slopes - Regional History*, viewed 1 August 2019 <https://www.environment.nsw.gov.au/bioregions/SouthWesternSlopes-RegionalHistory.htm>.

4 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 – Bethungra to Wagga Wagga, report prepared for APA Group, January 2010. NSW Office of Environment and Heritage, *South Western Slopes - Regional History*, viewed 1 August 2019 <https://www.environment.nsw.gov.au/bioregions/SouthWesternSlopes-RegionalHistory.htm>.

5 Tindale, N 1974, *Aboriginal tribes of Australia: their terrain, environmental controls, distribution limits and proper names*, University of California Press, Berkeley.

6 NSW Office of Environment and Heritage, *South Western Slopes - Regional History*, viewed 1 August 2019 <https://www.environment.nsw.gov.au/bioregions/SouthWesternSlopes-RegionalHistory.htm>.

7 RAP Letter dated 22 November 2018, to GML Heritage.

8 Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.

9 Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.

10 NSW Office of Environment and Heritage, *South Western Slopes - Regional History*, viewed 1 August 2019 <https://www.environment.nsw.gov.au/bioregions/SouthWesternSlopes-RegionalHistory.htm>.

11 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal, Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

12 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 – Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.

13 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 – Bethungra to Wagga Wagga, report prepared for APA Group, January 2010, p 50.

14 Witter, D 1980, An Archaeological Pipeline Survey between Wagga Wagga and Young, report prepared for the National Parks and Wildlife Service, Sydney.

15 Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011.

16 Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011, p 5.

17 Dearling, C, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work, within Ulandra Nature Reserve and Adjacent Areas, near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, December 2007.

18 Dearling, C, Aboriginal Cultural Heritage Study, Access Track Upgrades: Transgrid Power Line, Ulandra Nature Reserve and Environs, Near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, February 2004.

19 Andersson, K M, M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney.

20 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 87.

21 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 108.

22 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 326.

23 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 311.

24 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 458.

25 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 503.

26 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 369.

[27] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 385.

[28] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 246.

[29] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 251.

[30] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 261.

[31] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 283.

[32] Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal, Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

5.0 Aboriginal Archaeological Assessment

5.1 Site Survey

Archaeological survey of the study area was undertaken from 26–30 November 2018 by GML in conjunction with members of the local Aboriginal community, as represented by the RAPs. The survey was conducted as per the methodology outlined in the October 2018 Survey AARD[1] (Appendix E). Additional survey was undertaken on 30 January 2019 to assess the possible men's business site, in May 2019 of Zone 11 during test excavation to account for revisions to the alignment, and on 10 November 2020 to assess scar tree ARTC19.

The work was conducted as a pedestrian survey and, where possible, was undertaken systematically across the landscape within the nominal 250m-wide project corridor. Some minor variation was required to systematic coverage due to the presence of crops, dams and paddock fences, but all areas required for survey were covered as comprehensively as possible. The approach also included opportunistic targeting of areas of higher ground surface visibility where available.

Participants in the first survey in November 2018, and Zone 11 survey in May 2019 included representatives from [names redacted]. Survey for the men's business site and the scar tree ARTC19 included representatives from [name redacted].

The individuals involved in the work are detailed in Table 5.1.

The October 2018 AARD, refining the results of the 2016 Due Diligence report,[2] outlined a total of 11 distinct areas covering a total of 16.6km as having the potential for archaeological or cultural sensitivity. However, due to access restrictions, only seven of those areas, covering 7.54km, were available for pedestrian survey. Each survey area covered a width of approximately 250m, allowing for some flexibility in the alignment of the proposal. Figure 5.1 shows the total number of areas of predicted sensitivity and those areas accessible for survey. Note that Figure 5.1 and Figure 5.21 shows some minor differences between the survey areas and the proposal site in Zone 4 due to subsequent changes in the design of the proposal.

These survey areas were based on the predictive modelling and focused on low-gradient, well-drained landforms in close proximity to water sources including Ironbong Creek, Run Boundary Creek, Isobel Creek and Ulandra Creek. The landforms across the study area were broadly categorisable into three distinct types, 1) River flats—flats/terraces along the tops of creek/riverbanks, 2) undulating plains, and 3) lower slopes—mainly of the Bethungra Ranges, but also of other isolated areas of moderate relief. Table 5.2 and Figure 5.2 outline and show the survey area relative to the landforms.

Table 5.1 Participants in the Survey.

Personnel	Affiliation	Role
Jodi Cameron	GML	Project Manager, Archaeologist
Martin Rowney	GML	Project Director, Archaeologist
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party

Personnel	Affiliation	Role
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party
[Name redacted]	[Name redacted]	Registered Aboriginal Party

Table 5.2 Survey Zones and Landform.

Zone	Landform	Survey Zone Length
1	River flats and undulating plains	820m
2	River flats and undulating plains	650m
3	Undulating plains and includes sites AHIMS 50-5-0117, AHIMS 50-5-0120, AHIMS 50-5-0121	50m
4	Lower slopes—mainly of the Bethungra Ranges	2100m
5	Lower slopes—mainly of the Bethungra Ranges	4200m
6	Lower slopes—mainly of the Bethungra Ranges	2450m
7	River flats and undulating plains	2330m
8	Undulating plains, with some lower slopes of isolated local relief	1240m
9	Undulating plains	1200
10	Undulating plains	500m
11	River flats and undulating plains, with some lower slopes of isolated local relief	400m

* Zones 5, 6, 9 and 10 (shaded) were not surveyed due to access restrictions.

5.1.1 Changes in the Study Area following completion of Site Survey

Refinements to the study area after the completion of the site survey meant that some parts of the study area were not covered by the survey. The three areas where this mainly occurred were at Zone 3, Zone 4 and Zone 11.

Changes at Zone 3 resulted in a section of access road being included in the proposal site (discussed below in Section 5.2.2.4). This change made no material difference to the survey coverage as the survey had covered the access road as well.

After review of the Zone 4 survey results, no additional survey was considered necessary for the revised location of Zone 4.

However, these refinements to the study area did result in the requirement for additional investigation in the vicinity of Zone 11. A new zone, Zone 11 East was established in December 2020 to account for archaeological investigation where the proposal had been moved further to the east. The area of Zone 11 East had already been covered by the survey in Zone 11, however it has been included in the survey discussion as it still comprised an area of sensitivity and was subsequently subject to test excavation (discussed further below in Section 5.3)

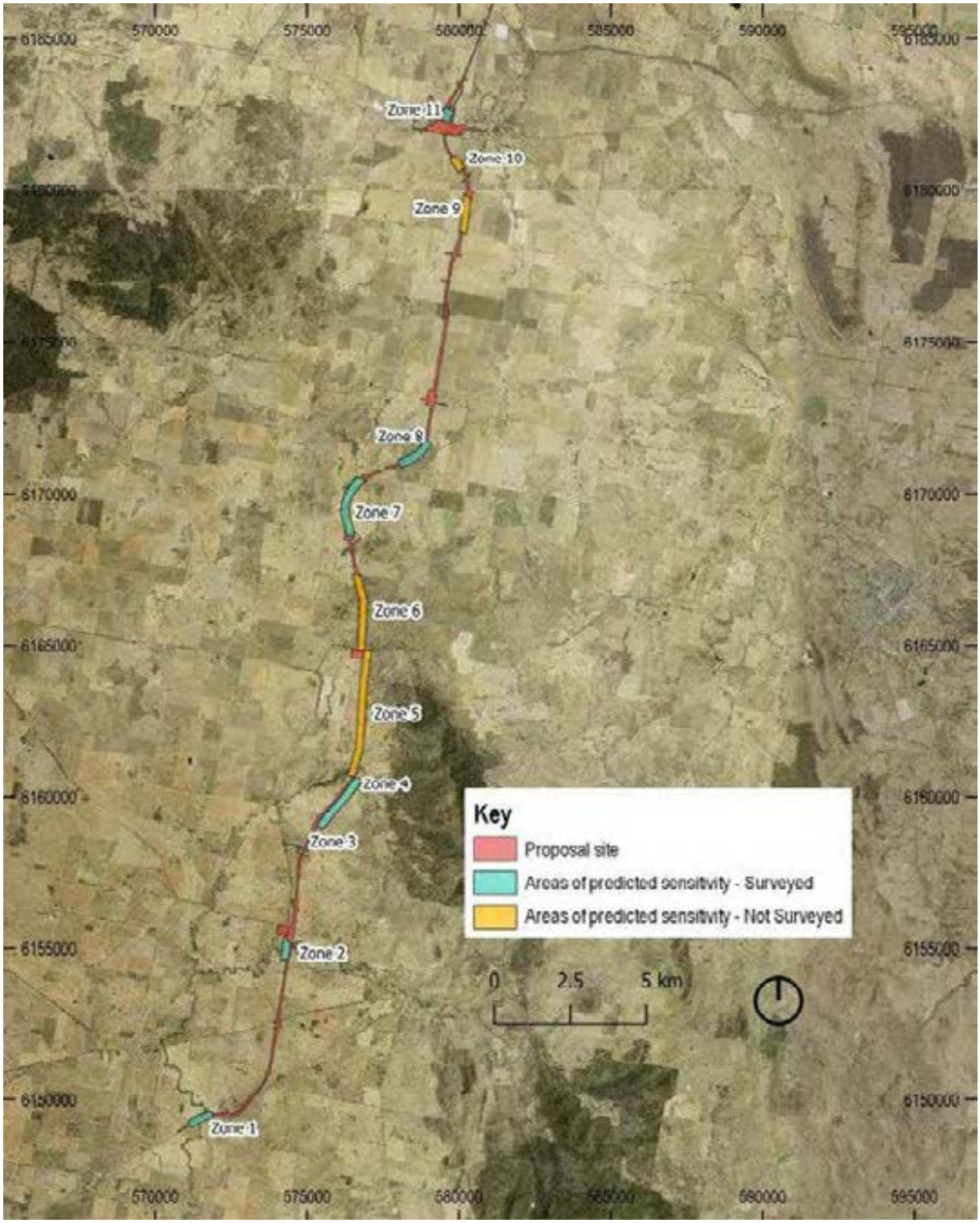


Figure 5.1 The reference design proposal showing areas of predicted sensitivity and survey zones as outlined in the AARD. Note that some areas of Predicted Sensitivity in the AARD no longer correlate with the reference design proposal due to subsequent revisions in the proposal**.** (Source: NSW LPI with GML additions, 2021)

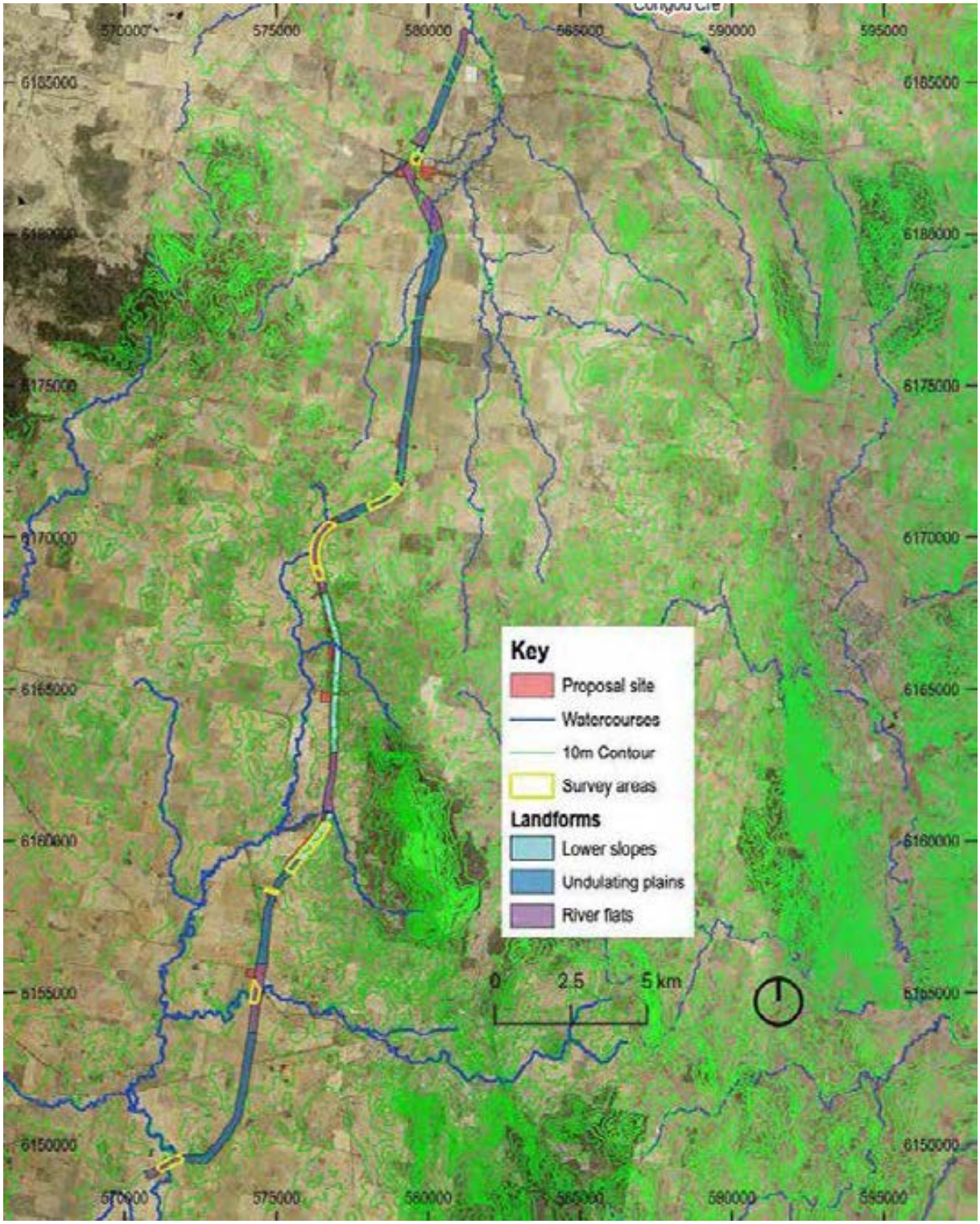


Figure 5.2 The study corridor showing landform types, contours, hydrology and the areas surveyed (edged in yellow). (Source: NSW LPI with GML additions, 2021)

5.2 Survey Results

5.2.1 Summary

The survey identified a number of artefact scatters and isolated artefacts. A total of 22 separate recorded locations were noted, four of which were scarred trees, the remainder being artefact sites (Table 5.3 Survey Zones with New Site and Site Type Data.). The survey also inspected the three previously recorded AHIMS sites identified: scarred trees 50-5-0117, 50-5-0120 and 50-5-0121.

No sites were recorded within Zone 8.

Table 5.3 Survey Zones with New Site and Site Type Data.

Zone	New Site Recording	Site Type
1	ARTC1 (50-5-0266), ARTC2 (50-5-0267), ARTC 3 (50-5-0274), ARTC4 (50-5-0276)	Low density artefact scatter / isolated artefacts
	ARTC5 (50-5-0275)	Grindstone and zone of archaeological potential
	50-5-0280	Zone of archaeological potential
2	ARTC6 (50-5-0277)	Scarred tree
	50-5-0287	Zone of archaeological potential
3	–	Scarred tree—AHIMS 50-5-0117
	–	Scarred tree—AHIMS 50-5-0120
	–	Scarred tree—AHIMS 50-5-0121
	ARTC18 (50-5-0286)	Scarred tree
	ARTC20 (AHIMS # pending)	Scarred tree
4	ARTC7 (50-5-0285)	Isolated artefact
	ARTC8 (50-5-0284)	Artefact scatter and zone of archaeological potential
	ARTC9 (50-5-0283)	Isolated artefact
7	ARTC12 (50-5-0268), ARTC13 (50-5-0269), ARTC14 (50-5-0270), ARTC15 (50-5-0271), ARTC16 (50-5-0272), ARTC17 (50-5-0273)	Isolated artefacts
8	–	–
11	ARTC10 (50-2-0054), and ARTC11 (50-2-0055)	Isolated artefacts
	–	Zone of archaeological potential
11 East*	ARTC19 (50-2-0058)	Scarred tree

* Zone 11 East was not included in the original survey but was subsequently investigated as a later stage of works.

5.2.2 Discussion of Results

5.2.2.1 Survey Units and Landforms

Adhering to Heritage NSW recording requirements, the study area was surveyed according to survey units, landforms and landscapes. All survey units are described in Table 5.4 Survey Units and Landforms. and shown in Figure 5.3 to Figure 5.15. Details with respect to landform coverage are provided in Table 5.5 Survey Coverage. and Table 5.6 Landform Summary—Sampled Areas.

Discussion relevant to each zone is noted in the survey and landforms table below.

Table 5.4 Survey Units and Landforms.

Landform Type	Relevant Survey Unit and Description	Photograph
River flats	**Zone 1** flat terraces along the top of the creek banks of Billabong Creek—one of the more substantial watercourses in the study area. This zone is mainly level ploughed paddock with some remnant crop grasses. Exposure was substantial due to the ploughing, but visibility was moderate to poor due to remaining grass and vegetation cover. (Section 5.2.2.2)	 **Figure 5.3** Zone 1. (Source: GML, 2019)
	 **Figure 5.4** Zone 1. (Source: GML, 2019)	 **Figure 5.5** Zone 1. (Source: GML, 2019)
River flats	**Zone 2** flat terraces along the top of the creek banks of Ulandra Creek—also one of the more substantial watercourses in the study area. This zone is also mainly level ploughed paddock with main areas of the paddock under crop. Exposure was substantial around the edges of the plough zones, and while visibility was poor in the centres of paddocks, it was good around the exposed tracks, edges and along the creek bank. but visibility was moderate to poor due to remaining grass and vegetation cover. (Section 5.2.2.3)	 **Figure 5.6** Zone 2. (Source: GML, 2019)

Landform Type	Relevant Survey Unit and Description	Photograph
	 **Figure 5.7** Zone 2. (Source: GML, 2019)	 **Figure 5.8** Zone 2. (Source: GML, 2019)
Undulating plains	**Zone 3** level area of wider undulating plains landform. Clear of all ground level vegetation but with scattered bark and leaf litter cover. (Section 5.2.2.4)	 **Figure 5.9** Zone 3. (Source: GML, 2019)
Lower slopes	**Zone 4** moderate relief lower slopes of the toe slopes from the Bethungra Ranges to the east. Rocky with livestock grazing on areas unsuitable for cropping. (Section 5.2.2.5)	 **Figure 5.10** Zone 4. (Source: GML, 2019)
River flats	**Zone 7** mainly level to mildly sloping plains adjacent to ephemeral watercourse and wetland. Cropped paddocks in areas to the east on drier ground adjacent up to, and along, the margin of the watercourse. (Section 5.2.2.7)	 **Figure 5.11** Zone 7. (Source: GML, 2019)

Landform Type	Relevant Survey Unit and Description	Photograph
Undulating plains and lower slopes	**Zone 8** moderate relief lower slopes of minor ridgeline among general zone of undulating plains. Lower slopes are rocky with livestock grazing while plains are ploughed and cropped. (Section 5.2.2.8)	 **Figure 5.12** Zone 8. (Source: GML, 2019)
River flats and lower slopes	**Zone 11** flat terraces along the top of the creek banks of Dudauman Creek—also one of the more substantial watercourses in the northern end of the study area, and southern slopes of moderate elevation knoll on plains. **Zone 11 East** flat terraces along the top of the creek banks of Dudauman Creek (Sections 5.2.2.10 and 11)	 **Figure 5.13** Zone 11 and Zone 11 East. (Source: GML, 2019)
	 **Figure 5.14** Zone 11. (Source: GML, 2019)	 **Figure 5.15** Zone 11. (Source: GML, 2019)

Table 5.5 Survey Coverage.

Zone (Survey Unit)	Landform	Survey Unit Area (SUA) (m^2)	Visibility (V) %	Exposure (E) %	Effective Coverage Area (ECA) (m^2) (=SUA* V%*E%)	Effective Coverage % (=ECA/SUA *100)
1	River flats	155,800 (excludes existing road and rail corridor from survey area)	10%	80%	12,464	8%
2	River flats	155,389	10%	75%	11,654	7.5%

Zone (Survey Unit)	Landform	Survey Unit Area (SUA) (m^2)	Visibility (V) %	Exposure (E) %	Effective Coverage Area (ECA) (m^2) (=SUA* V%*E%)	Effective Coverage % (=ECA/SUA *100)
3	Undulating plains	10,000	80%	90%	7,200	72%
4	Lower slopes	525,000	15%	30%	23,625	4.5%
7	River flats	582,500	10%	80%	46,600	8%
8	Undulating plains	185,000	5%	5%	462.50	0.25%
	Lower slopes	121,500	5%	40%	2,430	2%
11 and Zone 11 East	River flats	70,000	5%	5%	175	0.25%
	Lower slopes	30,600	5%	10%	153	0.5%

Table 5.6 Landform Summary—Sampled Areas.

Landform	Landform Area (LA) (m^2)	ECA	% Landform Effectively Surveyed (=ECA/LA *100)	Number of Aboriginal Sites	Number of Artefacts or Features
River flats	963,689	70,893	7.35%	14	14 artefacts, 1 scarred tree
Undulating plains	195,000	7,662.50	3.93%	1	1 scarred tree
Lower slopes	677,100	26,208	3.87%	3	11 artefacts

5.2.2.2 Zone 1

This zone is situated either side of Billabong Creek adjacent to the rail corridor along Olympic Highway to the southwest of Bethungra (Figure 5.20). The land in this zone comprised flat terraces at the top of the creek banks within 125m of the watercourse. The terrace banks were approximately 3m above the creek level and had been subject to ploughing and cropping up to within 20m of the top of the bank. The southwestern end of the zone was under crop.

A number of artefacts were noted on the southwestern side of the bank, with another two artefacts noted towards the eastern end of the zone.

- ARTC1 (50-5-0266) comprised two small, pink silcrete flaked pieces exposed on a track in the paddock approximately 70m from the creek.
- ARTC2 (50-5-0267) comprised a single dark grey silcrete flake located adjacent to a large tree near the break of the slope at the top of the creek bank, along with a large dark grey chert core approximately 30m farther south along the creek bank top. A number of some scattered quartz fragments and pieces of pink silcrete cobble were also nearby, although they did not contain any clear evidence of flaking but may represent transported raw material.
- ARTC3 (50-5-0274) is a single, grey chert flake. It was located marginally outside the study corridor to the north but is indicative of the artefactual material in the area.
- ARTC4 (50-5-0276) is a small quartz flaked piece on the top edge of the creek bank, exposed by track erosion toward the eastern end of the survey zone.

- ARTC5, (50-5-0275) a possible grindstone fragment, was also found in the middle of the paddock towards the eastern end of the survey zone. The grindstone fragment was approximately 150 mm x 180mm x 50mm thick and dished in the centre.

Artefacts ARTC 1 (50-5-0266) and ARTC 3 (50-5-0274) were located outside of the focused investigation area, but are indicative of the general distribution of the artefactual materials in the area.

The distribution of these artefacts was within a zone of up to 125m from the top of the creek bank. They demonstrate some remnants of the use of the area by Aboriginal people and were mainly exposed by erosion and ploughing. The landform across this zone was consistently level, with some minor slope towards the creek line. It was also largely undisturbed except for the prior vegetation clearance and ploughing of the paddocks which typically results in disturbance to sites to approximately 200mm below the ground surface. This zone is considered to have some potential for subsurface archaeological deposits to be present.

5.2.2.3 Zone 2

The property at Zone 2, located just to the south of the bend in Ironbong Road, has Ulandra Creek running through it (Figure 5.20). Like Billabong Creek, Ulandra Creek is one of the more substantial watercourses along the study corridor—although not flowing at the time of survey—and each has a defined and deep central channel with oxbows and branches remaining from earlier meanders. These creeks are both ephemeral upper tributaries of the Murrumbidgee River system.

The survey did not find any surface artefacts in this area, although most of the land was under crop and therefore during the survey work walking through the centre of the paddocks was avoided. A scarred tree (ARTC6—50-5-0277) was recorded here towards the western side of the study area on the top of the creek bank. This scar was approximately 1200mm in height and 600mm wide, located approximately 2.6m from the ground.

Exposure of soil in the river bed demonstrated the depth of the soil profile in these paddocks. Over 1m of brown silty A_1 horizon was noted at these exposures, indicating the depositional nature of the area and therefore the high probability for archaeological sites to remain undisturbed by erosion. Despite this, the land approximately 25m away from the creek has been disturbed by ploughing.

This zone is very similar to Zone 1 in that it comprises the same landform and stream size but has been subject to less bank erosion. The scar tree also attests to the prior presence of Aboriginal people using this landscape. Zone 2 is considered to have some potential for subsurface archaeological deposits to exist.

5.2.2.4 Zone 3

Zone 3 covers a road corridor leading to the east from Ironbong Road (Figure 5.21). It contains the three previously recorded scarred trees: AHIMS 50-5-0117, 50-5-0120 and 50-5-0121.

Survey along this road corridor resulted in the re-identification of the three recorded scarred trees all of which are located within the study corridor. The characteristics of each of these trees were reviewed, and it was determined by the assessment team in consultation with the RAPs that the scarring previously recorded as ‘fire scars’ on each of the trees were most likely to be of natural, rather than cultural, origin. Therefore, it was determined that none of the three AHIMS recorded scar trees was a culturally modified tree.

However, two previously unidentified scarred trees were recorded along this zone;

- ARTC18 (50-5-0286)—a large tree at the eastern end of the proposal with a scar located approximately 2.5m from the ground. The scar is oval shaped measuring 1000mm high x 500mm wide. ARTC18 is located just outside of the northern boundary of the proposal site at the east end of this zone

Figure 5.16 Scar Tree ARTC-18

Figure 5.17 Scar Tree ARTC-18 view from East

- ARTC20 (AHIMS# pending) was located near the western end of this road corridor, along the northern side of the access track. The tree has two scars. The upper scar is oval shaped measuring 1000mm high x 500mm wide approximately 2.5m above the ground. Below this scar is the remnant of a long narrow scar that has been subject to extensive bark regrowth. The shape of the upper scar is typical of bark removal for making a coolamon. The cultural original of the regrown lower scar is unknown due to the irregular shape of the remaining scar and regrowth material.

Figure 5.18 Scar Tree ARTC-20

Figure 5.19 Scar Tree ARTC-20 view from south west

5.2.2.5 Zone 4

This zone covers a 2km length of the study area located to the south of Run Boundary Creek and to the southwest of the Bethungra Range (Figure 5.21).

A single dark blue/grey chert flaked piece (ARTC7—50-5-0285) was found to the southern end of this zone on the erosional bank of small drainage depression. The surrounding area appeared to have been disturbed by cattle and some minor earthworks for water diversion. It was generally considered to have little further archaeological potential. The RAPs identified no cultural values associated with this isolated artefact.

Further to the north, a larger artefact scatter (ARTC8—50-5-0284) was noted on the lower western toe-slope of a rocky shale ridge approximately 1.5km west of the base of Bethungra Range. The site covered an area of approximately 20m x 30m and included nine mid-grey to black chert flaked pieces and fragments. The site extended to the north of a large paddock tree and also to the north of a modified drainage swale. Sheet erosion had affected the area around the tree and the artefacts.

At the northern end of this zone another isolated artefact (ARTC9—50-5-0283) was identified exposed on a northerly facing lower slope approximately 100m from Run Boundary Creek.

5.2.2.6 Zones 5 and 6

Both Zones 5 and 6 were unable to be physically surveyed due to access restrictions (Figure 5.21). These zones cross Run Boundary Creek and Isobel Creek, with the study corridor passing halfway between Ironbong Creek to the west and the Bethungra Range to the east.

The landforms in Zone 5 are mainly lower toe-slopes and plains, while Zone 6 has two small ridges either side of Isobel Creek.

Based on the survey of the other zones, both Zones 5 and 6 would be considered likely to have artefact scatters within close proximity to the creek lines, along with low density artefact occurrences across the adjacent plains. Scar tree are likely to occur in stands of mature trees along the alignment, and therefore may also occur in Zones 5 and 6.

5.2.2.7 Zone 7

Zone 7 is a 2km section of the study area which is largely defined by mildly undulating plains along the eastern side of Ironbong Creek (Figure 5.22). Notable in the centre of this area is the dispersion of the creek into a wetland zone up to 100m in width. A range of artefacts were noted across this zone:

- ARTC12 (50-5-0268) is a single isolated dark blue-grey chert flake exposed on the track on the edge of a paddock.
- ARTC13 (50-5-0269) is a single quartz flake fragment located on lower slope and flats adjacent to wetland. It was in ploughed and disturbed land approximately 70m from the edge of the wetland.
- ARTC14 (50-5-0270) is a dark blue chert flaked piece. It was also located on the access track along the western side of a ploughed level paddock adjacent to the wetland.
- ARTC15 (50-5-0271) is a small site comprising three artefacts on the edge of wetland. The artefacts were within 5m of each other and had been exposed by sheet erosion and plough disturbance. They were two small black chert flaked pieces and one small quartz flake. This area

in general had been subject to some surface disturbance through the creation of a small dam on the edge of the wetland.

- ARTC16 (50-5-0272) is an isolated black chert flake. It had been broken and had a negative blade scar on the dorsal face and an errailure on the ventral surface. This was the most formed artefact found during the survey work. It was located on the flat flood zone near the wetland, approximately 120m from ARTC15.
- ARTC17 (50-5-0273), an isolated, single black chert flake, was identified exposed on a track in a paddock at the southern end of this zone. The surrounding area was a generally low-lying floodplain with no defining landforms.

On the whole the landforms across Zone 7 were mainly lower shallow slopes and low-lying flats. The presence of artefacts is consistent with the predictive modelling that sites would be in close proximity to water, but was seemingly inconsistent with the prediction that artefacts and sites would mainly be present on well-drained landforms.

5.2.2.8 Zone 8

In Zone 8, the study corridor crosses the lower slopes of a low spurline of a ridge located to the west of the study area (Figure 5.22). The spurline is oriented east–west and the study area crosses the end of it as it slopes gently down towards a wide drainage depression. This area had low visibility due to grass cover providing only patchy exposures of the ground surface.

No artefacts were found in this zone. Overall the southern end of this zone was considered to have no archaeological potential. Towards the northern end of this zone, the spurline landform would seem to be a likely location for archaeological sites; however, the drainage depression would seem to be an unlikely and inconsistent water source. The northern end was therefore considered to have low archaeological potential.

5.2.2.9 Zones 9 and 10

Zones 9 and 10 cross the flat plains to the south of Stockinbingal (Figure 5.23) and are located either side of Powder Horn Creek, a third order ephemeral watercourse. Zone 9 occupies the plains along part of the eastern side of Powder Horn Creek, while Zone 10 spans a minor drainage tributary to Powder Horn Creek, between 300m and 550m from the main creek channel.

While neither of these zones was able to be surveyed due to access restrictions, the nature of the landforms and watercourses have been reviewed from aerial photography including oblique-angle flyover footage. The level, unremarkable nature of the landforms in these zones along with the inconsistent nature of the watercourses suggests that neither of these zones will have any archaeological potential.

5.2.2.10 Zone 11

This zone was located at the western end of Stockinbingal, either side of Dudauman Creek (Figure 5.23) This zone is relatively level along the banks of the creek which has a defined channel and steep sides. On the northern side of the creek, this zone includes the lower slope from a small hill to the northwest. The hill is approximately 30m high and slopes steeply down towards the creek, abruptly levelling out approximately 70m from the creek edge. No artefacts were found on this side of the creek. The flat creek bank terrace was relatively undisturbed, with the only obvious impact being an access track. This flat area to the north of Dudauman Creek was considered to have some archaeological potential.

To the south of Dudauman Creek, the relatively flat creek bank had been partially disturbed by the construction of a former rail embankment. Two artefacts were noted in this area, ARTC10 and ARTC11. ARTC10 is a large, mid-brown coloured chert core, while ARTC11 is an isolated quartz flake on the edge of the rail embankment; its original context had been disturbed by part of that construction. The two artefacts were approximately 140m apart.

5.2.2.11 Zone 11 East

This zone was surveyed as part of the Zone 11 survey work and comprises areas either side of Dudauman Creek up to approximately 200m from the creek channel (Figure 5.23).

Further investigation in this area, as part of the December 2020 test excavation (discussed further below), identified Scar tree ARTC19 (50-2-0058) approximately 300m north of the creek channel—beyond the extent of the original survey zone.

This tree (50-2-0058) is a grey box (*Eucalyptus microcarpa*) of 2.96m trunk diameter that displays two scars—one on the western side is a definitive 'coolamon' type scar while the second scar on the eastern the side is a longer scar that may be a 'canoe' type scar.

The eastern side scar was situated 400mm from the ground, it had a distinctly oval shape and measured 700mm long x 200mm wide and 40mm deep. The western side scar was 250mm in length starting at ground level with a width of 450mm. Part of the face of this scar was splitting off and a short length of fencing wire was embedded in it. This scar is of the size that would typically be used for a canoe, although the embedding of the wire may indicate that it was scarred more recently.

Other trees in the proposal site were inspected for cultural modification, but no further examples were identified.

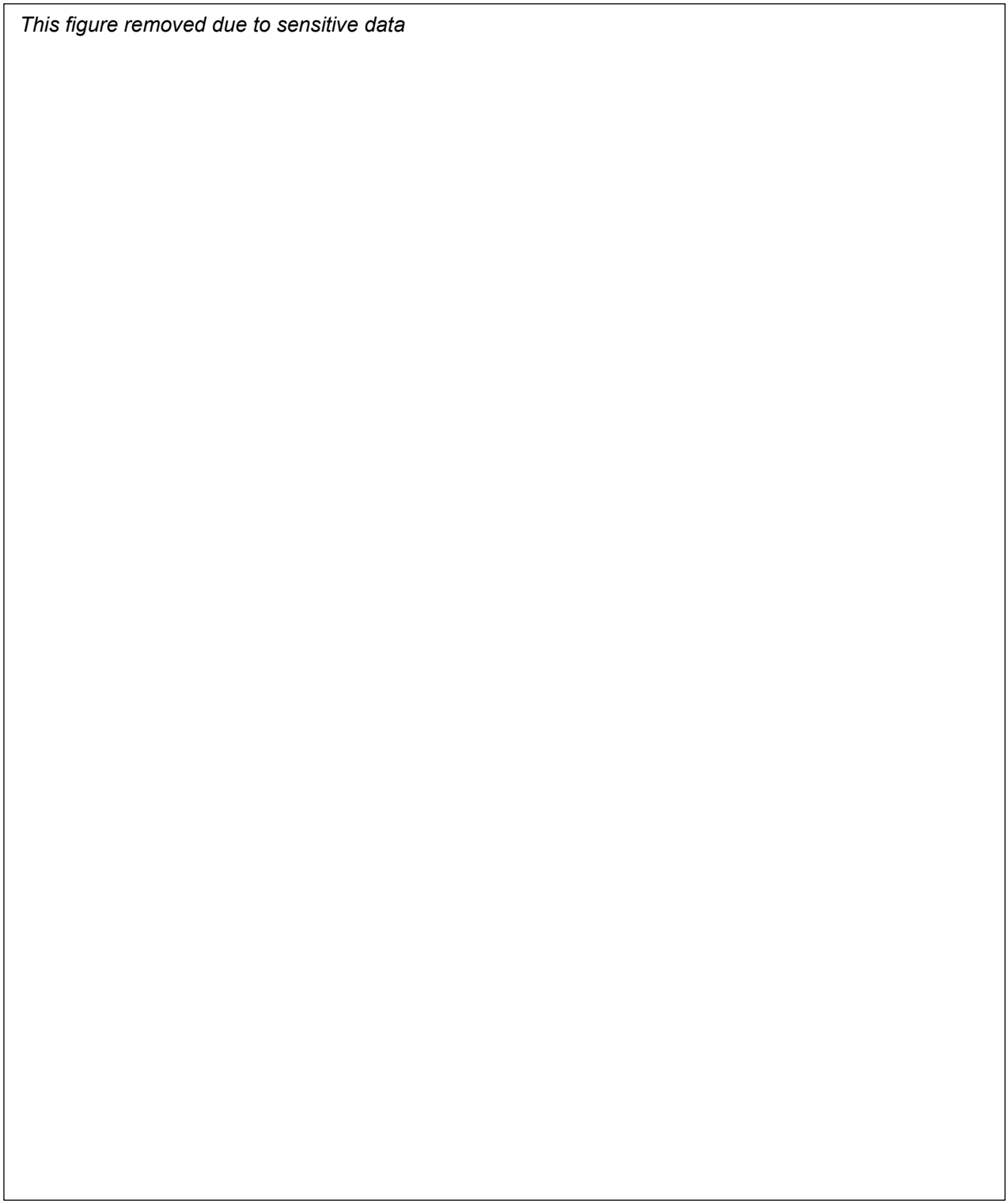


Figure 5.20 Survey zones 1 and 2 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2021)

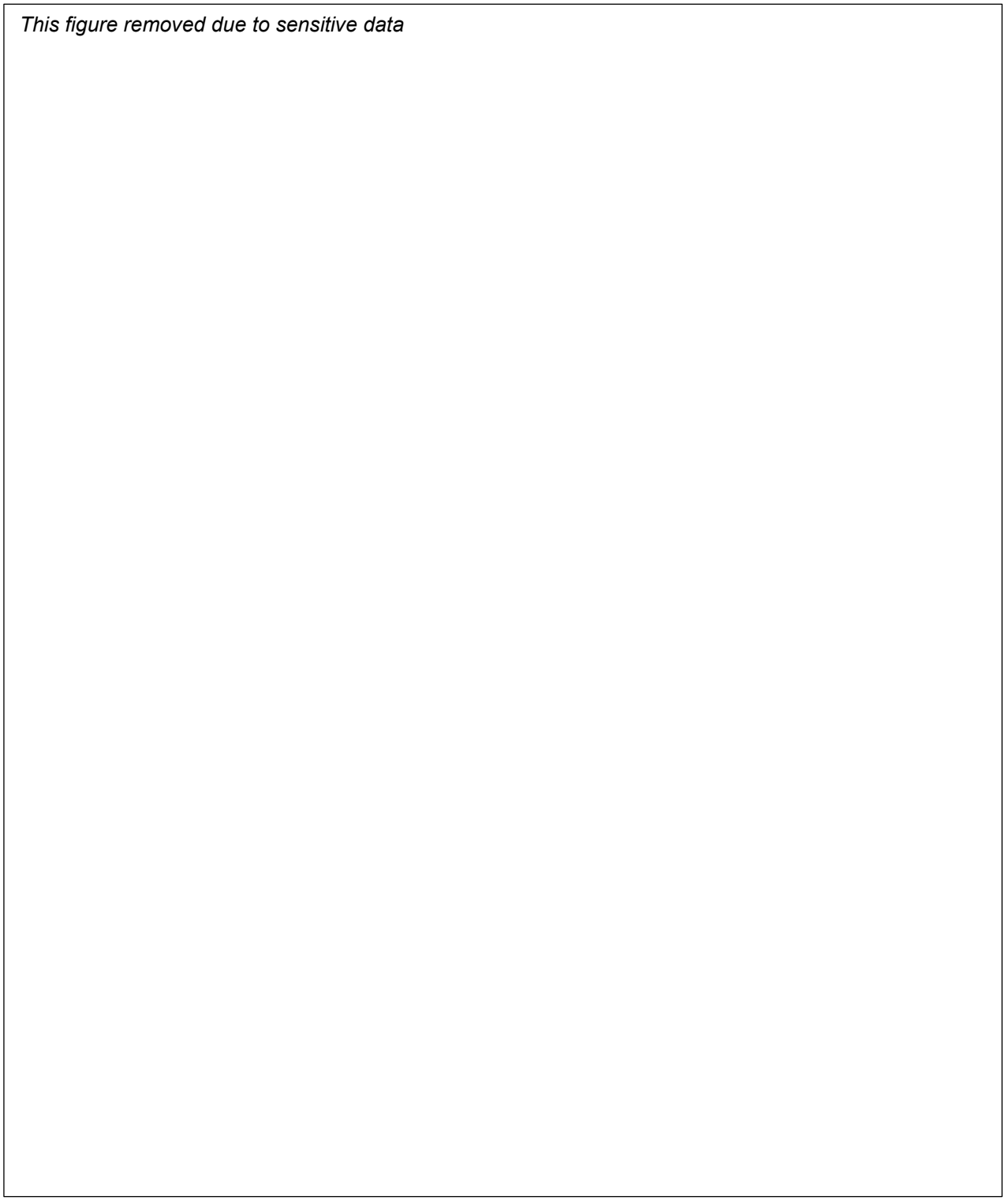


Figure 5.21 Survey zones 3, 4, 5 and 6 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2021)

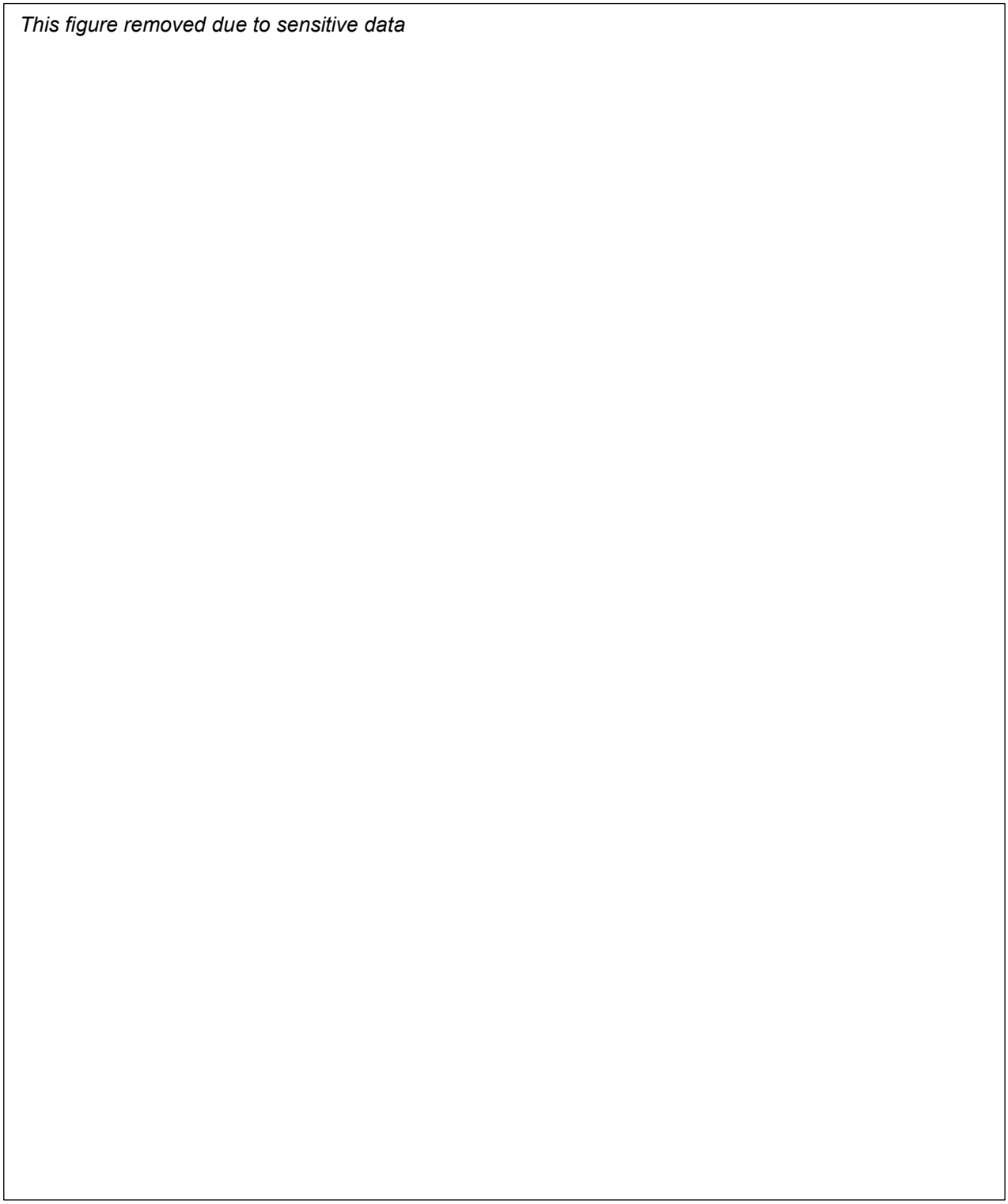


Figure 5.22 Survey zones 6, 7 and 8 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2021)

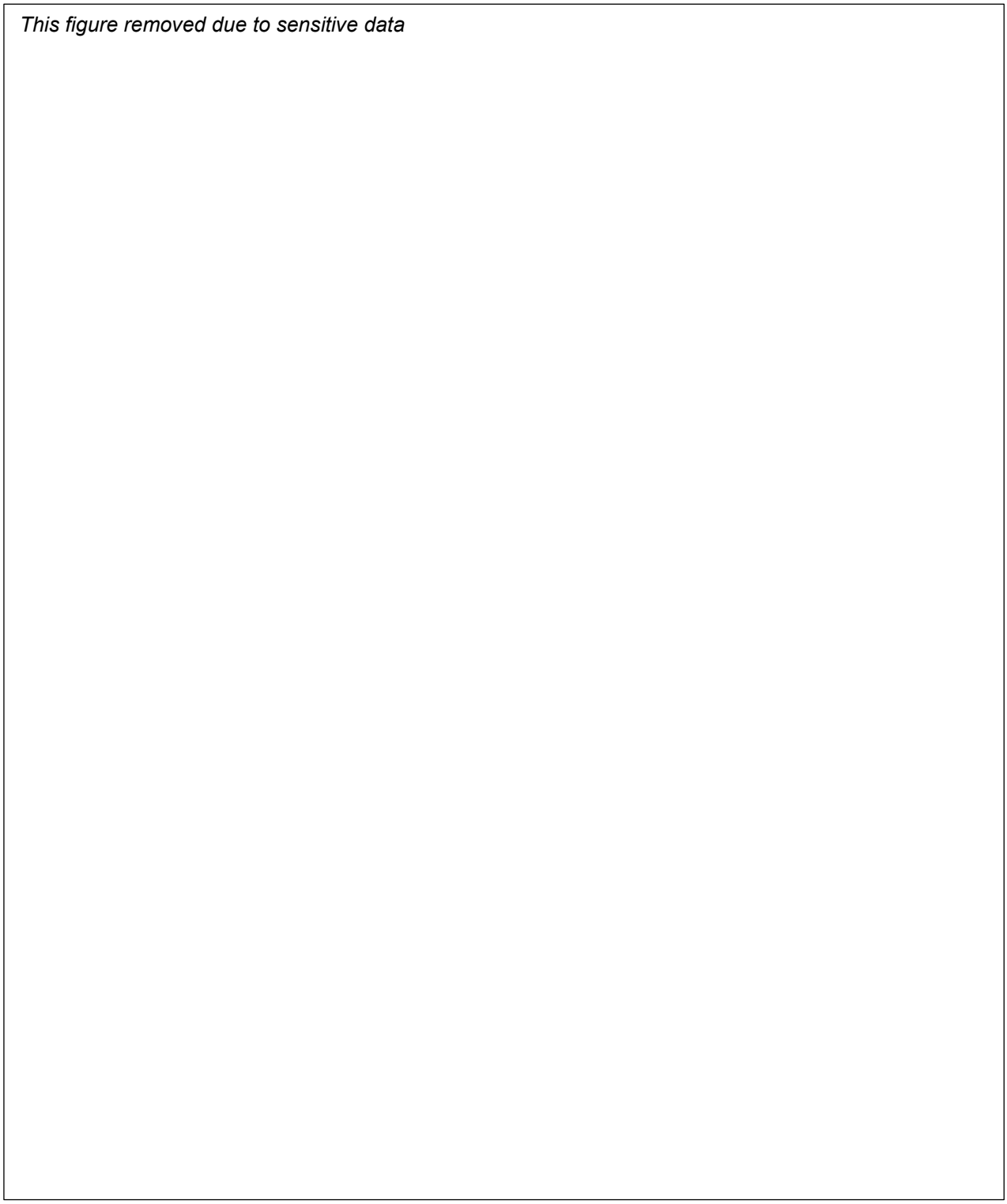


Figure 5.23 Survey zones 9, 10 and 11 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2021)

5.2.3 Summary of Results

Much of the proposal site is flat and or mildly undulating plains with some areas of mild relief in association with the lower slopes of the Bethungra Ranges, mainly around Zones 4–8.

The survey found a number of artefact scatters and isolated artefacts. A total of 22 separate recorded locations were noted, four of which were scarred trees, the remainder being artefact sites.

The flat terrace landforms on the edges of Billabong and Dudauman Creeks were found to have a clear presence of artefacts. These locations were consistent with the predictive modelling based on their proximity to water, and also their well-drained nature. Based on this correlation, Zone 2 along Ulandra Creek was also assessed as having a similar level of archaeological potential due to the similarity of hydrology and landform conditions. It is likely that ground surface visibility played a role in the absence of detecting surface artefacts.

The notable site ARTC8 (50-5-0284) is an outlier in relation to the predictive modelling. While it partly correlates to the lower-slope landform predictions, it is approximately 700m from the nearest reliable water source—Run Boundary Creek—a distance which is generally considered to be beyond the typical range for sites in this area. Other nearby water courses would be ephemeral drainage lines from the ranges. This suggests that perhaps ARTC8 (50-5-0284) is representative of a short-term event rather than a more substantial occupation area.

The presence of a number of randomly located isolated artefacts such as ARTC7, ARTC9 (50-5-0283) and ARTC12–17 (50-5-0268–50-5-0273) suggest a general low-density background scatter of artefacts is present across parts of the landscape in general. While the impact of farming activities on these locations will have redistributed artefacts both vertically and horizontally, and therefore may have affected the surface expression of this background scatter, the relatively infrequent occurrence of these artefacts suggests that they represent a background scatter rather than the disturbance of more focussed archaeological sites.

While the locations of ARTC7 and ARTC9 (50-5-0283) do not conform to any of the predictive modelling criteria, the ARTC12–17 (50-5-0268–50-5-0273) group of isolated artefacts show some correlation with proximity to water but are not in well-drained landforms. Therefore, they only partly meet the predictive modelling criteria and suggest the presence of a relatively ubiquitous but low-density background scatter of archaeological material in this landscape.

The absence of artefacts on the low spur line at the northern end of Zone 8 suggests that the correlation with water is a greater identifier of site location than a correlation with specific lower slope landforms.

The overall results also indicate that Zones 9 and 10 are unlikely to contain sites or artefacts.

Despite the lack of access to Zones 5 and 6, these zones are still considered to have potential archaeological sensitivity in correlation with water sources, well-drained landforms and, to a lesser degree, lower slope landforms in their own right.

Figure 5.16 to 5.19 contains the areas identified as containing archaeological potential for further assessment.

5.2.4 Potential Men's Business Site

This section removed due to sensitive data

5.3 Archaeological Test Excavation

The results of the archaeological survey were refined to produce a test excavation methodology targeted to newly identified sites, areas of Potential Archaeological Deposit (PAD) and areas of specific landforms as necessary to formulate a valid sampling strategy.

The test excavation methodology specifically targets Zones 1, 2, 4, 7, 8, 11 and 11 East. Zones 5 and 6 were excluded from the test excavation program due to lack of access to the site, rather than lack of predicted archaeological potential.

The following section summarises the methodology and research parameters for archaeological test excavation across the study area. The methodology for the test excavations is detailed in the 2019 Test Excavation AARD[3] (Appendix F).

Based on refinements to the proposal alignment the test excavation methodology was designed around the reference design proposal. As the survey for the AARD was based on an earlier revision of the proposal, where it deviated from the surveyed areas, those areas were subject to survey assessment as well as test excavation. This applied to the eastern side of Zone 2 and all of Zone 11. An additional excavation Zone, Zone 11 East was also later included in the test excavation program based on further revisions to the alignment (Figure 5.24).

5.3.1 Archaeological Sampling Strategy

The Code of Practice specifies that a sampling strategy meet the following requirements:[4]

- Provide a framework for sampling all PADs that are at risk of harm within the subject area.
- Describe the differentiation of the PAD to be test-excavated from the surrounding archaeological landscape.
- Test those areas of PAD that have no archaeological exposure or visibility.
- Test the boundaries of known sites (where appropriate).
- Confirm areas of low potential (where relevant).
- Describe how the sampling area relates to the area that is proposed to be impacted by the proposed activity.

The proposed approach to test excavation sampling strategy is based on the results of the site survey and assessments of areas of predicted sensitivity.

5.3.1.1 PAD Sampling and Differentiation

Four key areas of PAD were identified during the survey. These were located at Zones 1, 2, 4, 11 and 11 East. Three of the four PADs are directly related to water courses (PADs in Zones 1, 2, 11 and 11 East), while one of the PADs is associated with the site ARTC8 (in Zone 4). The test excavation program aimed to test these PAD areas to understand the nature, extent and significance of the archaeological resources.

The PADs at Zones 1, 2, 11 and 11 East were predicted as having archaeological sensitivity based on their proximity to Billabong Creek, Ulandra Creek and Dudauman Creek respectively. Each of these zones comprised level creek bank terraces, and two of the three zones had artefacts present. The PAD zones outlined in Figure 5.25 to Figure 5.26 and Figure 5.31 to Figure 5.32 were nominal distances from the creek bank top based on minor variations in each landform and may not have been indicative of the full extent of any of these PADs. The test excavation sampling regime intended to establish the nature and extent of these areas. At each PAD location, both sides of the creek were nominated for testing.

The PAD at Zones 11 and 11 East also included the slopes and crests of the hill to the north of Dudauman Creek. This area was considered to have archaeological potential based on the criteria of the predictive modelling.

The PAD at Zone 2 was the only PAD with no surface expression of artefacts, although each of the PADs has a moderately low level of exposure and visibility. The test excavation sampling regime was also intended to ensure that PAD areas with low or no surface exposure or surface expression of artefacts were tested. The following number of test units (TUs) were excavated for each PAD to meet these sampling requirements. The arrangement of these TUs is shown in Figure 5.25 to Figure 5.26 and Figure 5.31 to Figure 5.32. The number of TUs for each Zone and the associated archaeological sites recorded is provided in Table 5.7.

Table 5.7 Relevant Testing Zones, New Site Recordings and Number of Test Units.

Zone	New Site Recording	Site Type	No. of Test Units
1	ARTC1–ARTC3 (50-5-0266, 50-5-0267, 50-5-0274)	Low density artefact scatter / isolated artefacts and zone of archaeological potential	4
	ARTC4, ARTC5 (50-5-0275, 50-5-0276)	Isolated artefacts, grindstone, zone of archaeological potential	56
2	ARTC6 (50-5-0277)	Scarred tree, zone of archaeological potential	25 (22 TUs excavated during test excavation)
11 and 11 East	ARTC10, ARTC11 (50-2-0054, 50-2-0055)	Isolated artefacts, zone of archaeological potential	70

5.3.1.2 Testing around Known Sites

Only one site was recorded during the survey—ARTC8 (50-5-0284) (located in Zone 4). This site comprised nine mid-grey to black chert flaked pieces and fragments scattered over an area of 20m x 30m. The definition of this site's area warranted further investigation to determine its boundaries and also to determine its nature and significance; therefore, the surrounding area was a considered to be a PAD.

On that basis, initial testing of this site area comprised 25 TUs set at 10m and 20m spacings across a wider area in order to determine the boundaries of this site area (Table 5.8).

Table 5.8 Relevant Testing Zones, New Site Recordings and Number of Test Units.

Zone	New Site Recording	Site Type	No. of Test Units
4	ARTC8 (50-5-0284)	Artefact scatter	25 (18TUs excavated during test excavation)

5.3.1.3 Testing Areas of Predicted Low Sensitivity

Two zones of low sensitivity were nominated for further investigation: Zones 7 and 8. The justification for testing in these areas is outlined below.

Zone 7 contains six newly identified isolated artefacts (ARTC12–17) (50-5-0268–50-5-0273) over a distance of 1183m of the study corridor. They are located between 135m and 565m apart on a low-lying flat plain adjacent to a wetland. Based on the landform type, this zone was considered to have limited archaeological potential due to its poorly drained aspect. Therefore, the artefacts were considered to represent casual use of the wetland area for immediate food and water needs rather than a concerted occupation phase.

However, given the presence of artefacts, testing was undertaken in this zone to test the hypothesis that the low-lying, poorly drained landforms do not give rise to the formation of occupation sites.

The northern end of Zone 8 crosses the lower slopes of the spurline of a ridge sloping gently down to a drainage depression. This landform represents well-drained ground; however, its proximity to a reliable water course is doubtful given that the nearest water source is an ephemeral drainage depression to the east.

No artefacts were found in this zone. It was assessed as having a low potential for archaeological deposits. Based on the landform type, but with a poor correlation with water resources, this zone was considered suitable for testing aspects of the predictive modelling relating to the importance of landform in archaeological site location.

The following number of TUs were set out for these areas to meet the sampling requirements for predicted low-sensitivity zones (Table 5.9).

Table 5.9 Relevant Testing Zones, New Site Recordings and Number of Test Units.

Zone	New Site Recording	Site Type	No. of Test Units
7	ARTC12 (50-5-0268)	Isolated artefacts and zone of low archaeological potential	6
	ARTC15–16 (50-5-0271, 50-5-0272)	Isolated artefacts	20
	ARTC13, ARTC14, ARTC17 (50-5-0269, 50-5-0270, 50-5-0273)	Isolated artefacts	–
8	–	Low sensitivity testing zone 1	19
	–	Low sensitivity testing zone 2	16

5.3.1.4 Landform Testing

The TUs set out above also provide an additional layer of testing data relating to landforms. The landforms comprising the study corridor are dominated by flat or mildly undulating plains and lower slopes from the nearby ranges.

Of the six key testing areas determined as part of the sampling strategy, three targeted the flat or mildly undulating plains (Zones 1, 2 and 7), while two zones targeted the lower slopes (Zones 4 and 8) and one zone (Zone 11) covered elements of both landforms by being on the level terraces of Dudauman Creek, but right at the base of lower slopes of an adjacent hill. Therefore, all of the dominant landforms along the study corridor were covered by the testing regime.

5.3.1.5 Responding to On-site Results and Variation

TUs were set out within each testing zone based on transects at 20m spacing, with parallel transects offset by 10m. Generally, during test excavation, Aboriginal representatives and field archaeologists are able to respond to the initial results of excavation and determine whether further TUs should be sampled in any particular testing area.

Conversely, should a sample transect identify areas of ground surface disturbance where the archaeological resource is deemed to have been substantially compromised, specific TUs or portions of a transect may be abandoned and/or relocated to a nearby area on an opportunistic basis. Such a strategy was required for Zone 4 in the immediate area around ARTC8 where disturbance necessitated the repositioning of some of the TUs and the abandonment of seven others. Further details are outlined in the excavation results below.

5.3.1.6 Limitations in Sampling Strategy

Limitations of the sampling strategy derive from the availability of access to the properties within Zones 5 and 6 and the absence of survey in these zones. Predictive modelling indicated that these zones would contain areas of archaeological sensitivity due to the correlation of low slope landforms and substantial water courses.

As outlined in Section 6.2.1, despite the limitation in access, and based on the overall results of this assessment, Zones 5 and 6 are considered to have archaeological potential and have been discussed throughout this assessment on that basis.

5.3.1.7 Refinements to the Study Area

At the time of the archaeological survey in November 2018, the study area comprised a 250m-wide corridor, which was progressively refined to a 100m-wide corridor by the time the test excavation sampling strategy was prepared. Subsequent refinements to the design of the proposal have resulted in the establishment of a reference design footprint.

Mapping of the archaeological survey results shows the original 250m-wide corridor, while mapping of the test excavation results shows the reference design footprint in Figure 5.25 to Figure 5.32 below. The refinement of the study area means that some sites noted as being within the study area during the archaeological survey reporting (eg sites ARTC1–4, ARTC6) are now shown outside of the proposal site. These sites all informed the sampling strategy and provide contextual information for the assessment. Some TUs shown in these figures are also now outside of the proposal site, for the same reason. Refinements to the alignment also meant that the surveyed area of Zone 4 was no longer directly within the proposal site.

As noted above, further refinements to the study area have resulted in the requirement for additional test excavation in the vicinity of Zone 11. A new zone, Zone 11 East was established in December 2020 to account for archaeological investigation where the proposal had been moved further to the east into an area not previously subject to test excavation, but still within a sensitivity zone. Scarred tree ARTC19 (50-2-0058) was recorded within this zone.

The same issue of refinement to the proposal also resulted in the survey / test excavation Zone 1 falling outside of the refined alignment. The results of the survey and test excavation in those areas are still included in the report below for completeness.

5.3.1.8 Manual Excavation

Based on the requirements of the Code of Practice, the test excavations comprised a series of hand-excavated TUs set out on systematic grids and based at 20m intervals. All TU locations were set out by a surveyor, based upon the sample pattern developed in ArcGIS (with minor variation only where necessitated by physical features on the ground).

TUs were excavated in 500mm x 500mm units using hand tools only. Vertical control was maintained through 50mm or 100mm excavation levels ('spits') as appropriate to the soil landscape and stratigraphy. All material excavated from the test excavation units was sieved using nested 3mm and 5mm aperture wire-mesh sieves.

TUs were excavated to at least the base of the identified Aboriginal object-bearing units and must continue to confirm that the soils below are culturally sterile.

Spatial control of TU locations and vertical excavation will be sufficiently precise to define the location of Aboriginal deposits across the study area and to allow the research questions to be addressed.

5.3.1.9 Data Collected

Data was collected for each TU during the test excavation on a specific TU context sheet. Data collected included:

- TU number;
- TU location;
- TU landform;
- TU aspect;
- depth of each spit as excavated;
- number of stone objects (or other feature/s) per spit;
- total number of objects;
- any features or inclusions (such as carbon);
- taphonomic factors (disturbance, bioturbation etc); and
- soil characteristics.

Section and plan diagrams (especially where features are present) were created for each TU, and recommendations made as to whether the TU should be expanded (in accordance with Heritage NSW guidelines) or if further TUs should be located surrounding the one excavated in order to better understand the extent of an archaeological deposit.

The excavation director supervised all TU recording and determined whether further TUs should be opened (in addition to those defined by the sample grid), or whether a TU should be expanded.

A running total of features and Aboriginal objects was kept to determine an in-the-field comparison between sample areas.

5.3.1.10 Research Questions

The objective of the archaeological test excavation was to gather sufficient information about the archaeological resources of the study corridor to allow an assessment of the nature, extent and significance of the cultural material to be made within a local and regional context.

In order to achieve this objective, a range of research questions were outlined to guide the archaeological process and provide the basis for questioning the data collected. Relevant research questions included:

1. What are the characteristics of soil horizons across the study area?
    a. How has the land use history impacted the study area and survival of soils and thus archaeological material?
    b. At each location, is the deposit consistent? Or does it possess characteristics that tell of different depositional or formation events?
2. Are there archaeological deposits present?
    a. Are the deposits stratified?
    b. Is there archaeological evidence which can be dated (both through scientific methods, carbon dating, OSL and/or relative dating)?
    c. Do the deposits have different degrees of archaeological potential with depth?
    d. What evidence—if any—other than stone artefacts is present for Aboriginal occupation and/or use of the study area?
    e. How do the archaeological deposits relate to the predictive modelling?
    f. Is there variation in the nature of the archaeological deposits across different areas of the study corridor?
3. What is the general nature of stone artefacts recovered from the study area? How can the stone artefact assemblage be characterised?
    a. What raw materials are represented in the stone artefact assemblage?
    b. Can any information be ascertained from the stone artefact assemblage regarding the intensity of stone artefact reduction and discard?
    c. Can a difference between stone artefact deposits be identified by different strata in the assemblage over time? If so, what is the nature of that difference?
    d. Can a difference between stone artefact deposits be identified across different areas of the study corridor?
4. How can the deposit be interpreted?
    a. Is there any evidence for variation in landscape use and selection strategies?
    b. Can deposits or features be dated? What is the antiquity of the evidence?

c. Does the archaeological deposit vary spatially within one location/site? How?

d. What does the archaeological deposit tell us about Aboriginal use of this landscape?

5. Can the archaeology be interpreted in a regional context?

   a. What is the source of the artefactual stone? How does this correlate with current regional research and knowledge of stone resources?

      i. Is raw stone material for artefact manufacture readily present within or near the study corridor?

      ii. Has stone been brought into the study corridor? From how far away has the stone been brought?

      iii. What is the main discard and reduction strategy pattern that can be observed for different raw materials across the study corridor?

   b. Do the archaeological deposits within this study corridor conform to the distance from water regional predictive model and theories or not?

6. Is the archaeological deposit culturally significant?

   a. What is the heritage value of the deposit, both scientifically and culturally?

   b. How does the Aboriginal community view and value the deposit identified?

7. Is there a deposit worthy of conservation or of future research?

   a. Where and what deposits should be conserved for future generations?

   b. Which deposits should be subject to more extensive investigations?

5.3.1.11 Summary and Analysis

Following test excavation, all recovered Aboriginal stone objects (artefacts) were analysed by one of GML's stone artefact specialists. Recording of all relevant attributes was undertaken in a comparable manner to other studies from the region in accordance with Requirement 19 of the Code of Practice and widely used Australian stone object analysis techniques.[5]

On the last day of test excavation, a discussion was held with the Aboriginal representatives on site to assess the excavation results and to discuss ongoing management of recovered artefacts.

Landscape analysis and all other reporting has been undertaken by GML, assisted by the field archaeologists present during the test excavation. All results have been analysed and mapped with the assistance of GIS.

In accordance with Heritage NSW requirements, this report will be provided to the RAPs for review and comment (with a minimum period of 28 days to comment). Following Aboriginal community review, the report will be forwarded to DPEfor the lodgement of an SSI application.

5.3.1.12 Information Gained for Future Study

The information derived from test excavation was used to expand the heritage values assessment of the study area. This report provides direction for conservation of Aboriginal heritage and an impact analysis for all known objects, sites, places and values within the study area.

The report also compares and contrasts the study area to other sites within the wider region and provides direction for future studies.

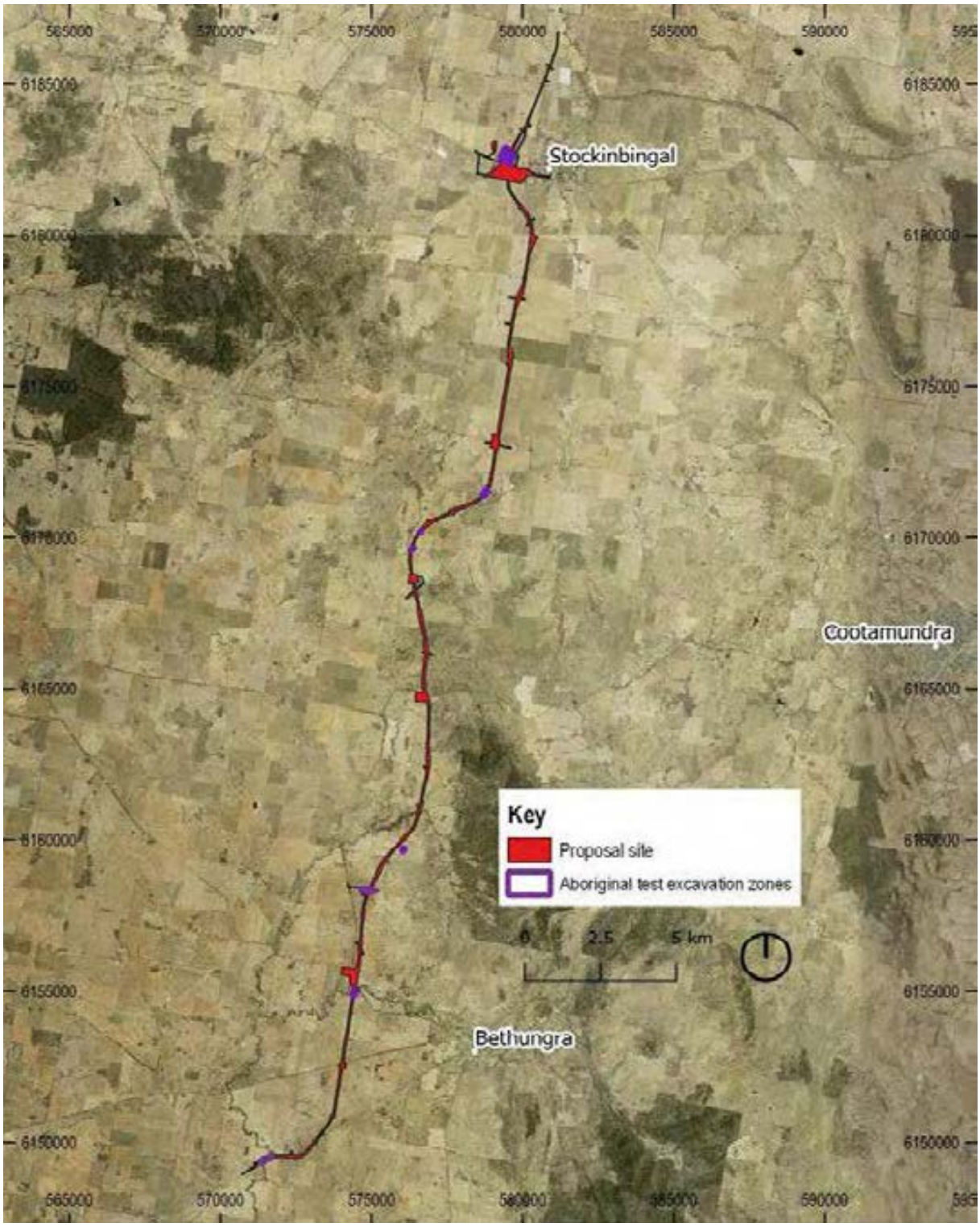


Figure 5.24 Proposed test excavation locations for Aboriginal archaeology. (Source: NSW LPI with GML additions, 2021)

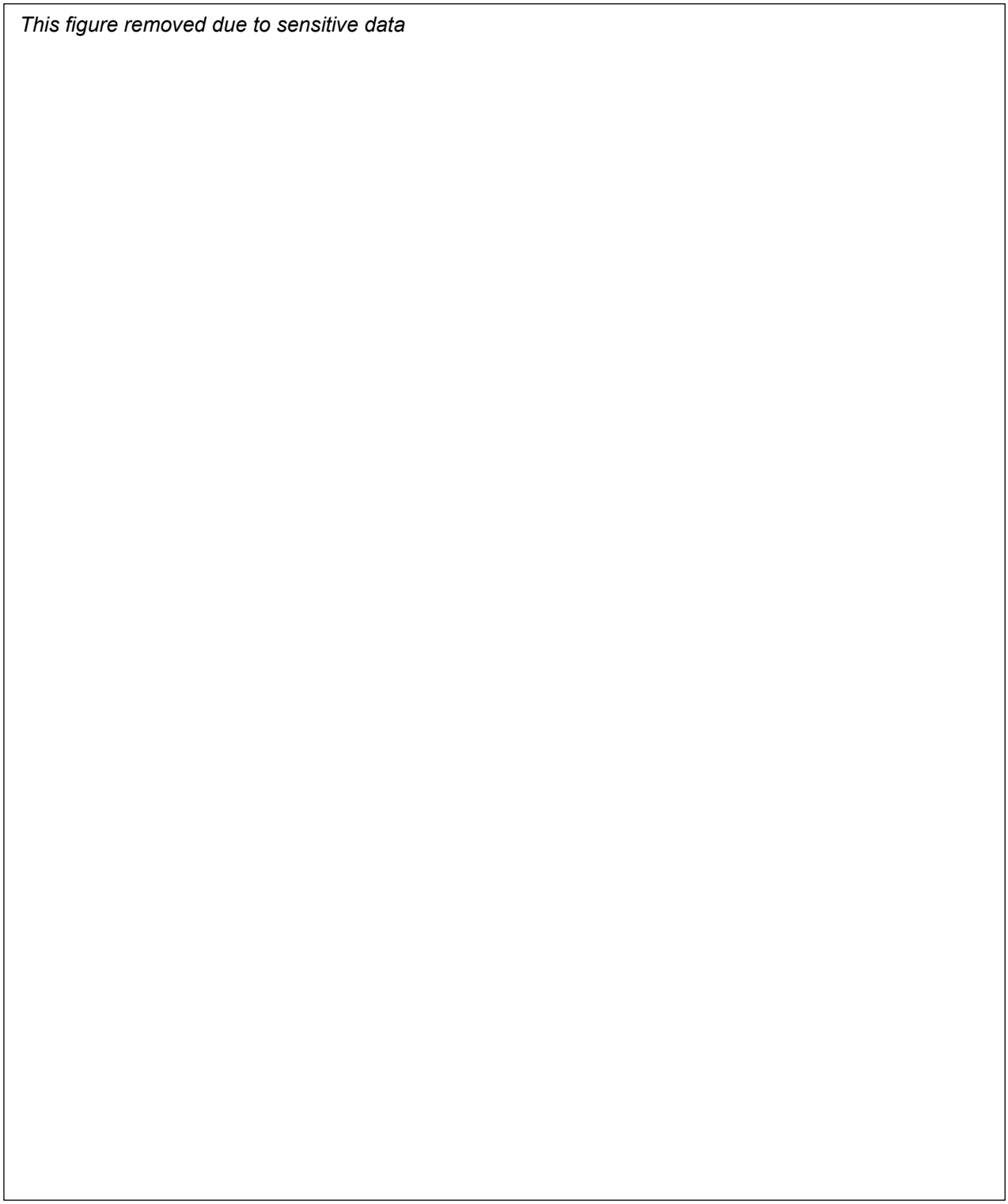


Figure 5.25 Test excavation locations in Zone 1. (Source: NSW LPI with GML additions, 2021)

Figure 5.26 Test excavation locations in Zone 2. (Source: NSW LPI with GML additions, 2021)

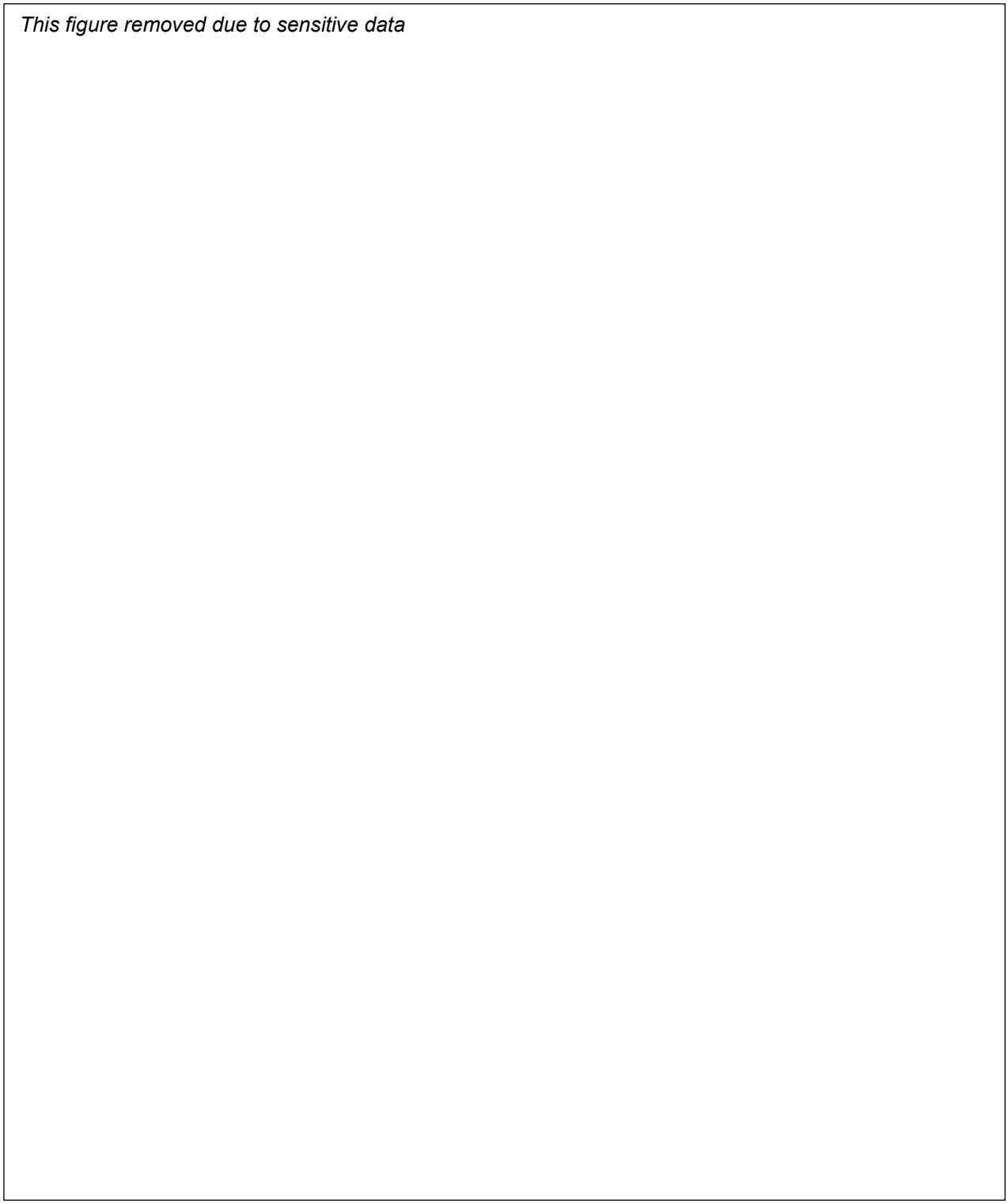


Figure 5.27 Test excavation locations in Zone 4. (Source: NSW LPI with GML additions, 2019)

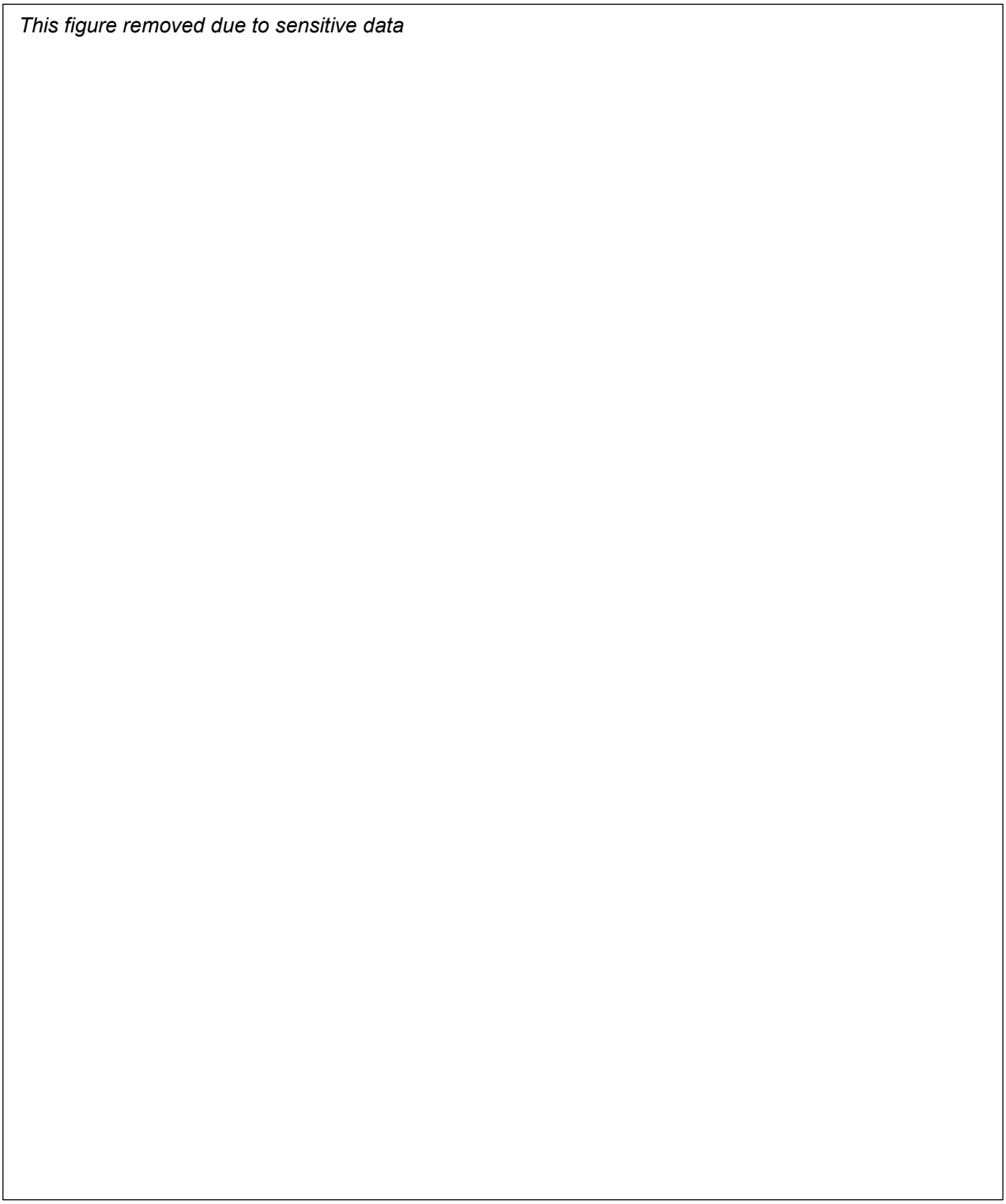


Figure 5.28 Test excavation locations in Zone 7 South. (Source: NSW LPI with GML additions, 2021)

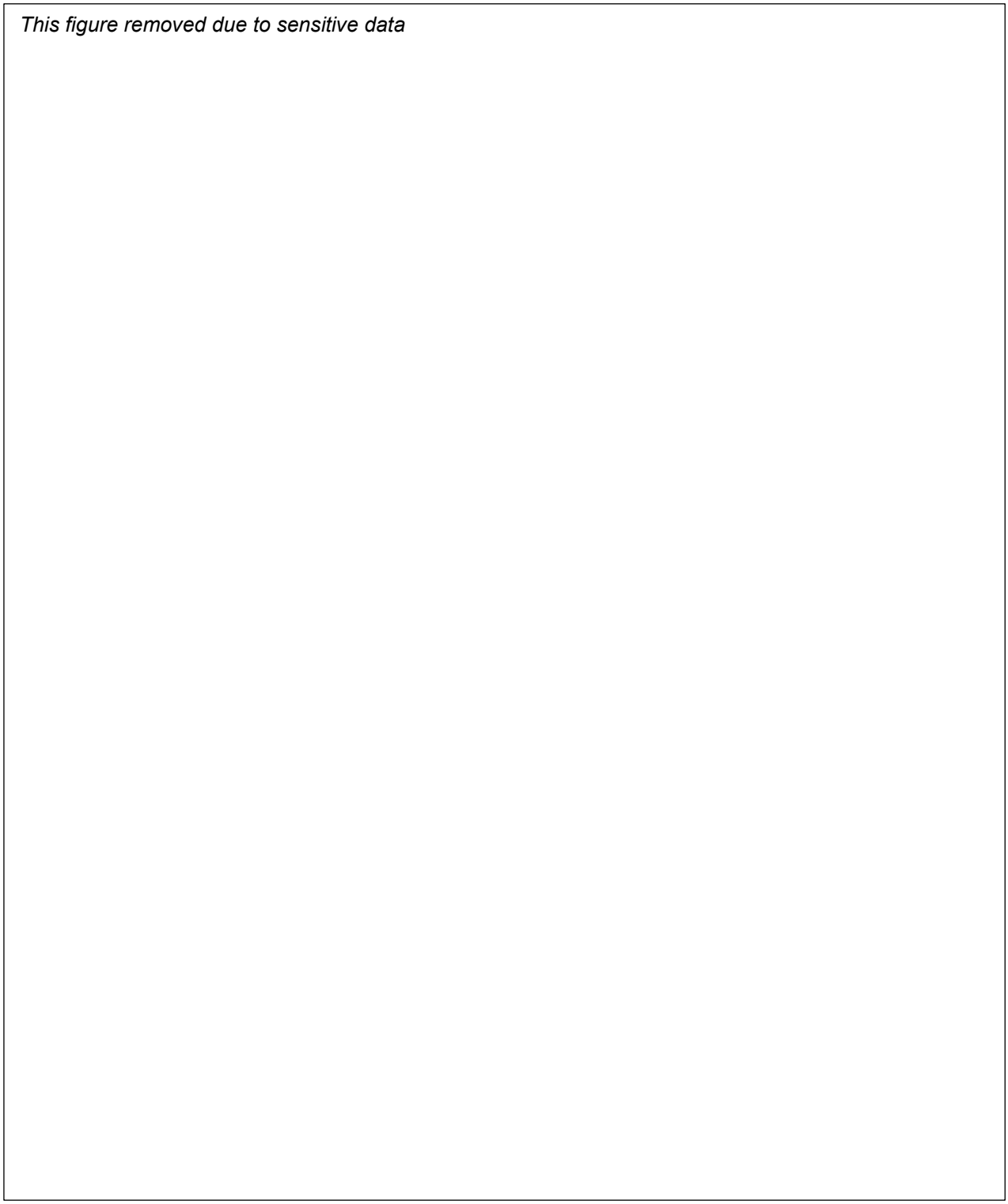


Figure 5.29 Test excavation locations in Zone 7 North. (Source: NSW LPI with GML additions, 2021)

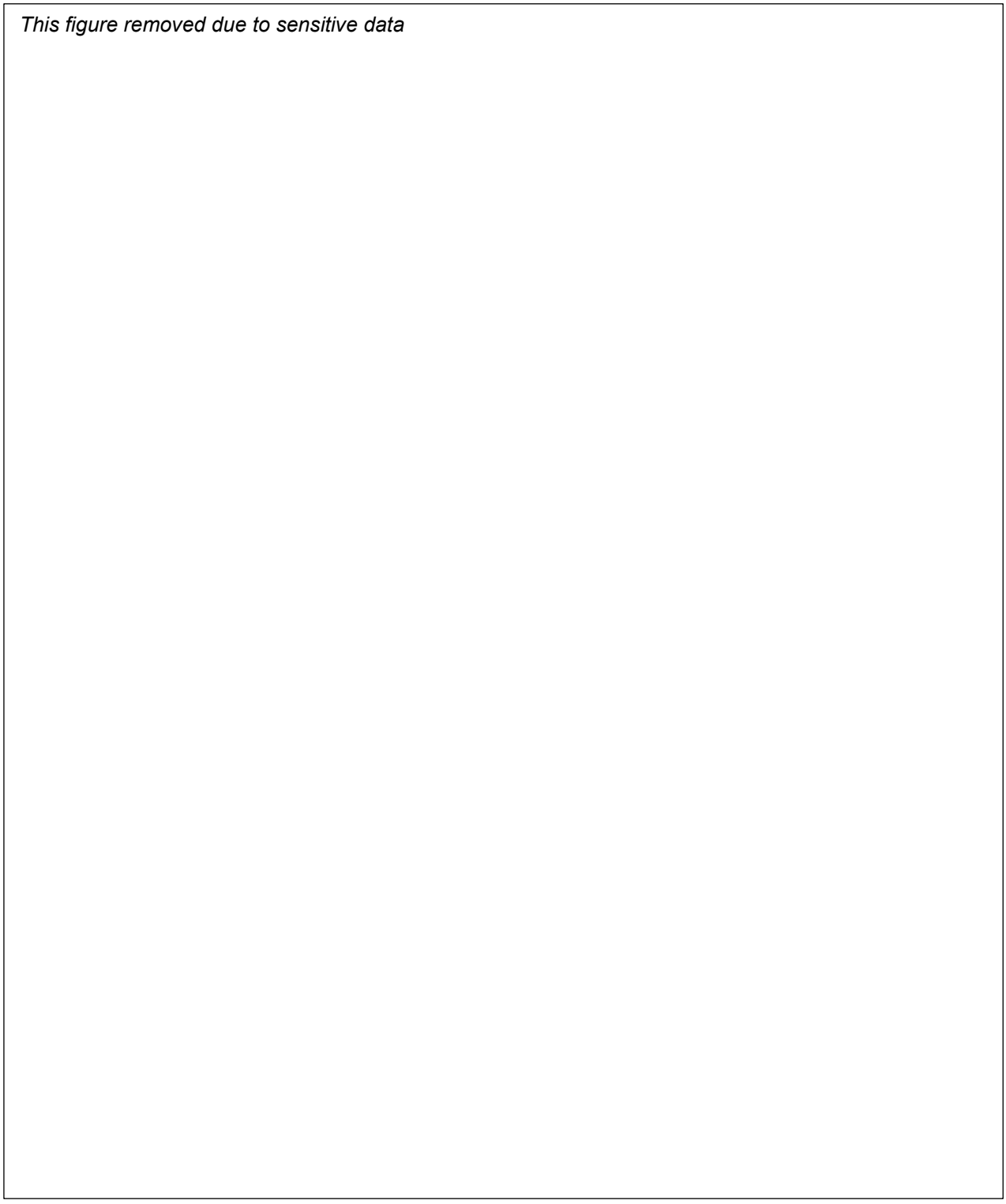


Figure 5.30 Test excavation locations in Zone 8. (Source: NSW LPI with GML additions, 2021)

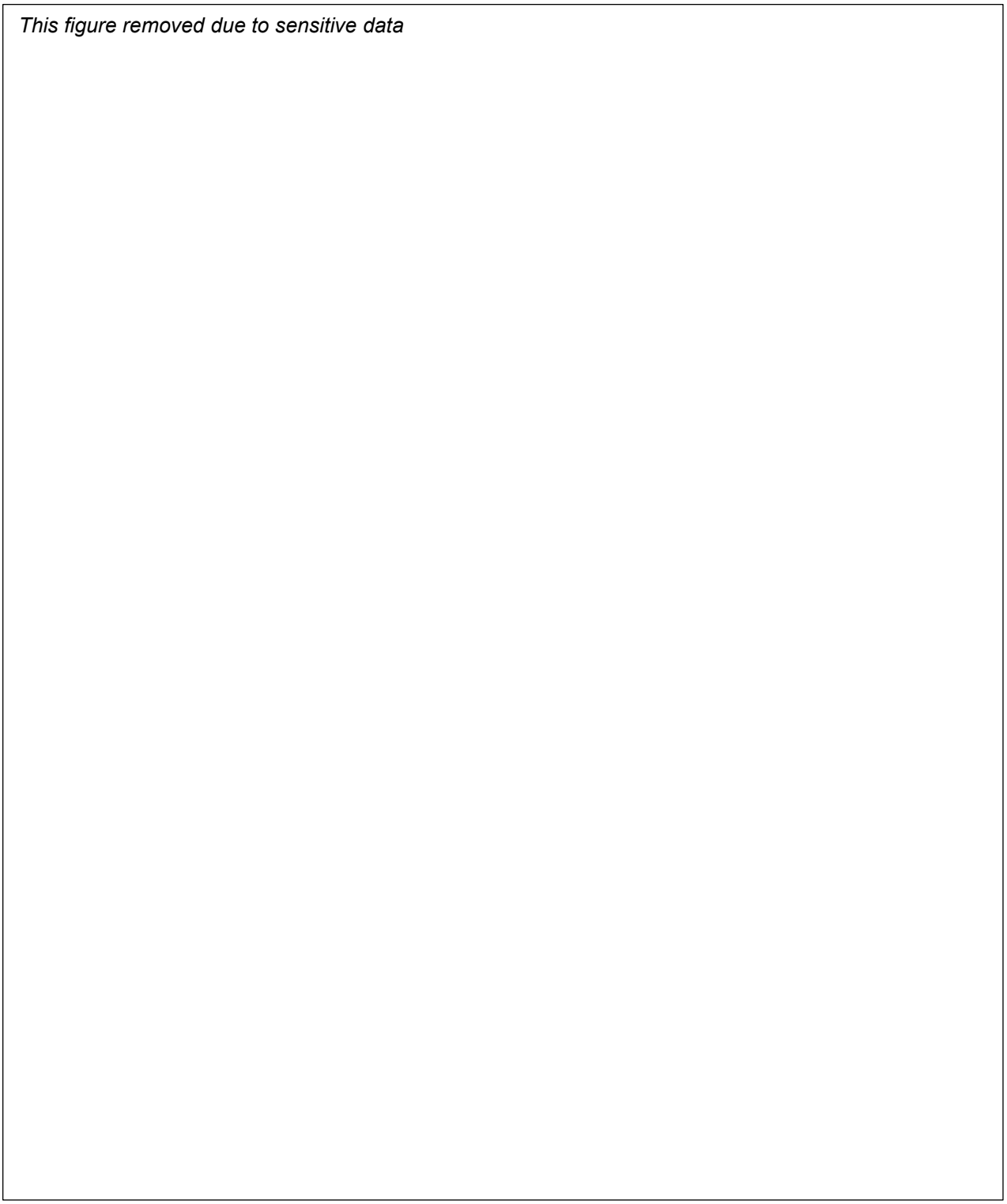


Figure 5.31 Test excavation locations in Zone 11. (Source: NSW LPI with GML additions, 2021)

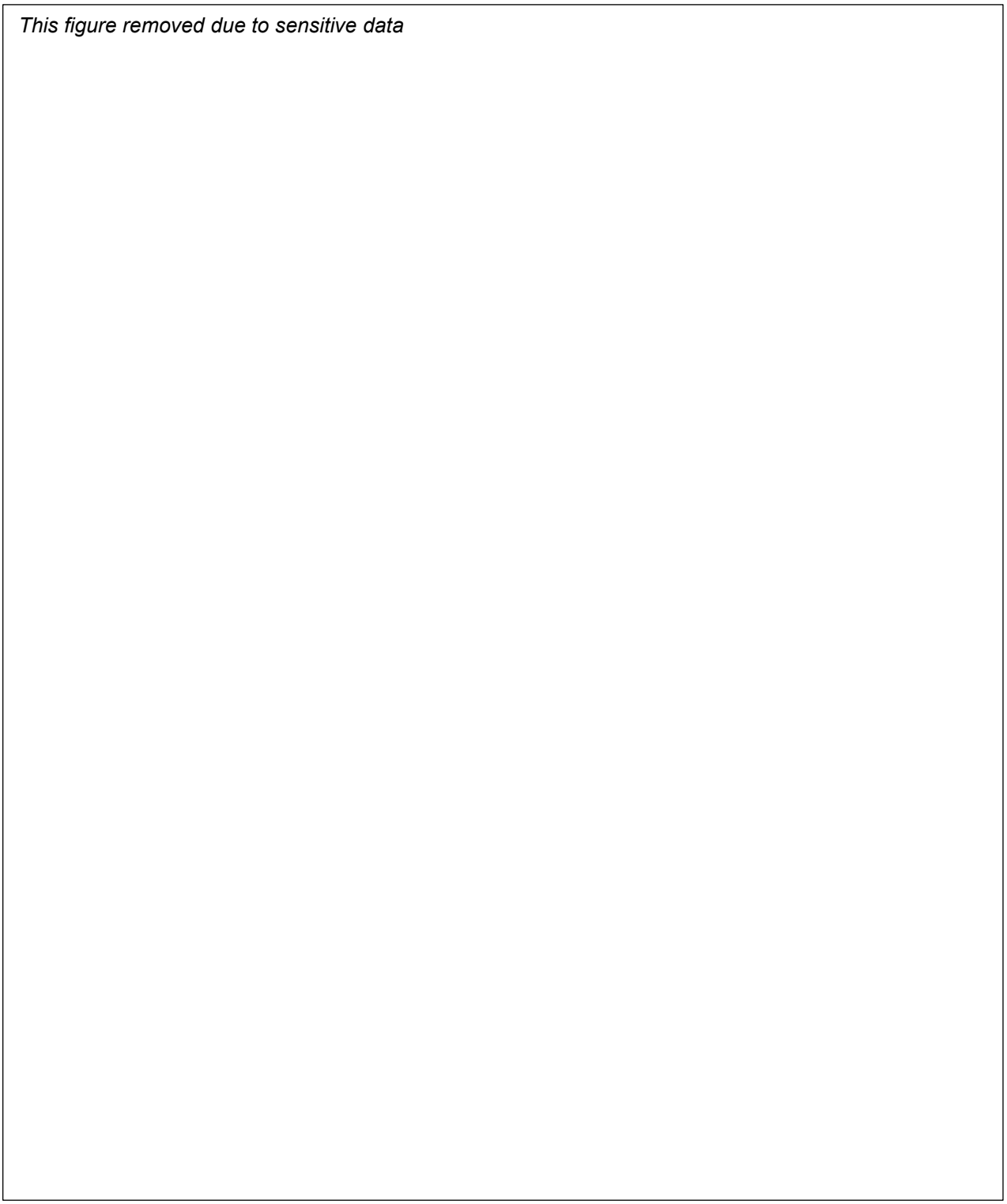


Figure 5.32 Test excavation locations in Zone 11 East. (Source: NSW LPI with GML additions, 2021)

5.3.2 Process and Participants

Heritage NSW was notified in writing 14 days before the commencement of each program of test excavation, in accordance with Requirement 15c of the Code.

Archaeological test excavation was undertaken between 6 and 23 May 2019 and 24 September to 2 October 2019 in accordance with the AARD[6] (Appendix F), outlined above, and previously reviewed by the RAPs.

A revised AARD (December 2020, Appendix G) was prepared for the additional test excavation for Zone 11 East (Appendix G) and also reviewed by the RAPs. Test Excavation for Zone 11 East was undertaken between 7 December and 10 December 2020.

The total lateral area excavated was 43.25m^2.

The individuals involved in the work are detailed in Table 5.10 below. Jodi Cameron and Martin Rowney—who were Excavation Directors for the project—meet Heritage NSW's criteria for excavation directors. All other archaeologists who participated in the test excavations were suitably qualified to undertake such work.

Table 5.10 Participants in the Test Excavation.

Personnel	Affiliation	Role
Jodi Cameron Bachelor of Science. Bachelor of Arts (Honours) Archaeology	GML	Excavation Director, Project Manager, Archaeologist
Martin Rowney Bachelor of Arts (Honours) Archaeology	GML	Excavation Director, Project Director, Archaeologist
Lara Tooby	GML	Archaeologist
Rebecca Värttö	GML	Archaeologist
Adam Pietrzak	GML	Archaeologist
Sarah Carter	GML	Archaeologist
Sebastian Loyzaga	GML	Archaeologist
Yolanda Pavincich	GML	Archaeologist
Richard Spencer	GML	Archaeologist
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant

Personnel	Affiliation	Role
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant

Table 5.11 Participants in the **Zone 11 East** Test Excavation.

Personnel	Affiliation	Role
Martin Rowney	GML	Excavation Director, Project Director, Archaeologist
Lara Tooby	GML	Project Manager, Archaeologist
Elise Jakeman	GML	Archaeologist
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant

Personnel	Affiliation	Role
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant
[Name redacted]	[Name redacted]	Registered Aboriginal Party, Archaeological Assistant

5.4 Test Excavation Results

5.4.1 Synopsis of Excavation Results

A total of 231 TUs were excavated across the seven zones. A total of 133 stone artefacts were identified during the test excavation.

Table 5.12 summarises the finds in each zone and Table 5.13 to Table 5.19 summarise the test units for each zone. Full excavation details are in Appendix H.

Table 5.12 Summary of the Zones Investigated in this Program.

Zone	No. of TUs Proposed	No. of TUs Excavated	Artefact Count	Zone Conditions
1 Figure 5.33	60	60	64	Grass covered paddock currently used for grazing. TUs located either side of Billabong Creek. Alluvial soil landscape—Ironbong Creek across the majority of the zone. Transferral soil landscape—Eurongilly in the northeastern portion of the zone. A_1 horizon: Thin <10mm mid brown sandy loam. B horizon: Pale yellow grey-brown loamy sand. Moisture and leeching caused colour changes within B horizon. Excavations stopped at 900mm due to limit of reach. Compact deposits, very few inclusions.
2 Figure 5.34	30	22	35	Grass/weed covered paddock, regularly ploughed for crops. TUs located either side of Ulandra Creek. Alluvial soil landscape—Ironbong Creek across the zone. A_1 horizon: 50mm mid brown silty sand A_1 horizon. B horizon: Approx. 200mm reddish brown silty sand with minor clay content and small gravel inclusions. B_2 horizon: Light brown compact coarse-grained silty sand with river gravels and quartz inclusions. C horizon: of compact red clay. Average TU depth 500mm. TUs excavated to C horizon, clay.

Zone	No. of TUs Proposed	No. of TUs Excavated	Artefact Count	Zone Conditions
4 Figure 5.35	25	18	12	Cropped paddock, recently ploughed. Erosional soil landscape—Bethungra across the zone. A_1 horizon: Imported topsoil. Approx 50mm. Dark grey/brown sandy loam. Fine-course gravel inclusions (quartz and degraded granite) Imported fill: Sandy silt with phosphate for crop fertiliser. Approx. 150mm. B horizon: Light brown silty clay. Approx 100mm. C horizon: Grey compact clay. Average TU depth 500mm. TUs excavated to C horizon, clay.
7 Figure 5.36	26	26	0	Cropped paddock, recently ploughed. Erosional soil landscape—Twins Range across the zone. Site in close proximity to the Transferral Frampton soil landscape. A_1 horizon: 50–150mm dark brown clayey silt. Fine grained and damp. B_1 horizon: Approx. 200mm, reddish brown clayey silt. Very compact and damp with manganese nodules. B_2 horizon: 100–150mm, gradual transition into C horizon. Increase in clay content with depth. C horizon: Red brown clay. Compact, sticky and damp.
8 Figure 5.37	35	35	0	Grass covered paddock currently used for grazing. Transferral soil landscape—Frampton across the zone. Site in close proximity to the erosional Twins Range soil landscape. A_1 horizon: shallow <10mm, dark brown silty clay. B horizon: approx. 150mm, orange brown, silty clay with quartz inclusions. C horizon: Orange brown clay and degraded bedrock.
11 Figure 5.38	41	41	9	Grass covered paddock currently used for grazing. Transferral soil landscape—Oakville across the southern portion of the zone. Erosional soil landscape—Comerford across the northern portion of the zone. Southern portion of site, creek bank: A_1 horizon: Approx. 100mm, light brown silty loam. A_2 horizon: Approx. 250mm, yellow, brown silty sand with small ironstone inclusions. Abrupt transition to B horizon. B horizon: Approx. 300mm, light grey, brown silty, sand with increased clay content and ironstone nodules with depth. Abrupt transition to C horizon. C horizon: grey sticky clay with ironstone inclusions. Northern portion of site, slope: A_1 horizon: heavily eroded across the landform. A_2 horizon: thin <100mm brown sandy silt heavily eroded. Degraded sandstone and shale inclusions. B horizon: Approx. 200mm yellow red sandy silt with increasing amounts of degraded sandstone and shale bedrock. C horizon: yellow red sandstone bedrock.

Zone	No. of TUs Proposed	No. of TUs Excavated	Artefact Count	Zone Conditions
11 East Figure 5.39 to Figure 5.42	25	29	13	Grass covered paddock currently used for grazing. TUs located either side of Dudauman Creek. Erosional soil landscape—Comerford across the majority of the zone. Transferral soil landscape—Oakville across the northeastern corner of the zone. Northern portion of the site: A_1 horizon: Approx. 100mm, brownish grey, yellowish brown, silty clay with minor ironstone inclusions. A_2 horizon: Approx. 150–350mm, grey, yellowish grey, silty clay with minor ironstone inclusions. B horizon: Approx. 280–450mm, greyish brown, yellowish grey, clay. Creek bank, either side of Dudauman Creek: A_1 horizon: Approx. 20–100mm, yellowish grey, silty clay with minor gravels. A_2 horizon: Approx. 120–400mm grey, greyish brown, yellowish grey, silty clay, ironstone inclusions. B horizon: Approx. 300–>500mm, yellowish grey, mottled, clay. Southern portion of the site: A_1 horizon: Approx. 50–100mm, brown, silt. A_2 horizon: Approx. 290–320mm, greyish brown, silty clay, gravel and ironstone inclusions. B horizon: Approx.290–300mm, brownish grey, clay. Average TU depth 300mm.
Total	242	231	133	

Figure 5.33 TU 5, representative of Zone 1. (Source: GML, 2019)

Figure 5.34 TU 68, representative of Zone 2. (Source: GML, 2019)

Figure 5.35 TU 97, representative of Zone 4. (Source: GML, 2019)

Figure 5.36 TU 127, representative of Zone 7. (Source: GML, 2019)

Figure 5.37 TU 161, representative of Zone 8. (Source: GML, 2019)

Figure 5.38 TU 197, representative of Zone 11 along the creek line. (Source: GML, 2019)

Figure 5.39 TU 211, representative of Zone 11 slope. (Source: GML, 2019)

Figure 5.40 TU 230, representative of Zone 11 East north. (Source: GML, 2020)

Figure 5.41 TU 235, representative of Zone 11 East creek. (Source: GML, 2020)

Figure 5.42 TU 240, representative of Zone 11 East south. (Source: GML, 2020)

Table 5.13 Zone 1 Test Units.

TU Number	Easting	Northing	Area Excavated (m^2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						2
1	[Data redacted]	[Data redacted]	0.25	380	4	0
2	[Data redacted]	[Data redacted]	0.25	350	4	1
3	[Data redacted]	[Data redacted]	0.25	160	2	0
4	[Data redacted]	[Data redacted]	0.25	780	8	2
5	[Data redacted]	[Data redacted]	0.25	960	10	0
6	[Data redacted]	[Data redacted]	0.25	1000	5	0
7	[Data redacted]	[Data redacted]	0.25	900	9	1
8	[Data redacted]	[Data redacted]	0.25	800	16	1
9	[Data redacted]	[Data redacted]	0.25	550	6	0
10	[Data redacted]	[Data redacted]	0.25	900	9	1
11	[Data redacted]	[Data redacted]	0.25	900	9	1

TU Number	Easting	Northing	Area Excavated (m^2)	Final Depth (mm)	Number of Spits	Artefact Count
12	[Data redacted]	[Data redacted]	0.25	800	8	1
13	[Data redacted]	[Data redacted]	0.25	900	9	0
14	[Data redacted]	[Data redacted]	0.25	900	9	3
15	[Data redacted]	[Data redacted]	0.25	900	9	0
16	[Data redacted]	[Data redacted]	0.25	700	7	1
17	[Data redacted]	[Data redacted]	0.25	900	9	1
18	[Data redacted]	[Data redacted]	0.25	600	6	1
19	[Data redacted]	[Data redacted]	0.25	500	5	9
20	[Data redacted]	[Data redacted]	0.25	600	6	1
21	[Data redacted]	[Data redacted]	0.25	600	6	0
22	[Data redacted]	[Data redacted]	0.25	500	5	0
23	[Data redacted]	[Data redacted]	0.25	500	5	3
24	[Data redacted]	[Data redacted]	0.25	400	4	0
25	[Data redacted]	[Data redacted]	0.25	500	5	0
26	[Data redacted]	[Data redacted]	0.25	370	4	2
27	[Data redacted]	[Data redacted]	0.25	600	6	0
28	[Data redacted]	[Data redacted]	0.25	400	4	0
29	[Data redacted]	[Data redacted]	0.25	460	5	0
30	[Data redacted]	[Data redacted]	0.25	500	5	1
31	[Data redacted]	[Data redacted]	0.25	400	4	0
32	[Data redacted]	[Data redacted]	0.25	500	5	2
33	[Data redacted]	[Data redacted]	0.25	590	6	4
34	[Data redacted]	[Data redacted]	0.25	320	4	2
35	[Data redacted]	[Data redacted]	0.25	400	4	0
36	[Data redacted]	[Data redacted]	0.25	600	6	1
37	[Data redacted]	[Data redacted]	0.25	500	5	0
38	[Data redacted]	[Data redacted]	0.25	420	5	1
39	[Data redacted]	[Data redacted]	0.25	600	6	0
40	[Data redacted]	[Data redacted]	0.25	500	5	0
41	[Data redacted]	[Data redacted]	0.25	500	5	0
42	[Data redacted]	[Data redacted]	0.25	260	3	0
43	[Data redacted]	[Data redacted]	0.25	500	5	2
44	[Data redacted]	[Data redacted]	0.25	400	4	1
45	[Data redacted]	[Data redacted]	0.25	500	5	3
46	[Data redacted]	[Data redacted]	0.25	600	6	6

TU Number	Easting	Northing	Area Excavated (m^2)	Final Depth (mm)	Number of Spits	Artefact Count
47	[Data redacted]	[Data redacted]	0.25	480	5	0
48	[Data redacted]	[Data redacted]	0.25	550	6	0
49	[Data redacted]	[Data redacted]	0.25	450	5	0
50	[Data redacted]	[Data redacted]	0.25	350	4	0
51	[Data redacted]	[Data redacted]	0.25	300	3	2
52	[Data redacted]	[Data redacted]	0.25	450	5	0
53	[Data redacted]	[Data redacted]	0.25	400	4	0
54	[Data redacted]	[Data redacted]	0.25	470	5	0
55	[Data redacted]	[Data redacted]	0.25	480	5	0
56	[Data redacted]	[Data redacted]	0.25	500	5	0
57	[Data redacted]	[Data redacted]	0.25	500	5	0
58	[Data redacted]	[Data redacted]	0.25	500	5	8
59	[Data redacted]	[Data redacted]	0.25	599	5	0
60	[Data redacted]	[Data redacted]	0.25	570	5	0
Zone 1 Total						64

Table 5.14 Zone 2 Test Units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						20
61	[Data redacted]	[Data redacted]	0.25	200	2	0
62	[Data redacted]	[Data redacted]	0.25	500	5	3
63	[Data redacted]	[Data redacted]	0.25	400	5	0
64	[Data redacted]	[Data redacted]	0.25	450	5	0
65	[Data redacted]	[Data redacted]	0.25	500	5	0
66	[Data redacted]	[Data redacted]	0.25	470	5	1
67	[Data redacted]	[Data redacted]	0.25	250	3	1
68	[Data redacted]	[Data redacted]	0.25	430	5	3
69	[Data redacted]	[Data redacted]	0.25	460	5	0
70	[Data redacted]	[Data redacted]	TU not excavated*			
71	[Data redacted]	[Data redacted]	0.25	700	7	0
72	[Data redacted]	[Data redacted]	TU not excavated			
73	[Data redacted]	[Data redacted]	TU not excavated			
74	[Data redacted]	[Data redacted]	TU not excavated			

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
75	[Data redacted]	[Data redacted]	0.25	800	8	1
76	[Data redacted]	[Data redacted]	TU not excavated			
77	[Data redacted]	[Data redacted]	0.25	500	5	1
78	[Data redacted]	[Data redacted]	TU not excavated			
79	[Data redacted]	[Data redacted]	0.25	400	4	0
80	[Data redacted]	[Data redacted]	0.25	500	5	0
81	[Data redacted]	[Data redacted]	0.25	410	5	0
82	[Data redacted]	[Data redacted]	0.25	300	3	0
83	[Data redacted]	[Data redacted]	0.25	400	4	0
84	[Data redacted]	[Data redacted]	0.25	600	6	0
85	[Data redacted]	[Data redacted]	0.25	490	5	0
86	[Data redacted]	[Data redacted]	TU not excavated			
87	[Data redacted]	[Data redacted]	0.25	400	4	0
88	[Data redacted]	[Data redacted]	0.25	800	8	5
89	[Data redacted]	[Data redacted]	TU not excavated			
90	[Data redacted]	[Data redacted]	0.25	500	5	0
Zone 2 Total						35

* A number of TUs were not excavated due to changes in access arrangements. However, as the TUs excavated prior to that time had provided sufficient evidence of the presence of an archaeological site at this location, no additional TUs were added to the sampling strategy here.

Table 5.15 Zone 4 Test Units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						6
91	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
92	[Data redacted]	[Data redacted]	0.25	300	3	0
93	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
94	[Data redacted]	[Data redacted]	0.25	480	5	2
95	[Data redacted]	[Data redacted]	0.25	500	5	0
96	[Data redacted]	[Data redacted]	0.25	390	4	0
97	[Data redacted]	[Data redacted]	0.25	300	3	0
98	[Data redacted]	[Data redacted]	0.25	500	5	0
99	[Data redacted]	[Data redacted]	0.25	600	6	1
100	[Data redacted]	[Data redacted]	0.25	100	1	0
101	[Data redacted]	[Data redacted]	0.25	300	3	1

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
102	[Data redacted]	[Data redacted]	0.25	400	4	0
103	[Data redacted]	[Data redacted]	0.25	400	4	0
104	[Data redacted]	[Data redacted]	0.25	260	3	0
105	[Data redacted]	[Data redacted]	0.25	500	5	0
106	[Data redacted]	[Data redacted]	0.25	460	5	1
107	[Data redacted]	[Data redacted]	0.25	500	5	0
108	[Data redacted]	[Data redacted]	0.25	500	5	1
109	[Data redacted]	[Data redacted]	0.25	500	5	0
110	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
111	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
112	[Data redacted]	[Data redacted]	0.25	800	8	0
113	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
114	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
115	[Data redacted]	[Data redacted]	TU not excavated due to prior disturbance			
Zone 4 Total						12

Table 5.16 Zone 7 Test units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						0
116	[Data redacted]	[Data redacted]	0.25	400	4	0
117	[Data redacted]	[Data redacted]	0.25	400	4	0
118	[Data redacted]	[Data redacted]	0.25	280	3	0
119	[Data redacted]	[Data redacted]	0.25	300	3	0
120	[Data redacted]	[Data redacted]	0.25	560	6	0
121	[Data redacted]	[Data redacted]	0.25	420	5	0
122	[Data redacted]	[Data redacted]	0.25	300	3	0
123	[Data redacted]	[Data redacted]	0.25	300	3	0
124	[Data redacted]	[Data redacted]	0.25	400	4	0
125	[Data redacted]	[Data redacted]	0.25	280	3	0
126	[Data redacted]	[Data redacted]	0.25	220	3	0
127	[Data redacted]	[Data redacted]	0.25	450	5	0
128	[Data redacted]	[Data redacted]	0.25	400	4	0
129	[Data redacted]	[Data redacted]	0.25	320	4	0
130	[Data redacted]	[Data redacted]	0.25	400	4	0

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
131	[Data redacted]	[Data redacted]	0.25	600	6	0
132	[Data redacted]	[Data redacted]	0.25	300	3	0
133	[Data redacted]	[Data redacted]	0.25	400	4	0
134	[Data redacted]	[Data redacted]	0.25	350	4	0
135	[Data redacted]	[Data redacted]	0.25	550	6	0
136	[Data redacted]	[Data redacted]	0.25	250	3	0
137	[Data redacted]	[Data redacted]	0.25	170	2	0
138	[Data redacted]	[Data redacted]	0.25	600	6	0
139	[Data redacted]	[Data redacted]	0.25	250	3	0
140	[Data redacted]	[Data redacted]	0.25	600	6	0
141	[Data redacted]	[Data redacted]	0.25	450	5	0

Table 5.17 Zone 8 Test Units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						0
142	[Data redacted]	[Data redacted]	0.25	200	2	0
143	[Data redacted]	[Data redacted]	0.25	150	2	0
144	[Data redacted]	[Data redacted]	0.25	150	2	0
145	[Data redacted]	[Data redacted]	0.25	200	2	0
146	[Data redacted]	[Data redacted]	0.25	180	2	0
147	[Data redacted]	[Data redacted]	0.25	200	2	0
148	[Data redacted]	[Data redacted]	0.25	230	3	0
149	[Data redacted]	[Data redacted]	0.25	180	2	0
150	[Data redacted]	[Data redacted]	0.25	200	2	0
151	[Data redacted]	[Data redacted]	0.25	300	3	0
152	[Data redacted]	[Data redacted]	0.25	200	2	0
153	[Data redacted]	[Data redacted]	0.25	100	1	0
154	[Data redacted]	[Data redacted]	0.25	200	2	0
155	[Data redacted]	[Data redacted]	0.25	230	3	0
156	[Data redacted]	[Data redacted]	0.25	300	3	0
157	[Data redacted]	[Data redacted]	0.25	400	4	0
158	[Data redacted]	[Data redacted]	0.25	260	3	0
159	[Data redacted]	[Data redacted]	0.25	150	2	0
160	[Data redacted]	[Data redacted]	0.25	150	2	0

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
161	[Data redacted]	[Data redacted]	0.25	250	3	0
162	[Data redacted]	[Data redacted]	0.25	150	2	0
163	[Data redacted]	[Data redacted]	0.25	250	3	0
164	[Data redacted]	[Data redacted]	0.25	200	2	0
165	[Data redacted]	[Data redacted]	0.25	120	2	0
166	[Data redacted]	[Data redacted]	0.25	150	3	0
167	[Data redacted]	[Data redacted]	0.25	220	2	0
168	[Data redacted]	[Data redacted]	0.25	200	2	0
169	[Data redacted]	[Data redacted]	0.25	300	3	0
170	[Data redacted]	[Data redacted]	0.25	300	3	0
171	[Data redacted]	[Data redacted]	0.25	200	2	0
172	[Data redacted]	[Data redacted]	0.25	400	4	0
173	[Data redacted]	[Data redacted]	0.25	200	2	0
174	[Data redacted]	[Data redacted]	0.25	200	2	0
175	[Data redacted]	[Data redacted]	0.25	290	3	0
176	[Data redacted]	[Data redacted]	0.25	340	4	0

Table 5.18 Zone 11 Test Units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						
177	[Data redacted]	[Data redacted]	0.25	500	5	1
178	[Data redacted]	[Data redacted]	0.25	450	5	0
179	[Data redacted]	[Data redacted]	0.25	470	5	0
180	[Data redacted]	[Data redacted]	0.25	560	6	0
181	[Data redacted]	[Data redacted]	0.25	700	7	0
182	[Data redacted]	[Data redacted]	0.25	660	7	0
183	[Data redacted]	[Data redacted]	0.25	700	7	6
184	[Data redacted]	[Data redacted]	0.25	700	7	0
185	[Data redacted]	[Data redacted]	0.25	430	5	0
186	[Data redacted]	[Data redacted]	0.25	700	7	0
187	[Data redacted]	[Data redacted]	0.25	650	7	0
188	[Data redacted]	[Data redacted]	0.25	480	5	0
189	[Data redacted]	[Data redacted]	0.25	400	4	0
190	[Data redacted]	[Data redacted]	0.25	400	4	1

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
191	[Data redacted]	[Data redacted]	0.25	380	4	0
192	[Data redacted]	[Data redacted]	0.25	600	6	0
193	[Data redacted]	[Data redacted]	0.25	600	6	0
194	[Data redacted]	[Data redacted]	0.25	600	6	0
195	[Data redacted]	[Data redacted]	0.25	600	6	0
196	[Data redacted]	[Data redacted]	0.25	390	4	0
197	[Data redacted]	[Data redacted]	0.25	500	5	0
198	[Data redacted]	[Data redacted]	0.25	340	4	0
199	[Data redacted]	[Data redacted]	0.25	400	4	0
200	[Data redacted]	[Data redacted]	0.25	380	4	0
201	[Data redacted]	[Data redacted]	0.25	900	9	0
202	[Data redacted]	[Data redacted]	0.25	300	3	0
203	[Data redacted]	[Data redacted]	0.25	400	4	0
204	[Data redacted]	[Data redacted]	0.25	230	3	0
205	[Data redacted]	[Data redacted]	0.25	300	3	0
206	[Data redacted]	[Data redacted]	0.25	170	2	0
207	[Data redacted]	[Data redacted]	0.25	340	4	0
208	[Data redacted]	[Data redacted]	0.25	400	4	0
209	[Data redacted]	[Data redacted]	0.25	400	4	0
210	[Data redacted]	[Data redacted]	0.25	350	4	0
211	[Data redacted]	[Data redacted]	0.25	350	4	0
212	[Data redacted]	[Data redacted]	0.25	400	4	0
213	[Data redacted]	[Data redacted]	0.25	500	5	0
214	[Data redacted]	[Data redacted]	0.25	640	7	0
215	[Data redacted]	[Data redacted]	0.25	570	6	0
216	[Data redacted]	[Data redacted]	0.25	500	5	0
217	[Data redacted]	[Data redacted]	0.25	400	4	0
Zone 11 Total						9

Table 5.19 Zone 11 East Test Units.

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
Surface Finds						1
218	[Data redacted]	[Data redacted]	0.25	280	3	1
219	[Data redacted]	[Data redacted]	0.25	350	4	1

TU Number	Easting	Northing	Area Excavated (m2)	Final Depth (mm)	Number of Spits	Artefact Count
220	[Data redacted]	[Data redacted]	0.25	250	3	0
221	[Data redacted]	[Data redacted]	0.25	450	5	0
222	[Data redacted]	[Data redacted]	0.25	280	3	0
223	[Data redacted]	[Data redacted]	0.25	300	3	0
224	[Data redacted]	[Data redacted]	0.25	200	2	0
225	[Data redacted]	[Data redacted]	0.25	250	3	1
226	[Data redacted]	[Data redacted]	0.25	450	5	2
227	[Data redacted]	[Data redacted]	0.25	300	3	0
228	[Data redacted]	[Data redacted]	0.25	270	3	0
229	[Data redacted]	[Data redacted]	0.25	300	3	5
230	[Data redacted]	[Data redacted]	0.25	300	3	1
231	[Data redacted]	[Data redacted]	0.25	300	3	0
232	[Data redacted]	[Data redacted]	0.25	310	4	0
233	[Data redacted]	[Data redacted]	0.25	400	4	0
234	[Data redacted]	[Data redacted]	0.25	500	5	0
235	[Data redacted]	[Data redacted]	0.25	300	3	0
236	[Data redacted]	[Data redacted]	0.25	500	5	0
237	[Data redacted]	[Data redacted]	0.25	350	4	1
238	[Data redacted]	[Data redacted]	0.25	400	4	0
239	[Data redacted]	[Data redacted]	0.25	290	3	0
240	[Data redacted]	[Data redacted]	0.25	350	4	0
241	[Data redacted]	[Data redacted]	0.25	350	4	0
242	[Data redacted]	[Data redacted]	0.25	300	3	0
243	[Data redacted]	[Data redacted]	0.25	300	3	0
244	[Data redacted]	[Data redacted]	0.25	280	3	0
245	[Data redacted]	[Data redacted]	0.25	250	3	0
246	[Data redacted]	[Data redacted]	0.25	300	3	0
Zone 11 East Total						13

5.4.2 Artefact Analysis

5.4.2.1 Method

Requirement 19 of Heritage NSW's Code of Practice states that a range of prescribed stone artefact attributes must be recorded. These attributes include the number of artefacts found, recording date, artefact material, artefact type, platform surface, platform type, termination, cross-section and measurements of length, width and thickness. These attributes have been recorded for the stone artefact

assemblage recovered during testing, with additional attributes added as necessary to allow for additional analysis. A description of the attributes recorded for each artefact is provided in Table 5.20 below. The data for each artefact is listed in Appendix K.

Table 5.20 Methodology for Stone Artefact Analysis.[7]

Attribute	Description
Provenance Data	Provenance data recorded included the zone, test unit (TU) and spit. A separate ID number was assigned to each artefact. The excavation date and names of the excavators were also recorded.
Raw Material Data	Stone raw materials were placed into the following categories: • FGS: other fine-grained siliceous rocks. These include chert, chalcedonic chert and one unknown but possibly basalt. • Quartz: a silica based mineral. • Quartzite: metamorphosed sandstone. • Sandstone: sedimentary rock composed of sand. • Silcrete: an indurated soil duricrust, formed when silica cemented soil sediments. • IMSTC: indurated mudstone/silicified tuff/chert. Fine-grained siliceous rock formed when volcanic ash fell into water or fell onto land and was washed into water. The tuff and other sediments subsequently hardened and silicified. Chert is formed through the impregnation of silica through sedimentation through the process of deep weathering. This category is assigned when these vast range of materials cannot be distinguished from one another. • Silicified wood, fossil wood. The original wood structure was replaced by silica in solution. • Unidentified. Other rock types which could not be identified.
Cortex	Cortex describes the 'weathered' outer skin of a raw cobble or stone material. An estimate of the amount of cortex on each artefact was recorded.
Size and Weight	The maximum size of each artefact along its longest dimension was measured and recorded to the nearest 0.5mm. The maximum dimension of artefacts was then grouped into 5mm interval categories. The length, width and thickness of each artefact was also recorded to the nearest 0.5mm.
Artefact Type	Artefacts were placed into grouped categories of the artefact 'type' which included: • Flakes: has a complete set of flake landmarks, including a bulb, termination, most of the lateral margins and platform. • Bipolar flake: a flake formed from the use of an anvil which is characterised by crushed opposable ends. • Proximal flake fragment: the initiation of a flake consisting of platform, but no termination. • Longitudinal split: a split flake which occurs during the process of production. • Distal flake fragment: a broken flake fragment from its distal end. • Medial flake fragment: a broken flake fragment without a platform or distal end, but with an identifiable ventral surface. • Flaked piece: where dorsal scars are present but with no striking platform. • Retouched artefact: these were recorded where scars from retouch occurred more recently in the reduction sequence than the artefact being retouched. • Cores: a piece of stone used to produce flakes which have one or more remnant flake scars. • Modified Cobble: this included cobbles which appeared to be modified to be used as a tool (eg chopper), rather than as a core. • Hammerstone. • Grinding Plate.

Attribute	Description
Flake Shape	The shape of flakes was recorded using length and width measurements according to the following definitions: • Wide: wider than long (W>L). • Length equals width (L=W). • Long: longer than wide (L>W). • Elongate (El): flakes twice as long as they were wide, or more than twice as long as wide.
Flake Platform	Flake platforms were identified in the categories listed below. • Cortex: where the platform is covered in cortex. • Plain (AHIMS category Flake Scar): where the platform has a smooth surface. • Scarred (AHIMS category 'More than one flake scar'): where multiple flake scars are on the platform surface. • Faceted: where the platform has many small flake scars. • Focal: where the platform is very small. • Partly crushed or crushed (AHIMS category 'shattered'): where the platform has been crushed during knapping.
Flake Terminations	Several flake termination types were recorded for this assemblage and are listed below. • Feather: where the termination tapered to a thin end. • Hinge: where the termination formed a rounded end. • Step: where the termination formed an abrupt end. • Plunging: where the termination removed the bottom of a core.
Flake Cross-section	The cross-section was recorded for each flake and included the following categories: • High angle/strong ridge. • High angle/weak ridge. • Low angle/strong ridge. • Low angle/weak ridge.

5.4.2.2 The Assemblage Generally

A total of 133 stone objects were identified during test excavations comprising 130 flaked stone artefacts and three 'other cultural lithics'. They were recovered from five of the seven test excavation zones (Zone 1, Zone 2, Zone 4, Zone 11, and Zone 11 East).

Surface artefacts noted during the survey were also collected and included in the analysis. In the case of Zone 7, none of the isolated surface artefacts were able to be found again during the test excavation phase, and consequently, they are not included in the overall analytical results, but are noted separately.

The flaked stone artefact technology is strongly focused around bipolar reduction of quartz, and selected unifacial reduction of a fine-grained siliceous material—a type of chalcedonic chert. The assemblage of artefacts based on each raw material type is notably different:

- The bipolar quartz reduction resulted in the production of a significant amount of debitage (small waste stone fragments which are byproducts of making useable cutting edges).
- The unifacial reduction of chalcedonic chert produced significantly larger discarded waste material suggesting different strategies for different artefact types and use.

There is little clear evidence for the use of microlithic technology, although one small core made from chalcedonic chert shows some of the key hallmarks of this technology.

The other cultural lithic material includes a grinding bowl, representative of a potential range of activities including food processing or ochre preparation, a modified cobble and the identification of a potential 'chopper'. However, this formal tool type is relatively rare, and the identification requires further investigation.

Table 5.21 Finds Recovered by the Testing Program in the Study Area.

	Artefact	Other Cultural Lithic
Total Finds	130	3

5.4.2.3 Zone 1

Zone 1 is situated either side of Billabong Creek adjacent to the rail corridor along Olympic Highway. The landforms within this zone consist of flat terraces above creek banks and within 125m of Billabong Creek.

Sixty TUs were excavated within Zone 1 (TUs 1–60) resulting in the recovery of a total of 64 stone objects (Figure 5.54). Surface finds consist of one quartzite modified cobble found approximately 30cm west of TU16, and one grinding bowl found within Zone 1 during the 2018 pedestrian survey of the area and collected as part of the 2019 testing program.

Artefacts recovered from Zone 1 varied in size from a maximum dimension of 6mm to 182mm (artefact ID #57, a grinding bowl). The average size of artefacts is 23mm, reflective of the later stages of raw material reduction, and also shatter and flaked pieces as the result of bipolar reduction. The relative absence of flakes 25mm or greater within the assemblage suggests that flake selection from the reduction process focused on the exploitation of these larger flakes.

Quartz is the most frequent material represented and to the greatest depth (Figure 5.43). IMSTC and FGS are notably less frequent, and silcrete is absent from the Zone 1 assemblage. The range of FGS material varies from basalt (Figure 5.44) and chert to chalcedonic chert **(**Figure 5.48). Some quartzitic sandstone was also identified but formed an isolated material type within the assemblage (Figure 5.49).

The range in depth of the cultural lithics is notable, with artefacts found in all spits between a depth of 100mm and 700mm (see Table 5.22). The vertical distribution shows some impact of the heavy ploughing visible from survey observations, in addition to a number of large quartzitic sandstone cobbles also found in Zone 1 with large plough strike marks. This is also reflected in some of the breakage patterns observed in the artefacts up to a 20cm depth. A cautionary approach to the identification of retouched artefacts, and the identification of 'formal' tool types, is necessary in these taphonomic (ie ground disturbance) contexts.

Table 5.22 Cultural Lithics from Zone 1.

Type	FGS	Silcrete	IMSTC	Quartz	Quartzite	Sandstone	Unidentified	Total
Bipolar core				1				**1**
Bipolar flake			1	9				**10**
Flake	2		3	8	1			**14**
Flaked piece	2		3	24				**29**
Longitudinal split	1			1		1		**3**
Proximal flake			1	1				**2**

Type	FGS	Silcrete	IMSTC	Quartz	Quartzite	Sandstone	Unidentified	Total
Proximal longitudinal split left				1				**1**
Unifacial core	1							**1**
Modified cobble					1			
Grinding bowl							**1**	**1**
'Chopper' Unconfirmed					1			
Total	**6**		**8**	**45**	**3**	**1**		**64**

Table 5.23 Vertical Distribution of Raw Materials in Zone 1.

Spit and Depth (below ground surface)	FGS	Silcrete	IMSTC	Quartz	Quartzite	Sandstone	Unidentified	Total
Spit 1 (0–10cm)	1		1	10		1		**13**
Spit 2 (10–20cm)	3		5	15				**23**
Spit 3 (20–30cm)	2		1	12	1			**16**
Spit 4 (30–40cm)				5				**5**
Spit 5 (40–50cm)			1	1				**2**
Spit 6 (and Spit 12—TU8) (50–60cm)				1	1			**1**
Spit 7 (60–70cm)				1				**1**
Spit 8 (70–80cm)								
Spit 9 (80–90cm)								
Spit 10 (90–100cm)								
Surface Finds					1	1		**2**
Total	**6**		**8**	**45**	**3**	**1**	**1**	**64**

Table 5.24 Size of Artefacts in Zone 1.

Group	Size (mm)	FGS	Silcrete	IMSTC	Quartz	Quartzite/ Quartzitic Sandstone	Unidentified	Total
Artefacts	5.5–10	1		1	10			**12**
	10.5–15	1			20			**21**
	15.5–20	1		1	11			**13**
	20.5–25			3	3			**6**
	25.5–30	1		1		2		**4**
	30.5–35				1			**1**
	35.5–40	1		1				**2**
	40.5–45							
	45.5–50	1						**1**

Group	Size (mm)	FGS	Silcrete	IMSTC	Quartz	Quartzite/ Quartzitic Sandstone	Unidentified	Total
	50.5–55			1				**1**
	85.5–90							
	105.5–110					1		**1**
	115.5–120					1		**1**
	180.5–185						1	**1**
	Total	**6**		**8**	**45**	**4**	**1**	**64**

Figure 5.43 Fine grained siliceous material from Zone 1. Artefact #103 (left) and #104 (right). Scale = 1cm. (Source: GML 2019)

Figure 5.44 Fine grained siliceous material from Zone 1, potentially basalt. Artefact #111. Scale = 1cm. (Source: GML 2019)

Figure 5.45 Fine grained siliceous material from Zone 1. Artefact #111. Scale = 1cm. (Source: GML 2019)

Figure 5.46 IMSTC from Zone 1. Artefact #79. Scale = 1cm. (Source: GML 2019)

Figure 5.47 FGS from Zone 1, longitudinally split fragment from Spit 2 consistent with 'in-production breakage'. Artefact #101. Scale = 1cm. (Source: GML 2019)

Figure 5.48 FGS from Zone 1, a core, a chalcedonic chert. Artefact #116. Scale = 1cm. (Source: GML 2019)

Figure 5.49 Quartzitic sandstone material from Zone 1, longitudinally split fragment from consistent with 'in-production breakage'. Artefact #108. Scale = 1cm. (Source: GML 2019)

Figure 5.50 IMSTC from Zone 1, proximal fragment from Spit 2 consistent with plough breakage. Artefact #77. Scale = 1cm. (Source: GML 2019)

5.4.2.4 Zone 2

Zone 2 is located on either side of Ulandra Creek, to the south of the bend in Ironbong Road. Intact A_1 soil profiles were identified within the Ulandra Creek bed; however, disturbance by ploughing was noted about 25m away from the creek. Twenty-two TUs were excavated within Zone 2 (TUs 61–69, 71, 75, 77, 79–85, 87, 88 and 90), recovering a total of 35 stone artefacts.

Twenty-two of these artefacts were found on the ground surface, and 13 were found below the ground surface. Three artefacts were found each within TU62, TU88 and TU68. One artefact was found each within TU66, TU67, TU75 and TU77.

The majority of the artefacts found on the surface in Zone 2 are flakes, flake fragments or flaked pieces (82%); however, three cores and one modified cobble were also identified (see Table 5.25). A possible scarred tree (ARTC6) was also identified within Zone 2 during field survey.

The remainder of artefacts in Zone 2 were found below the ground surface and include seven flakes, three flake fragments, two flaked pieces and one broken hammerstone (see Table 5.26). The broken hammerstone was found within Spit 2 of TU88. Two IMSTC flakes were also found within TU88 in Spit 3. Three flake fragments were found within TU62 including one IMSTC distal fragment in Spit 5, one full flake of silcrete in Spit 2 and one silcrete medial flake fragment in Spit 3. One quartz distal flake fragment was found within Spit 2 of TU75. One IMSTC flake was found within Spit 1 of TU67. One silcrete flake was found within Spit 1 of TU77 with retouch on its left lateral margin. One quartz flaked piece was found within Spit 2 of TU66. One silcrete flake and one quartz flaked piece were found within Spit 1 of TU68 and one IMSTC flake was found within Spit 5 of TU68.

Overall, a larger number of stone artefacts were found on the surface rather than below the ground surface in Zone 2 (63%) (see Table 5.22). Of the artefacts found subsurface, the majority were found within the first three spits, to a depth of 30cm (85%). Two artefacts were found within Spit 5, between 40cm and 50cm, including one IMSTC distal flake fragment in TU62 and one IMSTC flake in TU68. It is interesting to note that while a range of raw materials occur on the surface and to a depth of 30cm (quartz, silcrete, IMSTC and quartzite), only IMSTC artefacts occurred below 30cm. No artefacts occurred in Zone 2 between a depth of 30cm and 40cm.

Two surface finds in Zone 2 retained cortex, one IMSTC flake (with approximately 15% cortex) and one modified cobble of unidentified material (with approximately 45% cortex). Four artefacts found below the ground surface retained cortex, including two complete IMSTC flakes (one with approximately 5% cortex, one with 15%), one broken quartzite hammerstone (with approximately 70% cortex) and one distal IMSTC flake fragment (with approximately 15% cortex).

Quartz is the dominant raw material type (54%) and are recorded as flakes (43%) or flaked pieces (26%). Artefacts recovered from Zone 2 varied in size from a maximum dimension of 10.5mm to one of 112mm. The artefact with the largest maximum dimension recovered from below the ground surface was a quartzite broken hammerstone found at a depth of between 10cm and 20cm in TU88.

Table 5.25 Cultural Lithics from Zone 2.

	Type	Silcrete	IMSTC	Quartz	Quartzite	Total
Surface Artefacts	Flake		3	5		**8**
	Medial flake fragment	1		2		**3**
	Flaked piece			7		**7**
	Core		1	2		**3**
	Modified cobble				1	**1**
Subsurface Artefacts	Flake	3	4			**7**
	Flaked piece			2		**2**
	Distal flake fragment		1	1		**2**
	Medial flake fragment	1				**1**

	Type	Silcrete	IMSTC	Quartz	Quartzite	Total
	Broken hammerstone				1	**1**
Total		**5**	**9**	**19**	**2**	**35**

Table 5.26 Vertical Distribution of Raw Materials at Zone 2.

Spit	Silcrete	IMSTC	Quartz	Quartzite	Total
Surface	1	4	16	1	**22**
Spit 1	2	1	1		**4**
Spit 2	1		2	1	**4**
Spit 3	1	2			**3**
Spit 4					
Spit 5		2			**2**
Total	**5**	**9**	**19**	**2**	**35**

5.4.2.5 Zone 4

Zone 4 covers a length of 2km along the study area corridor to the south of Run Boundary Creek. Excavation in this zone found that the area had been subjected to substantial disturbance. Eighteen TUs were excavated within Zone 4 (TUs 92, 94–109 and 112) recovering a total of 12 stone artefacts (Figure 5.56). Six of these artefacts were found on the ground surface, and six were found below the ground surface. Two stone artefacts were recovered from TU94, and one was recovered each from TUs 99, 101, 106 and 108.

Of the six surface finds, three are recorded as flakes (made of IMSTC) and three as flaked pieces (made of IMSTC) (see Table 5.23). One Aboriginal archaeological site had been previously recorded within Zone 4, including a scatter of nine chert flaked pieces and fragments scattered over an area of 20m x 30m (ARTC8).

The remainder of the artefacts in Zone 4 were found subsurface and include two quartz flaked pieces recovered from TU94 in Spit 3, one quartz flake from TU99 in Spit 5, one IMSTC medial flake fragment from Spit 2 in TU101, one quartz flake from Spit 1 in TU106 and one quartz flake from Spit 1 in TU108 (Table 5.23).

Raw materials found on the surface and below the ground surface appear to correlate, with quartz and IMSTC found in both contexts (see Table 5.24). This is likely a reflection of disturbance of the landscape from ploughing, which has resulted in movement of artefacts. Quartz is present to a depth of 50cm below the surface, while IMSTC occurred to a depth of 20cm. The quartz flake found in Spit 5 at a depth of between 40cm and 50cm is likely below any recent disturbance to the area and is likely associated with an older landform adjacent to the former creekline running through this area. The remainder of artefacts were recovered from the surface or within the top three spits excavated (to a depth of 30cm below the ground surface).

Only one artefact recovered from Zone 4 retained cortex, an IMSTC flake with about 15% cortex found on the ground surface. This flake has the largest maximum dimension of artefacts recovered from Zone

4 at 47mm (see Table 5.25). Artefacts recovered from Zone 4 varied in size from a maximum dimension of 17mm to one of 47mm.

The dominant raw material recovered from Zone 4 is IMSTC (58%), followed by quartz (42%). Most artefacts are recorded as flakes (50%) or flaked pieces (42%).

Table 5.27 Cultural Lithics from Zone 4.

	Type	Silcrete	IMSTC	Quartz	Quartzite	Total
Surface Artefacts	Flake		3			**3**
	Medial flake fragment					**0**
	Flaked piece		3			**3**
Subsurface Artefacts	Flake			3		**3**
	Medial flake fragment		1			**1**
	Flaked piece			2		**2**
Total			**7**	**5**		**12**

Table 5.28 Vertical Distribution of Raw Materials in Zone 4.

Spit	Silcrete	IMSTC	Quartz	Quartzite	Total
Surface		6			**6**
Spit 1			2		**2**
Spit 2		1			**1**
Spit 3			2		**2**
Spit 4					
Spit 5			1		**1**
Total		**7**	**5**		**12**

Table 5.29 Size of Artefacts in Zone 4.

Group	Size (mm)	Silcrete	IMSTC	Quartz	Quartzite	Total
Artefacts	5.5–10					
	10.5–15					
	15.5–20			3		**3**
	20.5–25		1			**1**
	25.5–30		2			**2**
	30.5–35		1	1		**2**
	35.5–40					
	40.5–45		2	1		**3**
	45.5–50		1			**1**
	Total		**7**	**5**		**12**

5.4.2.6 Zone 7

No artefacts were found in the Zone 7 test excavation. However, a total of eight were recorded during the survey, although none were able to be found again for collection during the test excavation program. Based on survey field recordings the artefacts are largely reflective of the wider range of materials and objects found in the other zones. The eight artefacts were distributed at low-density over a distance of 1200m and on that basis are more representative of a low density background scatter than on any focussed cultural activity.

Chert was the dominant raw material – four artefacts being black chert, with two artefacts blue/grey chert and two artefacts made from quartz. Five of the eight were flakes and three were flaked pieces. Only one contained any distinctive diagnostic features—ARTC16 (50-5-0272) which was a black chert flake. It had been broken and had a negative blade scar on the dorsal face and an errailure on the ventral surface. This was the most formed artefact found during the survey work.

5.4.2.7 Zone 11

Zone 11 was located on the northern side of Dudauman Creek and included 41 TUs excavated on the southern slope and ridge of the small knoll, and on the toe of the slope leading onto the flat along the top of the creek bank.

TUs excavated in Zone 11 included TUs 177–217 with a total of nine stone artefacts recovered (

Figure **5.57**).

Artefact size varies from 12mm to 28mm with an average of 20mm. A significant proportion of this small assemblage consisted of quartz reduction and shatter from a single core. Three of the six artefacts refit (refit set 1: artefact #: 121, 122 and 123, Figure 5.51), which means that an action within the reduction process can be identified. A single blow appears to have broken the larger piece of material for further reduction. The particular piece of quartz was of a more consistent flaking quality than other quartz within the overall assemblage, which may explain this instance of increased economisation of raw material (ie, using as much of the material as possible). There is insufficient information to determine if this reflects different source exploitation at different depths.

Table 5.30 Cultural Lithics from Zone 11.

Type	FGS	Silcrete	IMSTC	Quartz	Quartzite	Sandstone	Unidentified	Total
Bipolar core				2				**2**
Bipolar core fragment				2				**2**
Bipolar flake				2				**2**
Flake				1				**1**
Flaked piece			1	1				**2**
Total			**1**	**8**				**9**

Table 5.31 Vertical Distribution of Raw Materials in Zone 11.

Spit	Silcrete	IMSTC	Quartz	Quartzite	Total
Surface					
Spit 1		1	1		**2**

Spit	Silcrete	IMSTC	Quartz	Quartzite	Total
Spit 2			1		**1**
Spit 3					
Spit 4					
Spit 5					
Spit 6			6		**6**
Total		**1**	**8**		**9**

Table 5.32 Size of Artefacts in Zone 11.

Group	Size (mm)	Silcrete	IMSTC	Quartz	Quartzite	Total
Artefacts	5.5–10					
	10.5–15			3		**3**
	15.5–20		1	1		**2**
	20.5–25			4		**4**
	25.5–30					
	30.5–35					
	35.5–40					
	40.5–45					
	45.5–50					
	Total		**1**	**8**		**9**

Figure 5.51 Refit set 1, artefacts #121 bipolar core fragment (left), #122 bipolar core fragment (right) and #123 flake (centre). Scale = 1cm. (Source: GML 2019)

5.4.2.8 Zone 11 East

Zone 11 East was located to the north and south of Dudauman Creek. The landforms within this zone consisted of the flat along the top of the creek bank, the creek bank itself, and the level area to the south. Disturbance across the area was largely characteristic of surface impacts caused by grazing, although two TUs located next to the rail corridor (TU236 and 241) contained significant quantities of rail bed gravels and other rubble.

Twenty-nine TUs were excavated (TU218–246) in the zone and total of 13 artefacts were recovered (Figure 5.58).

Artefacts recovered from Zone 11 East varied in size from a maximum dimension of 7.5mm to 28mm, with an average size of 15.5mm (Table 5.33). This is reflective of the later stages of raw material reduction, although none of the identified artefacts could be refit and the small assemblage sizes precludes inferences regarding targeted flake size selection.

Quartz is the most frequent material represented, with only minor quantities of silcrete, IMSTC, and unidentified materials. The vertical distribution is limited, with all artefacts found in <300mm of soil.

One possible geometric backed artefact was identified (Figure 5.53). A blueish grey chert flake has retouch on the long horizontal margin, with approximately four to five scars creating a backing. There is also possible evidence of use-wear on the margin opposite the backing, as edge fracture are present, however, no other diagnostic indicators of use-wear could be identified.

Table 5.33 Cultural Lithics from Zone 11 East.

Type	Silcrete	IMSTC	Quartz	Unidentified	Total
Flake		1	3		**4**
Flaked piece			1	1	**2**
Proximal flake		1			**1**
Medial flake			2		**2**
Distal flake	1		2		**3**
Geometric backed artefact		1			**1**
Total	**1**	**3**	**8**	**1**	**13**

Table 5.34 Vertical Distribution of Raw Materials in Zone 11 East.

Spit	Silcrete	IMSTC	Quartz	Unidentified	Total
Surface				1	**1**
Spit 1			5		**5**
Spit 2	1	2	3		**6**
Spit 3		1			**1**
Spit 4					
Spit 5					
Total	**1**	**3**	**8**	**1**	**13**

Table 5.35 Size of Artefacts in Zone 11 East.

Group	Size (mm)	Silcrete	IMSTC	Quartz	Unidentified	Total
Artefacts	5.5–10	1	1	1		**3**
	10.5–15		2	2	1	**5**
	15.5–20			2		**2**
	20.5–25			1		**1**
	25.5–30			2		**2**
	Total	**1**	**3**	**8**	**1**	**13**

Figure 5.52 Quartz from Zone 11 East, TU 229, comprising of (left to right) two complete flakes, a distal flake, a medial flake, and a flaked piece. (Source: GML 2021)

Figure 5.53 IMSTC from Zone 11 East, a possible geometric backed artefact, a chert. Scale = 1cm. (Source: GML 2021)

5.4.2.9 Overview and Comparative Analysis

Spatial Analysis

The artefacts recovered by spit and zone are shown in

Table 5.36. Zone 1 contains the most numerous assemblage, and these continue to a greater depth

Zone/ Depth	Surface	Spit 1 (0–10cm)	Spit 2 (10–20cm)	Spit 3 (20–30cm)	Spit 4 (30–40cm)	Spit 5 (40–50cm)	Spit 6 ** (50–60cm)	Spit 7 (60–70cm)	Total
1	2	13	23	16	5	2	2	1	**64 ***
2	22	4	4	3		2			**35**
4	6	2	1	2		1			**12**
11		2	1				6		**9**
11 East	1	5	6	1					**13**
Total	**31**	**26**	**36**	**23**	**5**	**6**	**7**	**1**	**133**

than Zones 2, 4, 11, and 11 East. However, Zones 2, 4 and 11 do have residual artefact signatures at depths between 400mm and 600mm. Zone 1 contained the deepest soil profile of all the zones; the test excavation was not able to reach basal clay across the majority of the test units. Artefacts found at depth in Zone 1 may represent earlier phases of occupation, and therefore older occupation than the other zones; however, this cannot be confirmed without the use of scientific dating.

The majority of artefacts were identified on the surface and within the top 300mm of the soil profile. The specific distribution of these artefacts within the upper soil profile is likely to have been affected by disturbance from ploughing and therefore they will not provide a definitive indicator of the vertical distribution of the archaeological evidence. However, the overall density of artefactual material at the top of the soil profile is indicative of consistent use of the area over a prolonged period.

Overall, the vertical distribution of the assemblage likely represents periods of occupation of these terraces along creek lines over a relatively prolonged period. The artefacts found at greater depths, in Spit 5 of Zones 1, 2 and 4, and Spit 6 and 7 of Zone 1, may represent earlier phases of occupation of the landscape.

Table 5.36 Vertical Distribution of Lithics in Zones 1, 2, 4, 11 and 11 East.

Zone/ Depth	Surface	Spit 1 (0–10cm)	Spit 2 (10–20cm)	Spit 3 (20–30cm)	Spit 4 (30–40cm)	Spit 5 (40–50cm)	Spit 6 ** (50–60cm)	Spit 7 (60–70cm)	Total
1	2	13	23	16	5	2	2	1	**64 ***
2	22	4	4	3		2			**35**
4	6	2	1	2		1			**12**
11		2	1				6		**9**
11 East	1	5	6	1					**13**
Total	**31**	**26**	**36**	**23**	**5**	**6**	**7**	**1**	**133**

*One artefact could not be assigned to a spit (Artefact ID #56, modified cobble).

**One artefact was identified in Spit 12 of TU8, which was dug in 5cm spits, and so was recovered from a depth of between 50cm and 60cm. Spit 12 of TU8 is shown in the table as part of the Spit 6 results to compare with the overall assemblage.

The highest number of artefacts (n=64) were recovered from Zone 1, which is situated on flat terraces around Billabong Creek. The number of artefacts decreased in Zone 2, which is situated on flat terraces around Ulandra Creek. Further north, Zones 4 and 11 East had the second lowest number of artefacts

recovered, followed by Zone 11. No artefacts were recovered from Zones 7 and 8 during the testing. These results generally support the predictive model that stone artefact sites will occur within close proximity to water.

Artefact Density

Based on the number of artefacts recovered from TUs in Zones 1, 2, 4, 11 and 11 East the artefact density per metre squared is recorded in Table 5.37, below. The artefact density for each TU in Zones 1, 2, 4, 11 and 11 East is shown in Figure 5.54 to Figure **5.58**. The results show the highest density of artefacts occurring in Zone 1 with 4 artefacts/m^2. Further north, Zone 2 yielded a slightly decreased artefact density with 2.36 artefacts/m^2, while Zone 4 has an artefact density of 1.33 artefacts/m^2, Zone 11 has a density of 0.87 artefacts/m^2 while Zone 11 East has a density of 1.65 artefacts/m^2

These densities demonstrate a clear trend towards greater artefact numbers towards the southern end of the study corridor, within the landscape formed to the west of the Bethungra Ranges, south of Run Boundary Creek and incorporating Ulandra and Billabong Creeks. Within this area, the overall average artefact density for Zones 1, 2 and 4 is 2.56 artefacts/m^2.

For a comparative analysis, there has been limited archaeological work within the local region; however, several local studies have recorded artefact densities, and interpreted these as indicators of low intensity landscape occupation. Dearling collected a total of 1,495 artefacts during a salvage undertaken prior to proposed works on a transmission line which crosses the Ulandra Nature Reserve, about 6.5km east of the southern portion of the study area.[8] Based on surface collection, the artefact density was recorded as between 0.045 artefacts/m^2 and 2.79 artefacts/m^2.[9]

Silcox undertook test excavations at site JK2 on Cunningham Creek near Murrumburrah, to the south of Young and about 40km east from Stockinbingal. A total of 95 artefacts were recovered with a density of seven artefacts/m^2.[10]

There has been a great range in artefact densities recorded across the wider region. Silcox and Koettig carried out survey and test excavation of a proposed route for the Barton Highway extension near Yass, about 80km southeast of the study corridor. They recorded artefact densities ranging from 2.3 artefacts/m^2 up to 12 artefacts/m^2.[11] Most artefacts here were of silcrete (57%).

Within the ACT region, about 100km southeast of the study corridor, studies have recorded a range of artefact densities. Saunders undertook a survey of Block 2099 in Jerrabomberra and identified seven stone artefacts, with a density of 0.06 artefacts/m^2.[12] Boot and Heffernan surveyed an area around Jumping Creek in Queanbeyan and identified 20 Aboriginal stone artefact sites with densities ranging from 0.03 to 0.15 artefacts/m^2.[13] Kamminga undertook an assessment of an Aboriginal volcanic stone procurement site in Symonston and identified artefact densities of between 1 and 3 artefacts/m^2.[14] Based on stone artefact assemblages recovered during testing of an area at Baldwin Drive in Belconnen, artefact densities of between 2.8 artefacts/m^2 and 12.0 artefacts/m^2 were recorded, the majority of which were made of quartz material.[15]

The lack of data relating to artefact density within the local area makes it difficult to understand the density of artefacts recovered from the study corridor within a wider context. The nearest data available is that collected by Dearling, who recovered densities of between 0.045 artefacts/m^2 and 2.79 artefacts/m^2 from the Ulandra Nature Reserve.[16] However, these densities were based on surface collection. Subsurface testing near Young identified densities of 7 artefacts/m^2.[17] Artefact densities have been recorded up to 12 artefacts/m^2 around Yass and in the ACT.[18]

The artefact densities recorded in the study corridor are comparable to the upper end of those recorded by Dearling in the Ulandra Nature Reserve, and notably lower that those recorded by Silcox near Young. In both of those cases, the investigators ascribed the values as indicative of a low-intensity use of the landscape. On that basis, the artefact densities from the study corridor suggest a low intensity use of the landscape, albeit over a prolonged period, as indicated by the maximum depths of artefacts below the surface.

Table 5.37 Mean Density of Artefacts and All Cultural Lithics for subsurface contexts Zones 1, 2, 4, 11 and 11 East.

Area	Landform	TU Size	Total TUs	Total Subsurface Artefacts	Mean Density Artefacts/m^2
Zone 1	River flats and undulating plains	50cm x 50cm	60	60	4.00
Zone 2	River flats and undulating plains	50cm x 50cm	22	13	2.36
Zone 4	Lower slopes	50cm x 50cm	18	6	1.33
Zone 11	Lower slopes and river flats	50cm x 50cm	41	9	0.87
Zone 11 East	River flats and creek banks	50cm x 50cm	29	12	1.65

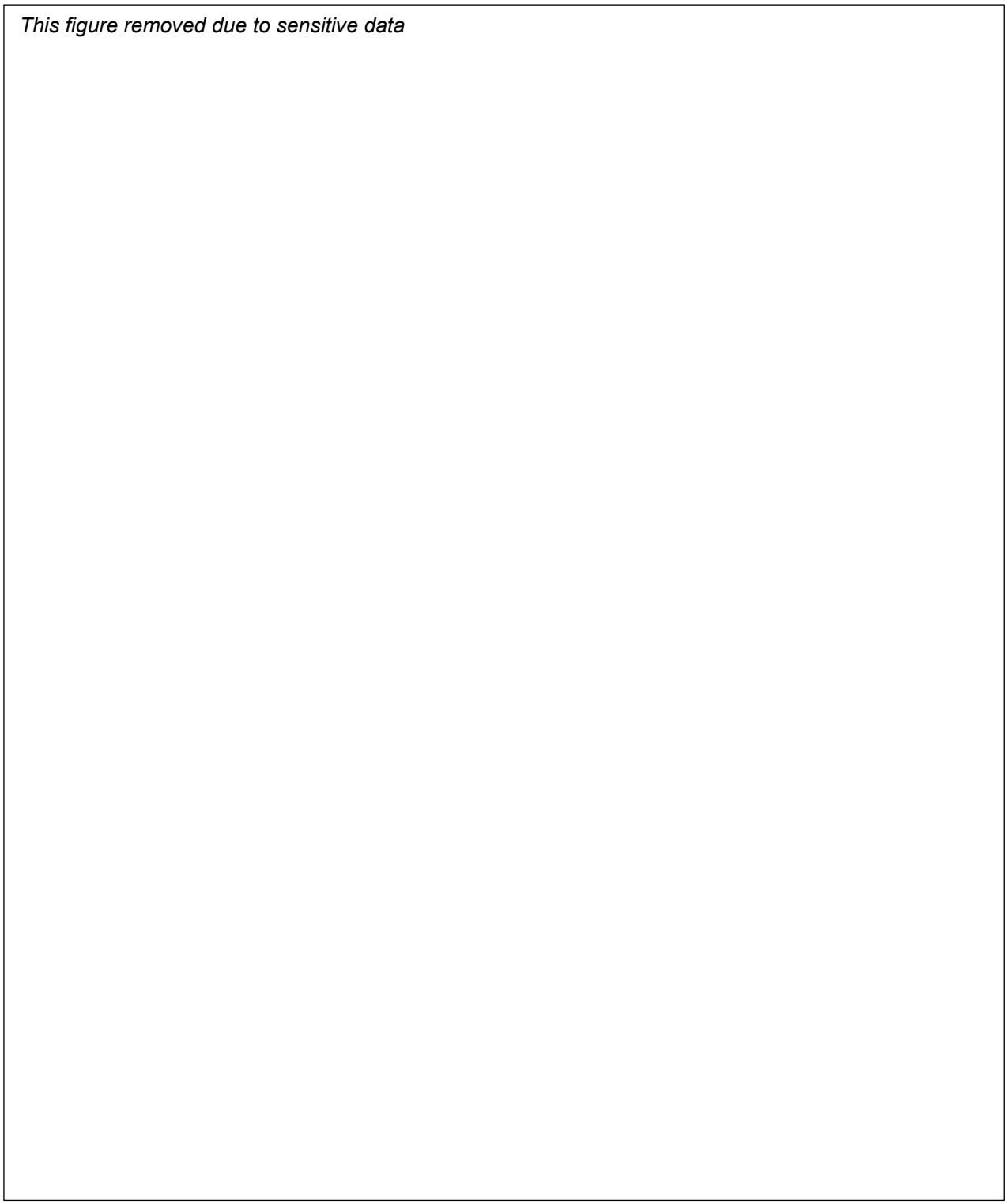


Figure 5.54 Artefact numbers in Zone 1. (Source: NSW LPI with GML additions, 2019)

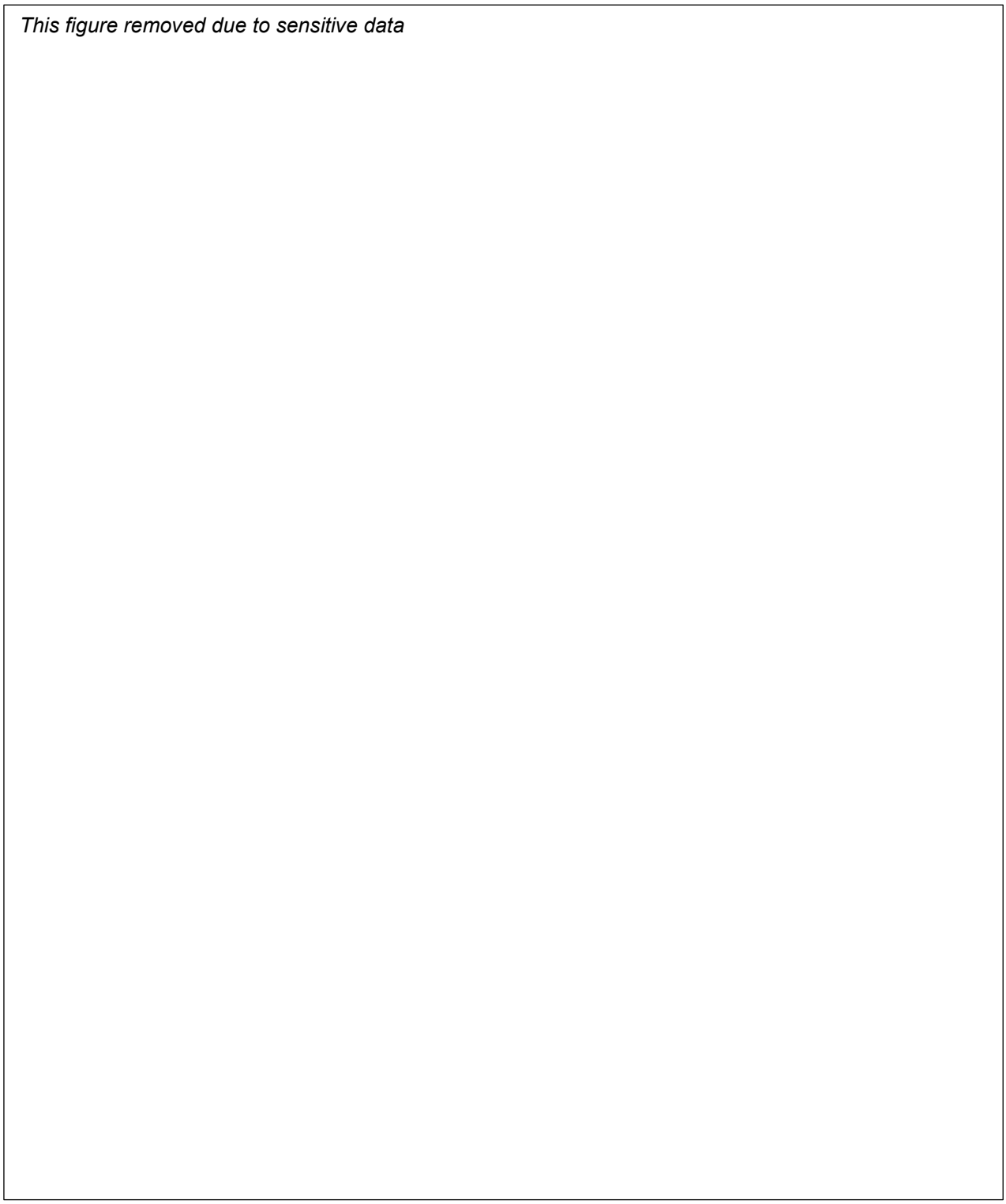


Figure 5.55 Artefact numbers in Zone 2. (Source: NSW LPI with GML additions, 2021)

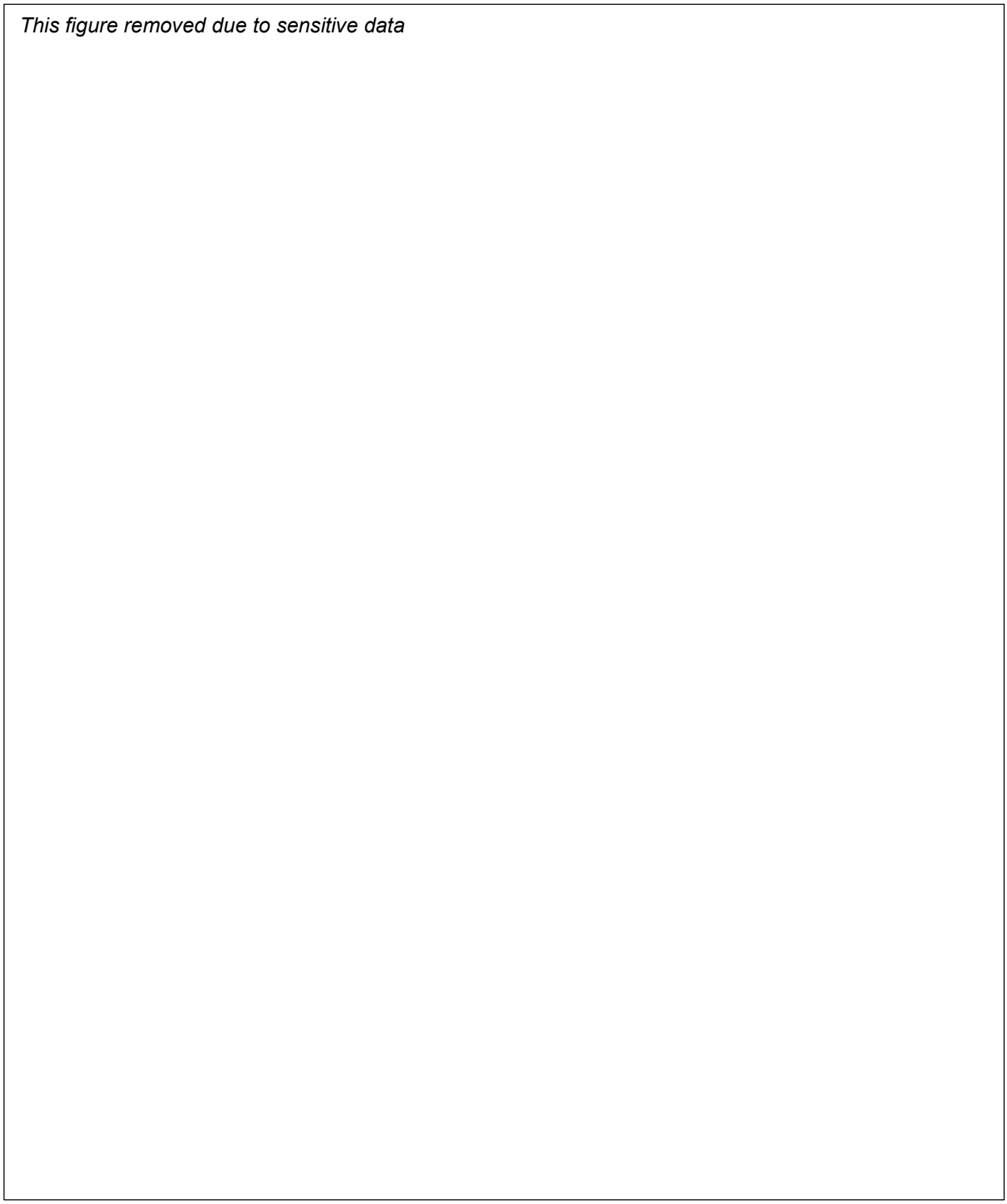


Figure 5.56 Artefact numbers in Zone 4. (Source: NSW LPI with GML additions, 2021)

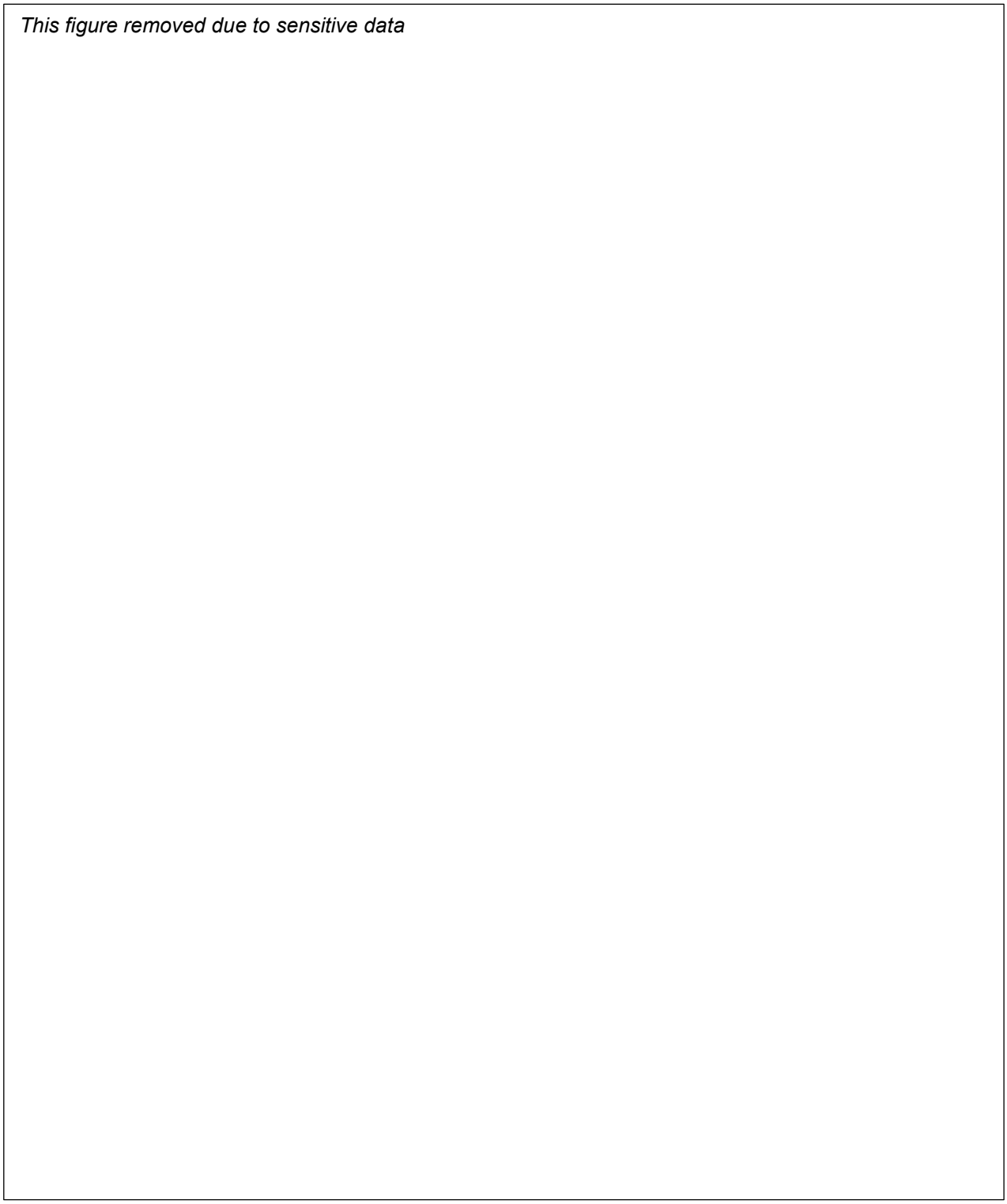


Figure 5.57 Artefact numbers Zone 11. (Source: NSW LPI with GML additions, 2021)

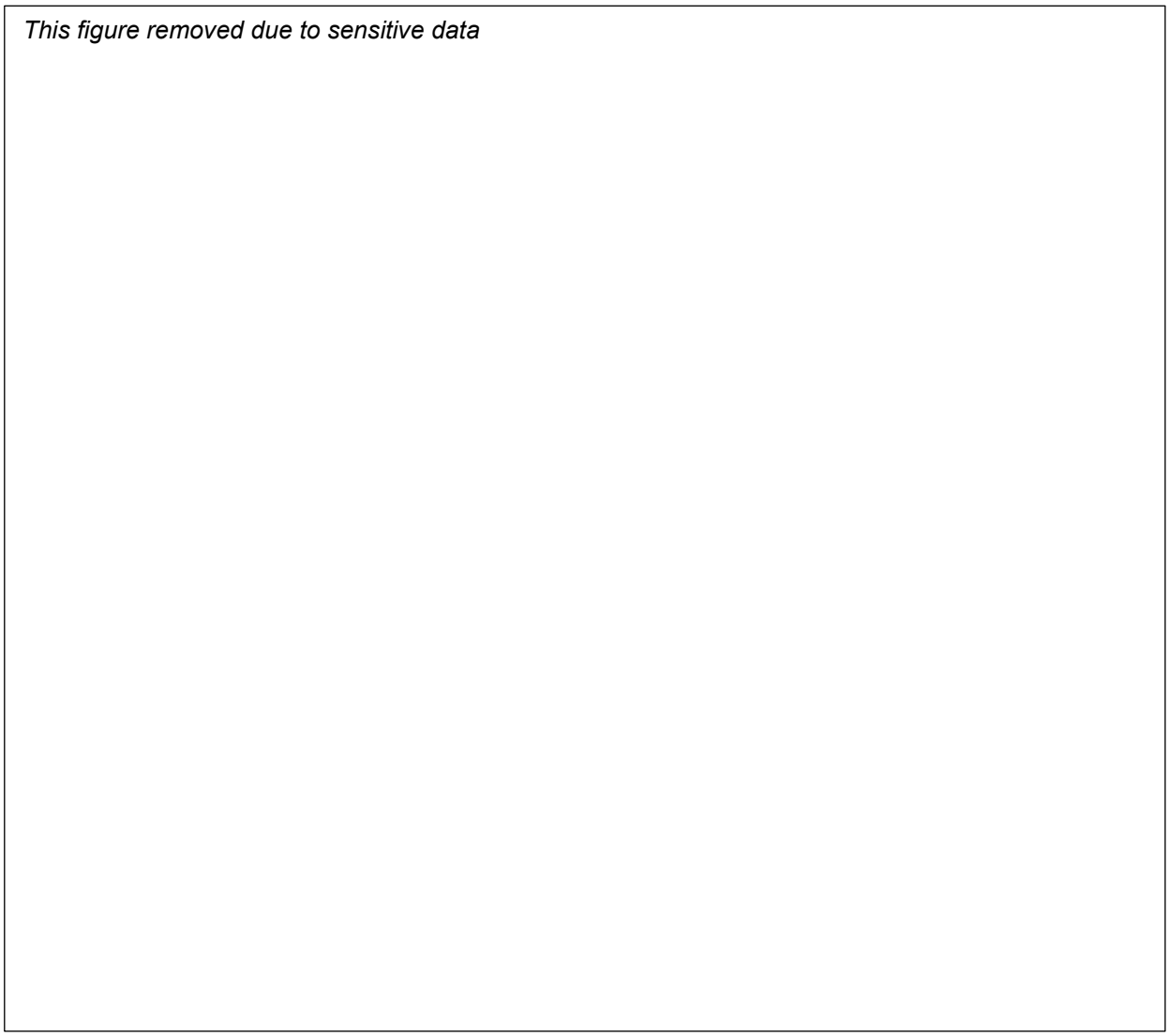


Figure 5.58 Artefact numbers in Zone 11 East. (Source: NSW LPI with GML additions, 2021)

Raw Material

Most artefacts were made of quartz (63.9%), followed by IMSTC (18.8%) (Table 5.38). A small number of artefacts of other raw material types were also present including quartzite (3.0%), silcrete (3.8%) and sandstone (0.8%). There is little variation in the raw material type found between Zones 1, 2, 4, 11, and 11 East. Quartz is a consistently dominant raw material followed by IMSTC.

While there has been limited subsurface testing in the local region, these raw material types are typical of previously recorded local surface and limited subsurface assemblages. Quartz has been noted as the dominant raw material type found in archaeological investigations across the region.[19] For instance, results of salvage undertaken within the Ulandra Nature Reserve as part of transmission line upgrade works recovered 1,495 artefacts, 954 (64%) of which were quartz. Salvage of AHIMS site 50-5-0009 along the southern bank of Bucks Creek, about 21km southwest of Illabo, recovered a total of 310 stone artefacts, of which 90% were quartz.[20] Based on results of excavations of two sites (JK1 and JK2) near Murrumburrah, and a review of the local archaeological record, Silcox found that quartz artefacts are the dominant raw material in the local area, while silcrete appears to become more prevalent further east between Goulburn and Yass. Silcox has speculated that this may be the result of variations in raw material availability or different stone tool technologies.[21]

Table 5.38 Mean Density of Artefacts and All Cultural Lithics for Zones 1, 2, 4, 11, and 11 East.

Raw Material	Frequency	Percentage of Total Assemblage
FGS	6	4.5
IMSTC	25	18.8
Quartz	85	63.9
Quartzite	4	3.0
Quartzitic sandstone	1	0.8
Silcrete	5	3.8
Unidentified	7	5.3
Grand Total	**133**	100

Cortex

Cortex describes the 'weathered' outer skin of a raw cobble or stone material. Analysis of cortex aims to understand whether the artefacts are elements of primary reduction (that is, earlier in the reduction sequence), or towards the end of the use life of a core. A significant portion of the assemblage represents a heavily reduced part of the stone manufacture process; in particular a bipolar anvil type reduction is identifiable in Zones 1 and 11. There is no identifiable trend for cortex retention between stone artefact materials which might identify a preference for one material or the other. As quartz is the predominant material, and a vast amount can be identified as bipolar reduction—a strategy used typically for quartz and also latter stage production sequences—this seems consistent.

Artefact Types

A small number of cores were found for the assemblage (n=5). The high flake and flake fragment ratio to core value is highest for quartz, reflective of a bipolar reduction process, which creates significant shatter and flaked pieces and other shattered byproducts. In comparison, for both the fine grained siliceous (FGS) and IMSTC material the flake fragmentation and core to flake ratios are significantly lower (ie the material is more conservatively reduced to prevent wastage). This could indicate that quartz was easier to source than either of the other raw materials. Quartz is commonly known to occur in water bodies throughout NSW, yet is unknown to occur in the immediate surrounding creeks.

Table 5.39 Raw Materials and Artefact Types in Zones 1, 2, 4, 11 and 11 East.

Category	FGS	IMSTC	Quartz	Quartzite	Quartzitic sandstone	Silcrete	Unidentified	Total
Bipolar core			3					**3**
Bipolar core fragment			2					**2**
Bipolar flake		1	11					**12**
Potential 'Chopper'				1			1	**2**
Distal flake		1	2			1		**4**
Flake	2	13	20	1		2	2	**40**
Flaked piece	2	5	38				3	**48**

Category	FGS	IMSTC	Quartz	Quartzite	Quartzitic sandstone	Silcrete	Unidentified	Total
Geometric backed artefact		1						**1**
Grinding bowl							1	**1**
Longitudinal split	1		1		1			**3**
Medial flake		1	4			2		**7**
Modified cobble				1				**1**
Pebble				1				**1**
Proximal flake		2	1					**3**
Proximal longitudinally split flake left			1					**1**
Unifacial core	1							**1**
Core		1	2					**3**
Total	**6**	**25**	**85**	**4**	**1**	**5**	**7**	**133**

Size

Stone artefacts ranged in size from a maximum dimension of 6mm to 182mm (see Table 5.40). The majority of artefacts were less than 35mm in maximum size (n=118 or 88.7%). Quartz artefacts, making up the majority of the assemblage (63.9%), mostly had a maximum dimension of less than 35mm, consistent with the bipolar technology identified in the assemblage. Only one quartz artefact was larger than this, a quartz flake with a maximum dimension of 43mm.

The larger items recorded (above 35mm) include two silcrete medial flake fragments with a maximum dimension of 35.5mm to 40mm, two IMSTC flaked pieces, two flakes (one quartz and one of silcrete) with a maximum dimension of between 40.5mm and 45mm, one IMSTC flake with a maximum dimension of between 50.5mm and 55mm, and three modified cobbles (all of quartzite between 105.5mm and 115mm in size). A grinding bowl was also recovered from the study area with a maximum dimension of 182mm. Very little can be inferred about the technology beyond the bipolar reduction present within the assemblage.

Table 5.40 Size of Artefacts and Other Lithics in Zones 1, 2, 4 and 11.

Group	Size (mm)	FGS	Silcrete	IMSTC	Quartz	Quartzite and Quartzitic Sandstone	Unidentified	Total
Artefacts	5.5–10	1	1	2	11			**15**
	10.5-15	1		2	29		1	**33**
	15.5-20	1		4	22			**27**
	20.5-25		2	4	7			**13**
	25.5-30	1		6	10	2	1	**20**
	30.5-35			4	5		1	**10**
	35.5-40		2					**2**
	35-40.5	1						**1**
	40.5-45			1	1		2	**4**
	45.5-50	1		1				**2**
	50.5-55			1				**1**
	90.5-95					1		**1**
	105.5-110					1		**1**
	110.5-115						1	**1**
	115.5-120					1		**1**
	180.5-185						1	**1**
	Total	**6**	**5**	**25**	**85**	**5**	**7**	**133**

5.4.3 Summary

A total of 133 stone artefacts were recovered during testing of Zones 1, 2, 4, 7, 8, 11, and 11 East.

There does not appear to be great variation between the stone artefact assemblage between Zones 1, 2 and 4 or by different stratigraphic depth. Of note, Zone 1 contained the deepest soil profile across the zones. Artefacts were generally concentrated in the upper stratigraphic levels, with fewer artefacts occurring at deeper stratigraphic levels across all three zones. However, the deeper level artefacts represented a consistent assemblage of raw materials and artefact types when compared with those found in upper levels.

The change in artefact density through the depth of the soil profile cannot suggest any major shift in occupation intensity—rather a slight increase in a less intense or more intermittent use of the landscape in the more distant past.

Most artefacts were made of quartz (63.9%), followed by IMSTC (18.8%). A small number of artefacts of other raw material types were also present including quartzite (3.0%), silcrete (3.8%) and sandstone (<1%). This is in line with current regional research which shows quartz as the dominant raw material used in the local region. Based on results of excavations of two sites (JK1 and JK2) near Murrumburrah, and a review of the local archaeological record, Silcox found that quartz artefacts are the dominant raw material in the local area, while silcrete appears to become more prevalent further east between Goulburn and Yass. Silcox has speculated that this may be the result of variations in raw material availability or different stone tool technologies.[22] No stone raw material sources have been found within or near the study area to date.

The overall small size and lack of cortex of the majority of the assemblage suggests a later stage in stone artefact reduction. This means that earlier stages of stone tool manufacturing and the procurement of raw materials was likely occurring elsewhere, and some reduction of smaller cores and retouch would have been undertaken within these areas.

Analysis of the stone artefact assemblage has supported the archaeological findings that the overall testing results conform to the predictive model which states that Aboriginal occupation sites will mainly be located in association with water sources and in low-gradient, well-drained landforms. The stone artefact assemblage recovered from the testing program conforms to the regional archaeological record which has demonstrated the use of quartz as the dominant raw material to manufacture stone tools. The density of artefacts recovered further suggests that these areas were used in an intermittent but repeated way, and that mainly later stage stone artefact reduction activities were occurring here.

5.4.4 Soil Conditions (Integrity and Condition)

As noted in Section 4.3.1 the study area crosses 12 soil landscapes, which can be categorised into three soil groups: Erosional, Transferral and Alluvial.

Zone 1 mainly crosses the alluvial Ironbong Creek soil landscape and demonstrates a deep B horizon stratum with little or no humic A_1 horizon and clear evidence of c150mm of surface disturbance due to ploughing. Excavation in this zone revealed a deep B horizon profile towards the southwestern end of the zone, near Billabong Creek, grading towards a shallower profile in the east. TUs towards Billabong Creek in the southwest ranged in depth from approximately 700mm deep to 1000mm deep (TUs 4–8, 10–17), while the TUs towards the centre and east end (TUs 26–44) ranged in depth from 320–500mm. A slight average increase in B horizon soil depth occurs further to the east with TUs 45–60 generally ranging in depth around 450–600mm. This soil thickness is likely to be a remnant of earlier topography having been levelled by ploughing—the eastern end being higher ground leading towards a small rise just outside of the study area.

The Zone 1 soil horizon has a high level of integrity below the plough zone, with the loss of A_1 likely the effect of erosion and redistribution from ploughing. The implications for archaeology are that the stable soil landscape here has contributed to the formation and preservation of archaeological sites at depth, with disturbance likely to occur in relation to those more recently formed within the upper 150–200mm of the soil profile.

At the northeastern end of this zone, the study area crossed into the transitional Eurongilly soil landscape.

Similarly, Zone 2 also crosses the alluvial Ironbong Creek soil landscape, with Ulandra Creek bisecting the testing area. The average TU depth in this area was around 500mm, thereby indicating a moderately deep alluvial soil profile but without the depth of the Zone 1 area. The overall soil profile retained a high level of integrity with an average of 50mmm of intact A_1 having formed on developed silty-sand B horizon. Plough zone disturbance occurred within the upper 150–200mm of the profile. Similarly to Zone 1, the Zone 2 soil landscape is likely to have contributed to the stable formation of archaeological sites with disturbance limited to the upper 150–200mm.

Zone 4 was entirely with the erosional Bethungra soil landscape. This zone had also been subject to substantial erosion of the upper soil profile, the redistribution of artefacts through surface sheet erosion and the infilling of drainage channels from sediment deposited from upslope erosion. Furthermore, the topsoil levels of the soil profile have been artificially created due to imported topsoil and imported sandy

fill with a phosphate fertiliser mix. The soil profile in this zone had very low integrity, which has significant implications for the integrity of the archaeological resource in this area.

Zone 7 test excavation also occurred mainly within the erosional Twins Range soil landscape, although it was on the edge of the Transferral Frampton and landscape and shared a number of those traits including the relatively well-developed A_1 horizon which ranged from 50–150mm in thickness. B horizons were well developed with good integrity. The test excavation zone was on the margin of the lowest point in the area and had been subject to low levels for erosional activity but had some plough zone disturbance. This is a relatively stable soil landscape which is likely to have contributed to the preservation of any archaeological resources that may have accumulated there.

Test excavation in Zone 8 also straddled the erosional Twins Range and Transferral Frampton soil landscapes. Overall the soil profiles were shallow, reaching around 230mm on average, with thin A_1 horizons. There was limited evidence of soil profile disturbance, which accords with the grazing, rather than cropping, land use in this area. Archaeological resources in this area could have been subject to erosional disturbances but the landforms may have been subject to reduced depositional processes leading to reduced likelihood of archaeological site formation.

Zone 11 comprises test excavations on the creek bank and lower southern slopes of a small knoll, and excavations on the mid to upper slopes of that knoll. The lower slope excavations are within the Oakville/Comerford soil landscape. Oakville is Transferral and appeared to have little defined humic A_1 but an intact B horizon of moderate depth ranging from 500mm to 900mm. The Comerford erosional landscape was more prevalent on the mid to upper slopes covering TUs 202–217. This area also showed little A_1 horizon development with only moderate B horizon depth. Soils in this zone were largely intact with little disturbance, although the track along the base of the knoll presented some induced erosion and compaction at the break of the slope.

The Zone 1 East test excavations were entirely within the lower slopes and flats of the Oakville transferral soil landscape. As per the testing in zone 11 to the west, the soils profile in Zone 11 had a relatively poorly defined humic A_1 but an intact B horizon of moderate depth up to 400-500mm. This profile wea generally intact except for some creek channel migration in the southern part of the excavation area, and a broad zone of disturbance though the centre where a former rail line had been located.

5.5 Interpretation, Analysis and Discussion

5.5.1 Zone 1

Test excavation in Zone 1 demonstrated the presence of a deep alluvial soil deposit on the banks of Billabong Creek. Artefacts were retrieved from in situ contexts at a range of depths revealing the presence of an archaeological site located on the northeastern bank of Billabong Creek.

A total of 64 artefacts were retrieved from the archaeological investigations across this zone. The majority of artefacts were found in the top three spits (n=52); however, artefacts were found at a depth of 700mm. This indicates the presence of a site that has been utilised over a prolonged period of time. The majority of test units could only be excavated safely to 900mm and did not reach basal clay at this depth.

The proximity of the rail line to this zone has disturbed the archaeological remains; however it is believed that there was a slight rise in the middle of the zone which would have provided a well-drained area for occupation, above the creek's flood zone. This theoretical rise is suggested by the rise in the level of the basal clay in the centre and eastern end of the zone, and the corresponding reduction in the thickness

of the B horizon. It is possible that the site gradually sloped from a modest rise around down towards the top of the creek bank and has been impacted by the existing rail line, and the levelling of the land for ploughing.

Further evidence of the Aboriginal use of this area includes the presence of the ring tree immediately to the west of Zone 1—identified during the test excavation phase, although outside the study area boundary Through consultation with the representatives on site, it was established that this ring tree was a significant marker for Aboriginal people and important to the wider cultural landscape.

5.5.2 Zone 2

Test excavation in Zone 2 revealed the presence of an archaeological site located on either side of Ulandra Creek. The concentration of the site was on the southern side of the creek where the land is marginally more raised than on the northern side. It is likely that the southern side may have been drier ground overall and less affected by flooding events.

A total of 35 artefacts were retrieved from the archaeological investigations across this zone. Twenty of these were surface finds, while 15 were recovered from the test excavations. All but two of the artefacts were in the top three spits excavated (0–300mm below the surface), thereby indicating the presence of a relatively shallow site that had been subject to disturbance from ploughing. The general distribution of artefacts indicates that ploughing had had some impact on the integrity of the archaeological site, although the general presence of artefacts in low numbers across many of the TUs indicates that evidence for the site is quite widespread.

The two artefacts located at the spit 5 depth (400–500mm below the surface) suggests that there may also have been Aboriginal occupation activity in the immediate area around Ulandra Creek at an earlier time. These artefacts may have some notable antiquity as they are located at the lowest stratum of the B horizon, close to the boundary with the basal clay.

Unanticipated limitations on the time available to test this zone led to not all of the TUs being excavated. However, there is sufficient evidence from those TUs excavated that there is an Aboriginal occupation site located on either side of Ulandra Creek in this zone and the surface finds scatter suggest that a buffer of 50m either side of the creek would cover its extent.

Palaeolithic channels run along the creek through the zone. This highlights the potential age of the creek and therefore the area's potential use over an extensive period of time by Aboriginal people.

Further evidence of the Aboriginal use of this area includes the presence of ARTC6, the scarred tree further to the west of the zone, along with a number of other Aboriginal artefacts noted on the ground surface further to the west outside of the study area. One of the RAPs also noted the presence of other cultural sites in the area, as discussed in Section 3.0.

5.5.3 Zone 4

Zone 4 was the only zone in which a site had been identified during the archaeological survey phase of the project. On that basis the TUs were set out in close proximity to the surface scatter of artefacts that defined this site, ARTC8 (50-5-0284).

Excavation in this zone revealed that in fact this area had been subject to substantial disturbance through a range of mechanisms including the construction of the dam and drainage levy banks, the introduction of topsoils and fills, along with broad areas of surface erosion.

The dam to the east of this zone was configured to catch surface water from two small drainage lines on the lower slopes to the east. The extension of these drainage lines (prior to the dam formation) continued to the west along what became the northern edge of the testing zone. An earlier creek line was revealed through the excavation of TU112 and TU113.

Discussion with the landowner revealed that this area had a steeply banked ephemeral creek which had been levelled and filled in conjunction with the construction of the dam and drainage levy banks. TUs 110–115 were all affected by this action and consequently were abandoned.

This information revealed that the TUs in the centre of and south of this testing zone are likely to have been positioned on what was an earlier creek bank and therefore would have been the most likely locations for identifying archaeological material. However, excavation still revealed a high overall level of surface disturbance for land surface improvement for cropping, including the introduction of new topsoils and also layers of introduced phosphates for fertiliser.

An erosion channel was also evident across the landscape at the southern end of the testing zone, in alignment with TUs 92, 96 and 100. On that basis, TU96 was moved to the north of TU99 so that it was out of the channel and the cropping/plough area. It was repositioned to under the tree, to test if the disturbance was mostly associated with farming or if it was the erosional landscape. It was also located near where the surface artefacts of ARTC8 had been found. Excavation revealed no topsoil and a largely depleted soil profile due to long-term erosion. No artefacts or archaeological deposits were found.

A single artefact was found during excavation, in TU99 at 400–500mm below the surface—well below the depth of any recent disturbance but essentially an isolated artefact on an older landform adjacent to the former creekline. One artefact was also found on the surface at TU101 but all remaining artefacts found in association with this zone were part of the surface collection of ARTC8 which largely stretched to the west of the study area.

Overall, test excavation in this zone revealed that the landforms had been subject to extensive erosion which is likely to have been the key mechanism for the distribution of the artefacts of ARTC8 across the low-lying landscape to the west of the zone. Other mechanical disturbance for farmland improvement may have also affected the landform integrity although it is likely that the erosional processes affected the archaeological site integrity prior to any agricultural disturbances. No intact archaeological resource was revealed in this zone.

Not all of the previously identified artefacts associated with ARTC8 could be relocated during the test excavation.

5.5.4 Zone 7

Zone 7 was divided into two areas (North and South) to account for the testing in close proximity to the isolated artefacts that had previously been identified during the archaeological survey.

Excavation in Zone 7 South was aimed to test the area between the locations of ARTC15 (50-5-0271) and ARTC16 (50-5-0272). Twenty test pits were excavated along the gently sloping paddock between those two sites, and along the margin of the wetland. Excavation across the 20 TUs in this zone demonstrated that the general landform was defined by a well-developed soil profile with a consistent level of plough zone disturbance in the upper 150–200mm. The proximity of this testing zone to the wetland resulted in the soils being fairly damp. No artefacts were found in this area and therefore the two surface finds previously identified (ARTC15 and ARTC16) were deemed to be isolated artefacts. There was no archaeological evidence to suggest that this zone had been subject to any substantial

occupation by Aboriginal people in the past. Since the archaeological survey, Zone 7 South had been ploughed for crops and the isolated finds ARTC15 and ARTC16 could not be relocated.

Excavation in Zone 7 North aimed to test the area around the location of isolated artefact ARTC12 (50-5-0268). Six TUs (136–141) were excavated along the access track either side of the ARTC12 location. The landform was largely eroded and had been compacted through track use with surrounding surface disturbance from ploughing. No artefacts were found, and no evidence was found of Aboriginal use of the area except the isolated artefacts which suggest an ephemeral and irregular use of this part of the landscape. Due to ploughing and maintenance on the fence, ARTC12 could not be relocated during the test excavation.

5.5.5 Zone 8

This zone was also divided into two areas based on property boundaries and also minor changes in landform. The southern part of this zone was located on the lower, gentle southern slopes of the minor ridgeline on which this zone was situated. A total of 19 TUs were excavated in the southern part. Another 16 TUs were excavated on the northern side of the property boundary on the marginally steeper slopes of the ridgeline.

All of the TUs in this zone demonstrated a relatively shallow soil profile with thin or no A_1 soils remaining from a fairly eroded slope surface. No artefacts were found, and the area was generally considered to have insufficient soil formation to retain any substantial archaeological sites.

These testing results conformed to the premise of the predictive modelling which held that this area would not contain any sites based on its lack of a reliable water source.

5.5.6 Zone 11

Excavation in this zone included 16 TUs on the southern slope and ridge of the small knoll, with 12 TUs at the toe of the slope leading onto the river flat.

All 16 TUs on the knoll demonstrated a shallow soil profile with a thin A_1 horizon demonstrating a generally erosional environment. Little or no deposit build-up had occurred in this area and as a result no archaeological deposits had formed. No artefacts were found, and this area was considered to have no further archaeological potential.

The 12 lower-slope TUs excavated demonstrated a more developed soil profile with defined A_1 and A_2 horizons. Soils had accumulated in this area due to deposition from the upslope erosion noted in the TUs further up towards the ridge.

However, despite the soil development in this area and the relatively close proximity to Dudauman Creek (120–130m from the creek line), no artefacts were found, and no signs of archaeological deposits or features were revealed.

Further testing was undertaken in areas located in closer proximity to the creek. Nine artefacts were identified during the excavation. Three of these form part of the one artefact, broken during excavation. The test excavation along the creek was extended to the rail line, a distance between 100 and 150m. In comparison, that area to the east that was surveyed included an area 200m to 250m between the creek and the rail line. Surface finds were identified during the survey and relocated during the test excavation; this may suggest that the archaeological record in this zone has been impacted by natural creek erosion to the north and construction of the rail line to the south. The remaining archaeological record, as

identified during the test excavation, is representative of a background scatter between the creek and the rail line.

5.5.7 Zone 11 East

Excavation in Zone 11 East comprised 29 TUs either side of Dudauman Creek, on the flats adjacent to the creek bank—20 TUs on north side and 9 TUs on the south side.

The soil profile across all of the TUs was largely consistent with only minor variations in horizon thicknesses, and an increase in ironstone gravel inclusions in the lower B horizon in TUs closest to the creek on the northern side.

On the northern side of the creek, the A_1 and A_2 tended to blend together with little humous in the A1, and a tendency to increased clay fraction with depth. Scattered ironstone gravels were through this area. The soils were largely similar on the southern side of the creek, although there was a greater presence of ironstone gravels throughout the deposits, possibly indicating a tendency towards more flood event deposition on the that site.

One of the TUs was located in an area on the south side that had been subject to substantial disturbance and ground surface reshaping as part of the construction and later removal of an earlier section of rail line. TUs 236 was located on level ground within 5m of the edge of the older rail alignment. Excavation in this TU revealed that disturbance corridor for the former rail line was greater then 5m from the rail embankment and to a depth of greater than 500mm in depth.

The distribution of artefacts, with only one artefact found in on the southern side, suggests that the landforms on the southern side of the creek were either used less by Aboriginal people in the past, or had been subject to more erosion and deposition events than the landforms on the north. The remaining 12 artefacts were found on the northern side within an area of 70m x 100m, with only 5 artefacts clustered close to each other.

Overall the scatter of artefacts in Zone 11 East are indicative of a low density background scatter suggestive of a low intensity use of this part of this area by Aboriginal people, rather than a dedicated occupation zone.

5.5.8 Addressing Research Questions

A series of research questions were posed to guide the investigation of the Aboriginal archaeological resources within the study area. The test excavation results allow us to answer key aspects of these questions, as outlined below.

1. What are the characteristics of soil horizons across the study area?

    a. How has the land use history impacted the study area and survival of soils and thus archaeological material?

    b. At each location, is the deposit consistent? Or does it possess characteristics that tell of different depositional or formation events?

This research question aimed to understand the soil landscapes across the proposal. As discussed in Section 2.0, the study area passes through 12 soil landscapes, which are characterised as Erosional, Transferral or Alluvial. The identified soil landscape was encountered at each zone. All zones showed varying degrees of disturbance from modern land use, particularly through ploughing. Disturbance from

livestock grazing and movement was also observed across the zones. Zone 4 was the most impacted by modern land use with major land modification and dam construction.

The deposits varied across zones but were found to be consistent within each zone. Zone 1 is a flat terrace adjacent to Billabong Creek; the Alluvial soil landscape was tested during this program and encountered a deep artefact containing B horizon, which remained intact below the modern disturbance. Zone 2, also within an Alluvial soil landscape, contained a comparatively shallow artefact bearing B horizon, which was therefore disturbed, but not completely removed by modern land use. As mentioned, Zone 4 has undergone significant land modification and combined with the erosional soil landscape, the archaeological deposit was found to be highly disturbed.

2. Are there archaeological deposits present?

    a. Are the deposits stratified?

    b. Is there archaeological evidence which can be dated (both through scientific methods, carbon dating, OSL and/or relative dating)?

    c. Do the deposits have different degrees of archaeological potential with depth?

    d. What evidence—if any—other than stone artefacts is present for Aboriginal occupation and/or use of the study area?

    e. How do the archaeological deposits relate to the predictive modelling?

    f. Is there variation in the nature of the archaeological deposits across different areas of the study corridor?

Archaeological deposits have been identified in Zones 1, 2, 4, 11 and 11 East. Other zones have had surface artefact finds (ie Zone 7) but without the subsurface deposits. Archaeological deposits have been mainly confined to zones in close proximity to water courses, including Billabong Creek, Ulandra Creek and an unnamed / filled-in tributary of Run Boundary Creek in Zone 4. Further investigation is required into the nature and extent of deposits in the area of Billabong Creek and the possible presence of archaeological deposits in the area of Dudauman Creek at the northern end of the study area.

However, none of the deposits investigated showed any stratification. Generally, the soils with archaeological material were A and B horizon alluvial deposits with artefacts occurring at a range of depths to approximately 500mm below the surface, although parts of Zone 1 suggest that the archaeological materials may be found up to 700mm below the surface. This variation in depth of artefacts, in conjunction with the intact but unstratified nature of the deposits, suggests that the accumulation of artefacts at different levels occurred over lengthy periods of time without clear evidence of an intense period of occupation.

Variation within the soil profile was largely due to ploughing of the surface which generally disturbed the upper 200mm of deposit, or the introduction of new soils and fertiliser fills. This recent disturbance to the surface of the study area doesn't necessarily change the archaeological potential of those zones but it does affect the integrity of the archaeological soils in those areas. Excavation so far has indicated that the ploughed zones do retain artefactual and archaeological evidence of the prior use of the landscape by Aboriginal people; however, those artefacts have been moved up and down the plough zone to the extent that their archaeological context is compromised. To that end, their archaeological value lies in their demonstration of artefact and raw material types, while their cultural values lies in their general indication of the prior use of the landscape by Aboriginal people.

No datable samples of carbon were found during the excavation and the poorly defined nature of the occupation strata meant that there were few options for meaningful sampling for other forms of dating.

Apart from the artefacts found during the archaeological survey and excavation, the other key evidence of Aboriginal use of this landscape is the presence of scarred trees in both Zones 2 and 3. Each zone has one clear example of a scarred tree, indicating that Aboriginal people using the area procured resources for a range of activities. The scars are fairly small and may well relate to making coolamons for collecting and carrying water.

In regard to the predictive modelling, the archaeological evidence is directly correlated to the presence of well-drained landforms in close proximity to reliable water sources. This correlation reflects the predictive modelling but also refines it in that the predictive modelling allowed for the occurrence of archaeological materials in either of those circumstances (mutually exclusive) whereas the investigative evidence shows that those circumstances are mutually inclusive / co-dependent / correlated.

The archaeological deposits do not appear to differ across the study area.

3. What is the general nature of stone artefacts recovered from the study area? How can the stone artefact assemblage be characterised?

    a. What raw materials are represented in the stone artefact assemblage?

    b. Can any information be ascertained from the stone artefact assemblage regarding the intensity of stone artefact reduction and discard?

    c. Can a difference between stone artefact deposits be identified by different strata in the assemblage over time? If so, what is the nature of that difference?

    d. Can a difference between stone artefact deposits be identified across different areas of the study corridor?

Quartz is the dominant raw material represented in the stone artefact assemblage, followed by IMSTC, with smaller amounts of fine-grained siliceous materials (such as chert and chalcedonic chert), quartzite, silcrete and unidentified rock types.

The overall small size and lack of cortex of the majority of the assemblage suggests a later stage in stone artefact reduction—the quartz in particular is consistent with the use of bipolar reduction strategies. The assemblage generally exhibits a low percentage of cortex and flake breakage, and a low rate of core and flake retouch.

There does not appear to be a difference in the stone artefact assemblage by different strata. Fewer artefacts occurred at deeper stratigraphic levels; however, these artefacts were consistent in type and material with those found in the upper levels. There may have been more intensive occupation of this area in more recent times compared to the lower deposits, which may represent older use of former landforms in the area.

Stone artefacts were recovered from Zones 1, 2, 4, 11 and 11 East within the study corridor. Based on the low frequency of artefacts across the area and the minimal differences in raw material (for example, Zone 2 is the only zone which contains silcrete), the assemblage does not demonstrate a scientifically significant difference in the distribution, type, raw material or size of artefacts between these four zones.

4. How can the deposit be interpreted?

a. Is there any evidence for variation in landscape use and selection strategies?

b. Can deposits or features be dated? What is the antiquity of the evidence?

c. Does the archaeological deposit vary spatially within one location/site? How?

d. What does the archaeological deposit tell us about Aboriginal use of this landscape?

Based on the fieldwork to date, there does not appear to be any variations in landscape use of selection strategies. There appears to be evidence of ephemeral use over long periods of time, rather than evidence of intensive occupation. No features have been identified that could be dated at this stage of works. No spatial variation has been observed either between or within zones. Based on the stone artefact assemblage recovered from Zones 1, 2, 4, 11 and 11 East, there appears to be a long, continuous use of the landscape, at a low level of intensity.

5. Can the archaeology be interpreted in a regional context?

    a. What is the source of the artefactual stone? How does this correlate with current regional research and knowledge of stone resources?

        i. Is raw stone material for artefact manufacture readily present within or near the study corridor?

        ii. Has stone been brought into the study corridor? From how far away has the stone been brought?

        iii. What is the main discard and reduction strategy pattern that can be observed for different raw materials across the study corridor?

    b. Do the archaeological deposits within this study corridor conform to the distance from water regional predictive model and theories or not?

The main raw material source present in the assemblage is quartz. This is in line with current regional research which shows quartz as the dominant raw material used in the local region. This has been compared to a shift to a use of silcrete east of Yass and Goulburn. There are no known quartz sources within the study area; it is not known as yet where the closest quartz source is. No known raw stone material sources have been identified within or near the study corridor. The assemblage represents a later stage of reduction, as there are low numbers of artefacts with a remaining cortex, rather artefacts contain more dorsal scarring and a higher incidence of non-feather terminations. There does not appear to be a difference in the discard and reduction strategy between different raw materials.

Zones 1, 2 and 4 are all within close proximity to water sources and conform with the predictive model. Zone 8 also supports the predictive model as it is not near any water sources and does not contain archaeological deposits. Zone 7 contained isolated artefacts, which suggests the wetland landscape was utilised by Aboriginal people, but there was no archaeological evidence to suggest that this zone had been subject to any substantial occupation by Aboriginal people in the past. There is not enough information at this stage to comment on Zone 11.

6. Is the archaeological deposit culturally significant?

    a. What is the heritage value of the deposit, both scientifically and culturally?

    b. How does the Aboriginal community view and value the deposit identified?

The Aboriginal representatives on site identified Zones 1 and 2 as being culturally significant. Both zones hold scientific value for further research. Zones 4, 7, 8, 11 and 11 East do not contain heritage value, although the scarred tree within Zone 11 East is in its own right of significance to the community.

7. Is there a deposit worthy of conservation or of future research?

    a. Where and what deposits should be conserved for future generations?

    b. Which deposits should be subject to more extensive investigations?

No zones were identified in this report or through consultation with the RAPs as requiring conservation for future generations.

Zone 1 was assessed as requiring further investigation and a potential salvage program. While the proposal alignment has been designed to avoid direct, permanent impacts to this zone, areas of sensitivity identified in Zone 1 are included within the construction impact zone, and therefore further investigation and mitigation.

Zone 2 requires further investigation and a potential salvage program before the area is impacted by the project.

5.6 Endnotes

1 GML Heritage, ARTC Inland Rail—Aboriginal Archaeological Research Design, report prepared for WSP, October 2018.

2 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal, Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

3 GML Heritage, ARTC Inland Rail, Aboriginal Archaeological Research Design for Test Excavations, report prepared for WSP and ARTC, February 2019.

4 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 25.

5 Holdaway, S and Stern, N 2004, *A Record in Stone: The Study of Australia's Flaked Stone Artefacts*, Museum Victoria and Aboriginal Studies Press, Melbourne.

6 GML Heritage, ARTC Inland Rail, Aboriginal Archaeological Research Design for Test Excavations, report prepared for WSP and ARTC, February 2019.

7 GML Heritage, The Former Belconnen Naval Transmission Station Baldwin Drive, Lawson ACT—Post-Excavation Report, Appendix E.

8 Dearling, C, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work, within Ulandra Nature Reserve and Adjacent Areas, near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, December 2007.

9 Charles Dearling, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work within Ulandra Nature Reserve and adjacent areas, near Bethungra, NSW, Permit No: 2686, December 2007, p 27.

10 RS Silcox, Test Excavations at Cunningham Creek, near Murrumburrah, NSW, report for the Public Works Department, NSW, 1987.

11 Charles Dearling, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work within Ulandra Nature Reserve and adjacent areas, near Bethungra, NSW, Permit No: 2686, December 2007, p 27.

12 Saunders, P, Block 2099 Jerrabomberra, ACT: Preliminary Cultural Resource Survey and Artefact Collection, report to the Land Division, Department of the Environment, Land and Planning, 1994.

13 Boot, Philip and Ken Heffernan, A Preliminary Archaeological Survey of Jumping Creek, Queanbeyan, NSW, report prepared for Kinhill Engineers Pty Ltd, n.d.

14 Johan Kamminga, Assessment of significance, and presentation of options for management of a volcanic-stone procurement place in Stage 2 of the Fyshwick Expansion Area, ACT, report to CMPS&F Pty Ltd, Consulting Engineers, 1996.

15 GML Heritage, The Former Belconnen Naval Transmission Station, Baldwin Drive, Lawson, ACT – Post Excavation Reporting, report prepared for Defence Housing Australia and WSP Australia Pty Ltd, 2019, pp 47–48.

16 Charles Dearling, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work within Ulandra Nature Reserve and adjacent areas, near Bethungra, NSW, Permit No: 2686, December 2007, p 27.

17 RS Silcox, Test Excavations at Cunningham Creek, near Murrumburrah, NSW, report for the Public Works Department, NSW, 1987.

[18] SIlcox, R and Koettig, M, Barton Highway Extension at Yass: Survey and Test Excavations on the Proposed Alternative Route, report to Kinhill Stearns Pty Ltd, 1988; GML Heritage, The Former Belconnen Naval Transmission Station, Baldwin Drive, Lawson, ACT—Post-Excavation Report, report prepared for Defence Housing Australia and WSP Australia Pty Ltd, 2019, pp 47–48.

[19] Charles Dearling, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work within Ulandra Nature Reserve and adjacent areas, near Bethungra, NSW, Permit No: 2686, December 2007; Kelly, A, Bowen-Young branch line of the natural gas pipeline: a detailed record of Zone A, site BY/4, unpublished report (DECC Report No. 478), 1980; Paton, Rc and Hughes, PJ, An archaeological investigation of the Ulandra Nature Reserve, NSW, report to the National Parks and Wildlife Service, Tumut, 1980; Kelton, J, An archaeological survey for the proposed Telecom optic fibre cable route: Bethrunga to Cootamundra, South West Slopes of NSW, report for Telecom Australia; Silcox, RS, Test Excavations at Cunningham Creek, near Murrumburrah, NSW, report for the Public Works Department, NSW, 1987.

[20] Kelly, A, Bowen-Young branch line of the natural gas pipeline: a detailed record of Zone A, site BY/4, unpublished report (DECC Report No. 478), 1980.

[21] Silcox, RS, Test Excavations at Cunningham Creek, near Murrumburrah, NSW, report for the Public Works Department, NSW, 1987, pp 21–22.

[22] Silcox, RS, Test Excavations at Cunningham Creek, near Murrumburrah, NSW, report for the Public Works Department, NSW, 1987, pp 21–22.

6.0 Synthesis and Implications

This synthesises the results of background research and test excavation and outlines the implications for the predictive modelling along the study area.

6.1 Synthesis

6.1.1 Review of Background Information

The AHIMS results indicate that the region surrounding the current study area contains multiple Aboriginal archaeological sites, the majority of which are stone artefacts and modified trees.

There is a strong correlation of these sites with existing watercourses, even though all of the watercourses currently crossing the study area are ephemeral. Overall, the watercourses are lower order streams, with the greater number of site occurrences correlating to the slightly higher order stream, Billabong Creek, towards the southern end of the study area.

AHIMS data suggests a stronger correlation with the watercourse at the southern end of the proposal where there is also some modest proximity to the higher landforms of the Bethungra Range, ranging from 1km to 5km from parts of the proposal site.

As discussed in Section 2.0, the current study area crosses 12 soil landscapes. They fall into three soil groups: Erosional, Transferral and Alluvial. Erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Alluvial soil landscapes vary between moderately deep and deep across all landforms.

Prior to European occupation, the study area would have been vegetated in open eucalypt woodlands which would have minimised erosion and artefact movement. Modified trees may be found in any soil landscape, in areas with mature vegetation. As a result of historical land clearing, modified trees may have been destroyed and stone artefacts in erosional landscapes may have been displaced from their original discard point. Artefact movement down slopes is common in these situations. Bioturbation is also common across all soil profiles. Soil landscapes with deep soil profiles are generally more stable and artefacts in these areas often undergo less displacement.

Generally, it was expected that artefact and site occurrences would tend to correlate more frequently with alluvial soils and less so with erosional soils. However, the AHIMS data shows that all previously recorded artefact scatters in close proximity to the study area were located on the alluvial Oakville soil landscape, along the margins of Billabong and Ironbong Creeks, with another cluster of sites on the lower slopes of the ranges on the erosional landforms in relatively close proximity to Ulandra and Wandalybingal Creeks (Figure 6.1).

These results may relate more to the patterning of study areas rather than the patterning of traditional Aboriginal land use, or the processes of archaeological site formation.

6.1.2 Analysis of the Archaeology

The survey process resulted in the recording of 22 separate sites over five separate locations. The sites were mainly artefact scatters or isolated artefacts with four occurrences of scarred trees. The artefact sites were located in survey Zones 1, 2, 4, 7 and 11 and each showed a correlation with watercourses,

albeit substantially modified in Zone 4. The scarred trees were identified within Zones 2, 3 and Zone 11 East..

The correlation with soil landscape type was only partly confirmed through the survey which noted artefact occurrences in conjunction with the alluvial Ironbong soil landscape along Billabong, Ulandra and Ironbong Creeks, but also two areas, Zones 4 and 8, where surface artefacts were found within erosional soil landscapes (Bethungra and Twins Range respectively). Artefacts found in Zone 11 and Zone 11 East along the margin of Dudauman Creek were within a Transferral—Oakville—soil landscape, although this type of soil landscape was only encountered in this zone and there was insufficient evidence to judge correlations. The more apparent correlation is with proximity to watercourses.

Test excavation results so far highlighted the tendency for Aboriginal archaeological evidence to be represented mostly along the Billabong / Ulandra Creek watercourses at the southern end of the study area.

Zone 1 shows evidence of a possible site located between the study area and Billabong Creek. Test excavation along the proposal alignment suggests that the alignment crosses the southern side of a larger site of unknown density and size but may be as extensive as 400m long with artefacts through a range of depths to 700mm below the surface. Three distinct clusters of higher artefact densities occur on the northern side of the proposal alignment within a consistent, lower density scatter of artefacts in 31 of the 64 TUs. This patterning suggests clustered activity areas along the banks of the creek, and the range of depths of artefacts below the surface suggests that the zone was used for occupation repeated over a long period of time.

The occurrence of this cultural material in close proximity to Billabong Creek—right along the creek bank of the highest order stream in the study area—is consistent with the predictive modelling for the area.

The Zone 2 test excavation area, located on a tributary (Ulandra Creek) to Billabong Creek, contains the next most demonstrable evidence of early Aboriginal occupation of the study area. The site identified here had been subject to surface disturbance but demonstrated that some zones of archaeology can, and do, remain intact along the close margins of the lower order watercourses in the area.

The artefact assemblage, including the presence of flakes and cores, indicates some level of effort expended at this site in middle to late stage tool making. Overall, however, the number of artefacts suggests that the use of the area was inconsistent but had been repeated at different, intermittent times—as suggested by the low-density occurrence of artefacts at different stratigraphic levels.

A comparison of the occupation along the banks of the creeks between Ulandra and Billabong will be an important analysis in further understanding the occupation patterns of the area and would be a key outcome from the completion of test excavation in Zone 1.

The excavation in Zone 4 revealed that the surface scatter of artefacts had been subject to substantial disturbance and does not provide a reliable indicator of the nature and extent of the archaeological record in this area. Excavation did reveal the possible remains of a buried watercourse which suggests that there may have been some correlation with that watercourse and Aboriginal occupation in the distant past. Given the distance of this site from the main watercourse of Ironbong Creek (750+m), the presence of artefacts here would seem likely to correlate with a more defined watercourse than is currently visible in the landscape. The erosional nature of the soil landscape in this area may also have played a substantial role in the redeposition of artefacts from further upslope to the east. The archaeological evidence here may well have related to an occupation zone further upslope to the east but now redeposited through erosion and mechanical disturbance.

Excavation in Zone 7 demonstrated the unlikely relationship between low-lying land on the margins of the wetland and archaeological evidence of substantial occupation. No artefacts were found in this area and therefore the two surface finds previously identified (ARTC15 and ARTC16) were deemed to be isolated artefacts. There was no archaeological evidence to suggest that this zone had been subject to any substantial occupation by Aboriginal people in the past. The artefacts in Zone 7 are in relatively close proximity to the water source here, although that watercourse has poorly defined banks and does not provide for a well-drained, elevated occupational zone.

As such, both Zones 4 and 7 confirm the absence of any definable archaeological site formation in areas at some distance from the defined watercourses and/or where the banks of those watercourses do not provide a well-drained position.

Excavation results from Zones 11 and 11 East run contrary to the predictive modelling. These zones were predicted to contain artefact sites on the lower slopes of the well-drained land close to Dudauman Creek. However, the archaeology shows a background scatter only, and an absence of any clear evidence of Aboriginal occupation of this zone in the past. Given that Dudauman Creek is a third order stream, and other third order streams in the study area have demonstrable evidence of Aboriginal occupation, these results would appear as an anomaly. It may be that Aboriginal occupation in association with Dudauman Creek was located nearby but outside of the immediate study area, or the archaeological signature has been removed through natural erosion of Dudauman Creek and construction of the rail line.

The combined results from Zones 1, 2, 4, 7, 11 and 11 East suggest a disparity in the way Aboriginal people in the past used the area in the north of the study area, around Dudauman Creek, and how they used and occupied the land in the south around Billabong and Ulandra Creeks—the southern creeks showing a distinctive archaeological signature while the northern creeks showing little evidence of occupation at all.

Artefacts from these locations confirm the predicted notion that quartz would be a dominant raw material choice and a limited palette of materials were used across the study area. It seems likely that the primary stone tool manufacturing processes occurred elsewhere and that artefact making in the study area may have had more to do with late stage refinements, retouching and repairs rather than primary processes of the early stage quarrying, cortex reduction and manufacture of basic tool blanks.

6.1.3 Summary

In summary, there is a tendency for sites to occur in the southern catchment of the study area around Billabong Creek, and its tributaries, and for those sites to have favourable site formation processes due to the alluvial nature of the soil landscape. Correlation with defined water sources remains as the most dominant factor in predicting the location of sites around the southern end of the study area, although low-lying poorly drained land appears unlikely to have been a favourable occupation zone.

There is less evidence for the tendency for sites to occur in the northern end of the study area. At present, while this observation is supported by AHIMS results, survey outcomes and initial test excavations, it may simply be a demonstration of bias relating to the prevalence of investigation areas.

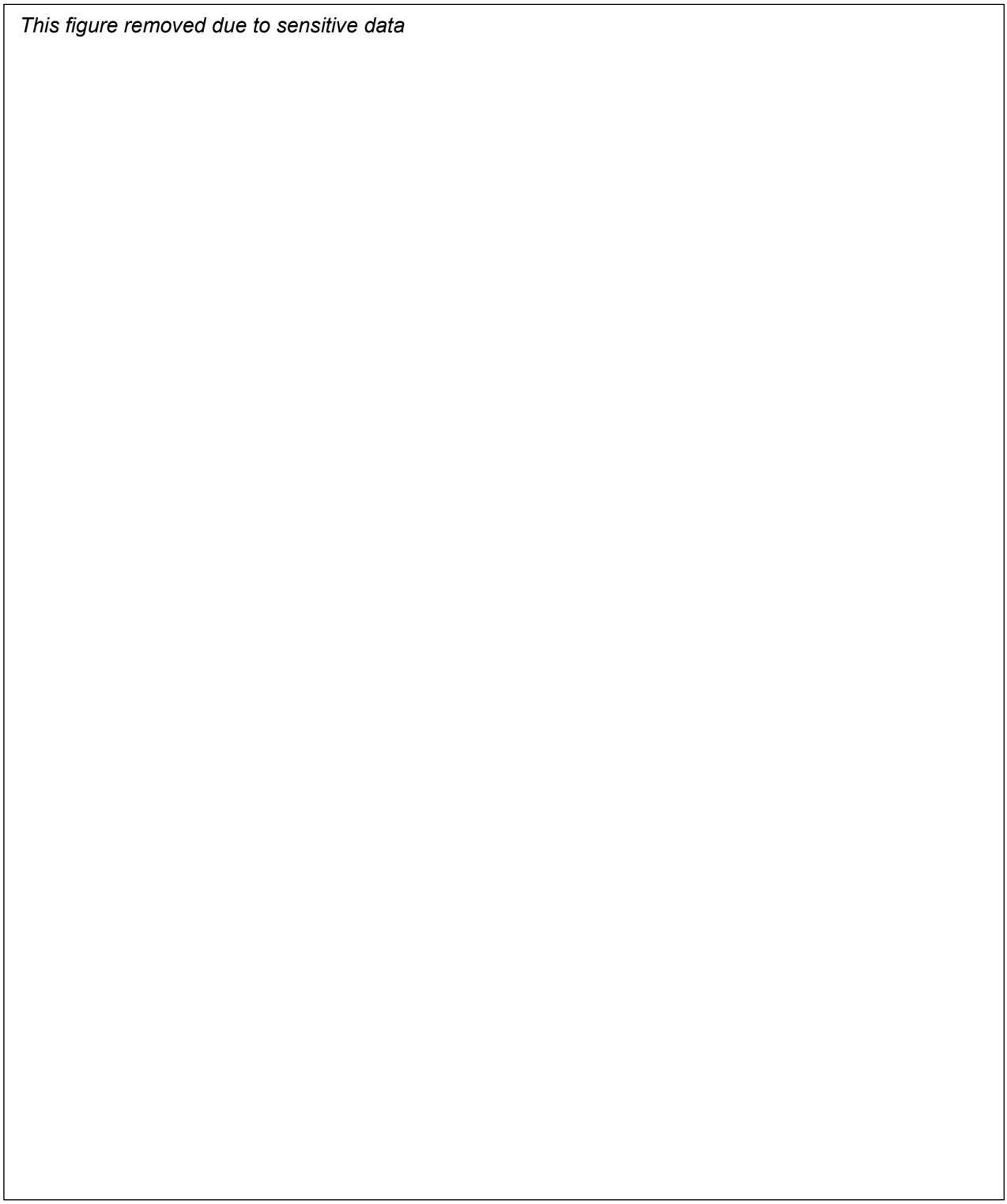


Figure 6.1 The study corridor showing soil types, hydrology, AHIMS sites and new sites identified during the survey. (Source: NSW LPI with GML additions, 2021)

6.2 Implications

6.2.1 Reassessment of Aboriginal Archaeological Potential

Based on the test excavation results, it is possible to review and redefine the predictive modelling in relation to areas of potential archaeological sensitivity along the study corridor.

Key predictive modelling statements include:

- Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—although sites may also occur in close proximity to Billabong Creek, Ironbong Creek, Ulandra Creek, Run Boundary Creek, Isobel Creek and Dudauman Creek.
- Aboriginal occupation sites are most likely to occur on low-gradient, well-drained landforms in close proximity to those water sources. This therefore indicates that the highest area of proposal with the potential for sites to occur is the 15km stretch starting 10km north of Illabo.

Zones 1 and 2, comprising levelled terraces adjacent to creeks, have both demonstrated the presence of archaeological sites, and therefore fit the predictive modelling that sites will be present in close proximity to water courses on level or gently sloping, well-drained ground. Zone 1 also appears to be located along the southern side of a widespread archaeological zone along Billabong Creek.

Although having been subject to heavy disturbance, Zone 4 also supports the model in relation to proximity to water, although it has little bearing on the statement of sites being located on low-gradient, well-drained landforms in close proximity to those water sources—primarily due to the high level of landform remodelling in that area. The key observation of this zone was that the artefacts present are likely to have derived from the banks of a water course that has since been infilled and levelled. Artefact distribution was largely a result of post-depositional taphonomic process and not the original archaeological site formation processes, thereby obscuring the original correlation between the site location and the water course.

In the case of Zone 7, the presence of the testing zone along the bank of a wetland associated with Ironbong Creek, plus the presence of some artefacts, were key aspects of the predictive modelling that sites would be present in this zone. However, the area was largely devoid of elevated/well-drained ground, and the channel of the water course had become ill-defined at this point, being more of a wetland than a clear fresh water source. The absence of any defined archaeological sites in this area suggests that this land was purely used for casual resource procurement and was not a favoured occupation zone. This leads to the possibility that the correlation with well-drained land is as important for Aboriginal occupation zones as the proximity to water. On that basis, the predictive modelling could be refined to note that proximity to water in its own right is of lesser likelihood than the correlation of both water sources and well-drained landforms.

The null-hypothesis testing in Zone 8 confirmed the prediction that regardless of the landform being semi-elevated and on the lower slopes of a ridge, the correlation with proximity to water is the crucial element in predicting the location of previous Aboriginal occupation activity.

Results from Zones 11 and 11 East so far run against the predictive statement correlating elevated land and proximity to water. These results tend to suggest that there may have been less Aboriginal occupation of the zones at the northern end of the study area, or perhaps that the area around Dudauman Creek was occupied in a location somewhere nearby but outside of the study area.

This review of the predictive model can assist with refining the predictive modelling statements for those areas where access was not available for survey and testing: Zones 5, 6, 9 and 10 (Figure 6.2).

Zone 5 was considered to have archaeological potential along most of the study area because the study corridor crosses over Run Boundary Creek and another small tributary to Ironbong Creek, a number of minor drainage lines, and it also skirts along the low slopes of the Bethungra Range. Zone 5 is approximately 4.2km in length; however, along that distance, there are only two areas of land in which there is a correlation between water course and low-gradient well-drained landforms. At the southern end of this zone, a length of 1130m from site ARTC9, across Run Boundary Creek and one of its minor tributaries, would cover an area of archaeological potential based on the predictive modelling correlates.

Further to the north within Zone 5 is a short section of the study area which crosses Isobel Creek and also crosses one of the toe-slopes of the Bethungra Range. This area would also be a zone of archaeological sensitivity and would cover an area of 100m either side of the creek.

Based on the refined predictive modelling correlates, the rest of the area along Zone 5 is unlikely to have much archaeological potential.

Zone 6 was also considered to have archaeological potential for the same reasons as Zone 5—it has areas of low slope from the Bethungra Range and also crossed Isobel Creek, a tributary of Ironbong Creek. However, also like Zone 5, there is only a small area within Zone 6 where there is a direct correlation of both the presence of a water course and low-gradient well-drained landforms. This correlation occurs over a distance of 880m either side of Isobel Creek. The southern end of this part of the study area is located 1.4km north of Dirnaseer Road.

Based on the refined predictive modelling correlates, the rest of the area along Zone 6 is unlikely to have much archaeological potential.

Zones 9 and 10 were considered in the 2016 Due Diligence assessment as having archaeological sensitivity due to their proximity to water courses. However, a comparison of these watercourses with others along the proposal indicate that they are ephemeral drainage lines which cross largely flat plains with little topographic relief. Test excavation results from other zones along the proposal suggest that neither Zones 9 or 10 maintain a substantial enough water source, nor have the characteristic low-gradient well-drained landforms that would warrant maintaining their definition as having archaeological sensitivity.

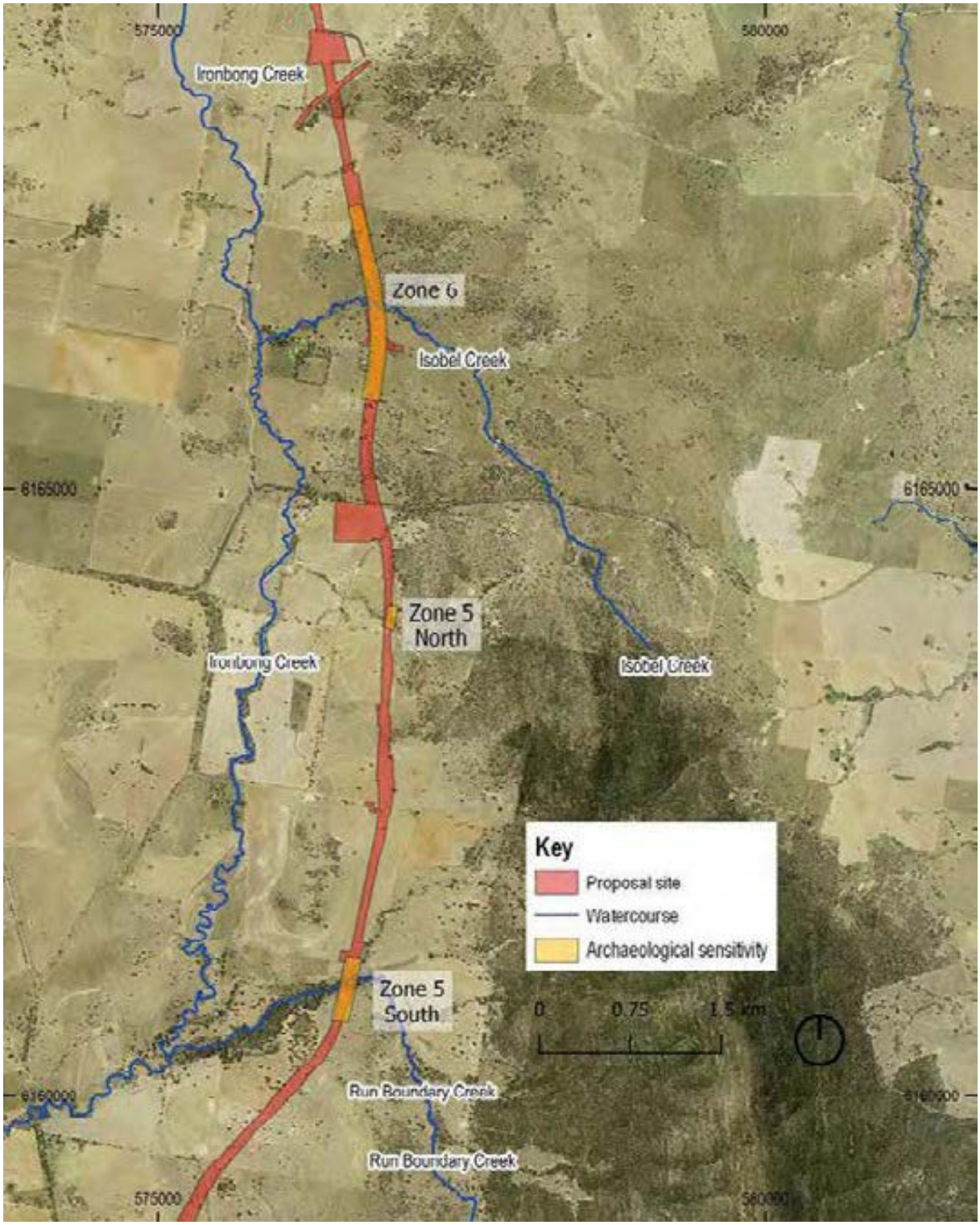


Figure 6.2 Revised areas of archaeological sensitivity within Zones 5 and 6 based on revised predictive modelling**.** (Source: Google Earth with GML additions, 2019)

6.3 Aboriginal Objects and Values Within the Proposal Site

Based on AHIMS results, site survey and test excavation, the Aboriginal objects and values known to be present within or near the current proposal site are identified in Table 6.1, and in relation to the proposal in Figure 6.3 to Figure 6.7.

Table 6.1 Aboriginal Objects and Values within the Proposal site.

Object	Values
Scarred Trees 50-5-0117, 50-5-0120, 50-5-0121	These three recorded sites were found to not be culturally modified trees. While the trees will be removed for the project work to be undertaken, their AHIMS records should be modified to show that they are not cultural objects.
Scarred Tree ARTC 18	This newly recorded culturally modified tree is outside of the eastern edge of the proposal site.
Scarred Tree ARTC 20	This newly recorded culturally modified tree is within the proposal site.
Artefact Sites ARTC1–4	Within the earlier study area but now outside of the proposal site.
Artefact Site ARTC5	Collected as part of Test Excavation work.
Site Zone 1	Three areas within Zone 1 with higher artefact densities are on the northern edge of the proposal site. Two zones of lower artefact density are within the proposal site.
Scarred Tree ARTC 6	Currently within the study area but located outside of the proposal site to the west.
Site Zone 2	Two areas within Zone 2 with higher artefact densities are within the proposal site, and partially impacted by the proposal.
Artefact Site ARTC7	Isolated artefact currently within the study area but located outside of the proposal site to the west.
PAD Zone 4	Area of PAD within the proposal site has been investigated and is not a site.
ARTC8	Currently within the study area but located outside of the proposal site to the west.
ARTC9	Isolated artefact currently within the study area but located outside of the proposal site to the east.
PAD Zone 5	Zone of Archaeological potential currently within the proposal site. The significance of this zone is predicted to be moderate-high adopting a precautionary approach.
PAD Zone 6	Zone of Archaeological potential currently within the proposal site. The significance of this zone is predicted to be moderate-high adopting a precautionary approach.
PAD Zone 7 North	Area of PAD within the proposal site has been investigated and is not a site.
PAD Zone 7 South	Area of PAD within the proposal site has been investigated and is not a site.
Artefact Sites ARTC12–17	ARTC12 and ARTC 16 are within the proposal site. ARTC13–15 are outside of the proposal site. Area of PAD within the proposal site has been investigated and is not a site
Artefact Site ARTC10 and ARTC 11	ARTC10 and ARTC 11 are within the proposal site.
PAD Zone 11	Area of PAD within the proposal site has been investigated and is not a site.
PAD Zone 11 East	Area of PAD within the proposal site has been investigated and is not a site.
Scar Tree ARTC 19	This newly recorded culturally modified tree is located outside of the proposal site

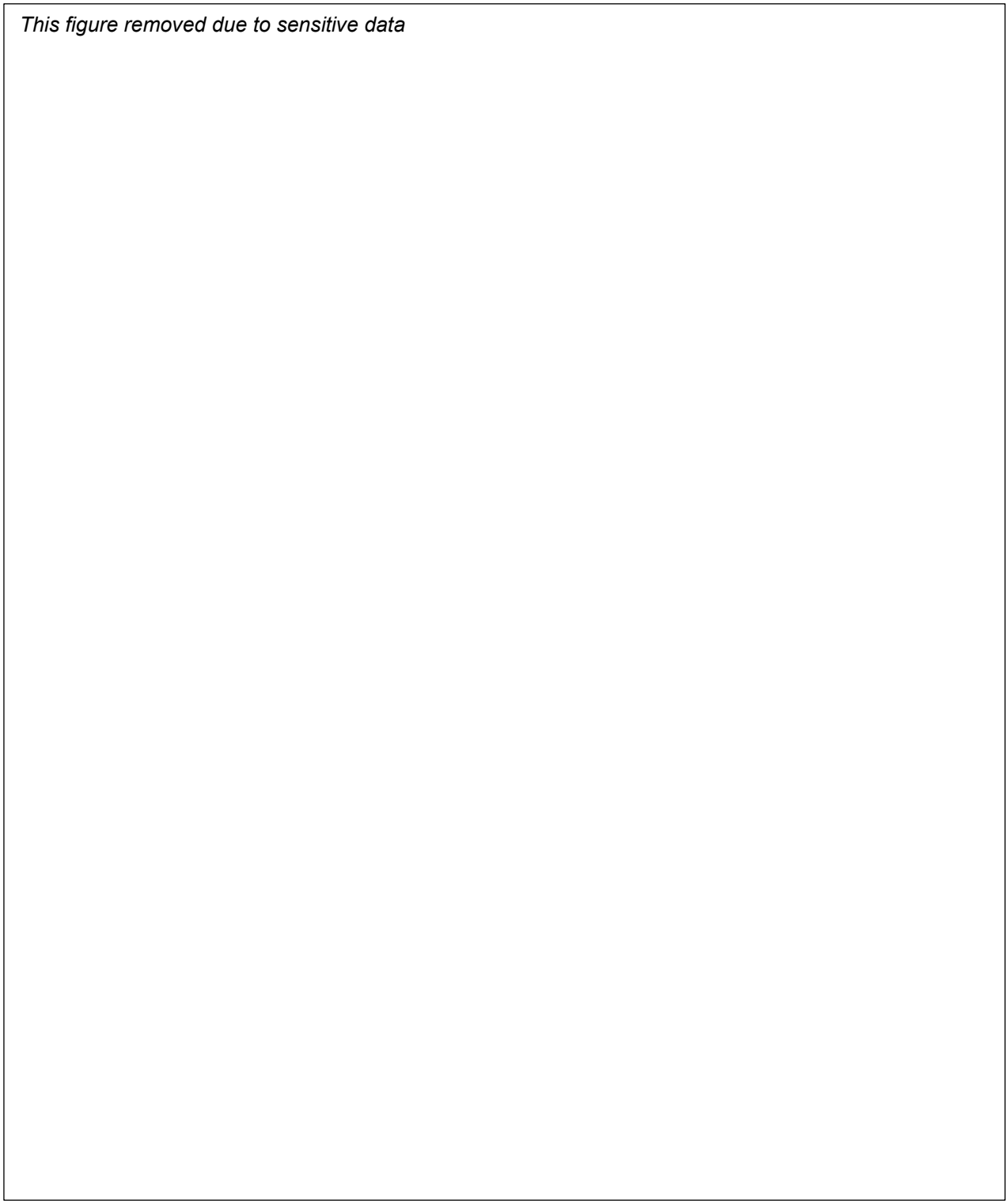


Figure 6.3 Zone 1: Relationship between Aboriginal objects and values, and the proposal site**.** (Source: GML)

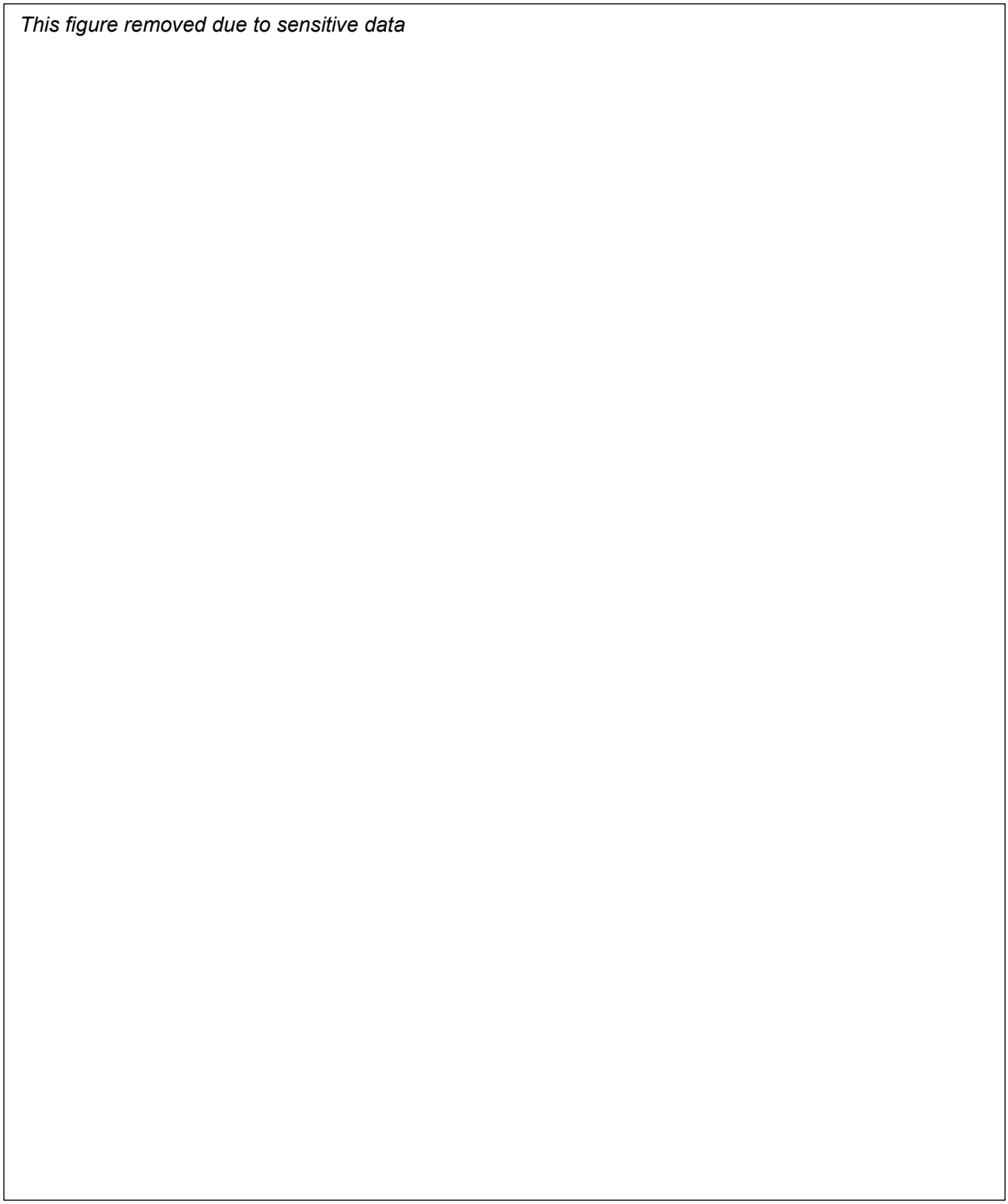


Figure 6.4 Zone 2: Relationship between Aboriginal objects and values, and the proposal site**.** (Source: GML)

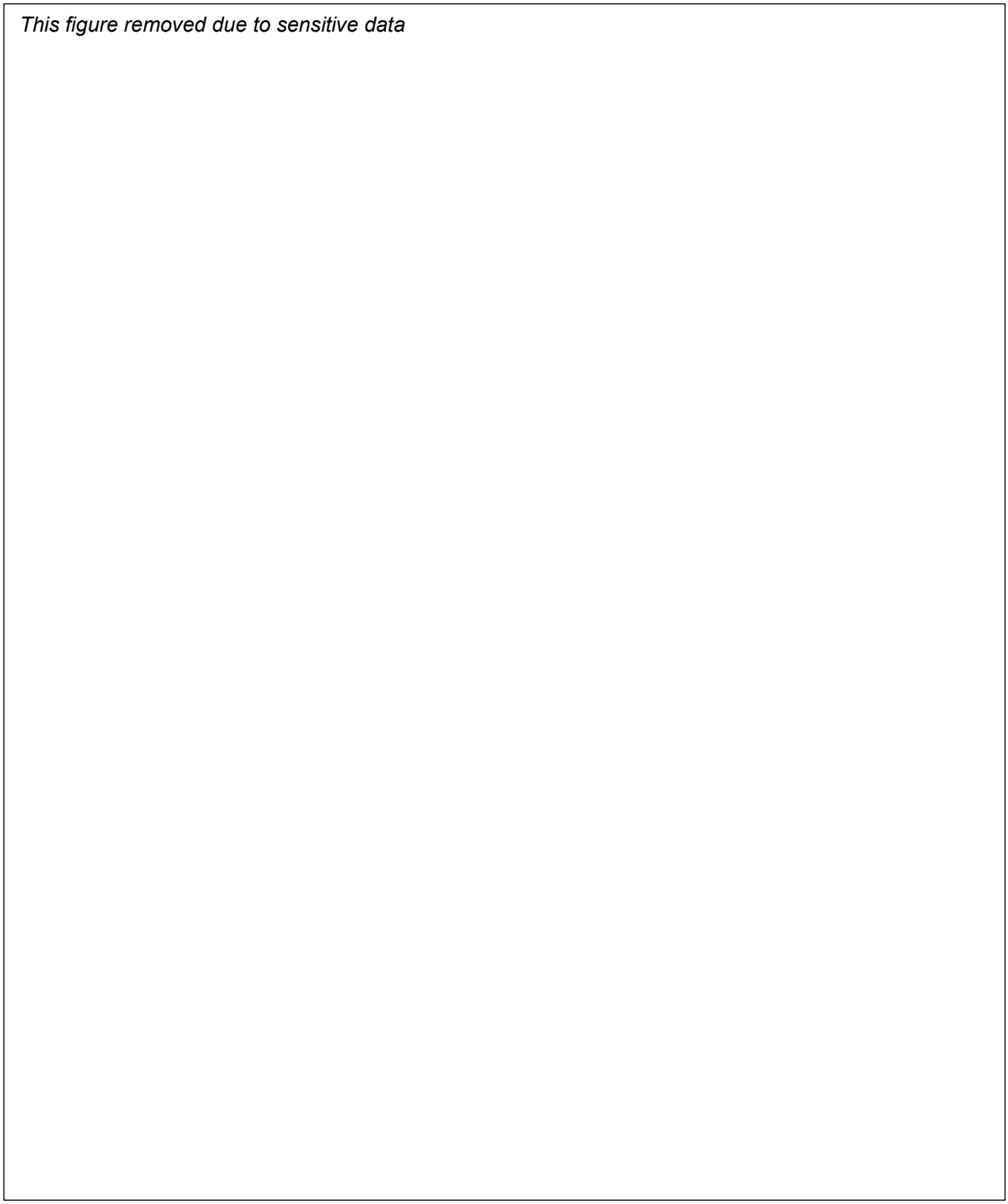


Figure 6.5 Zone 3: Relationship between Aboriginal objects and values, and the proposal site. (Source: GML)

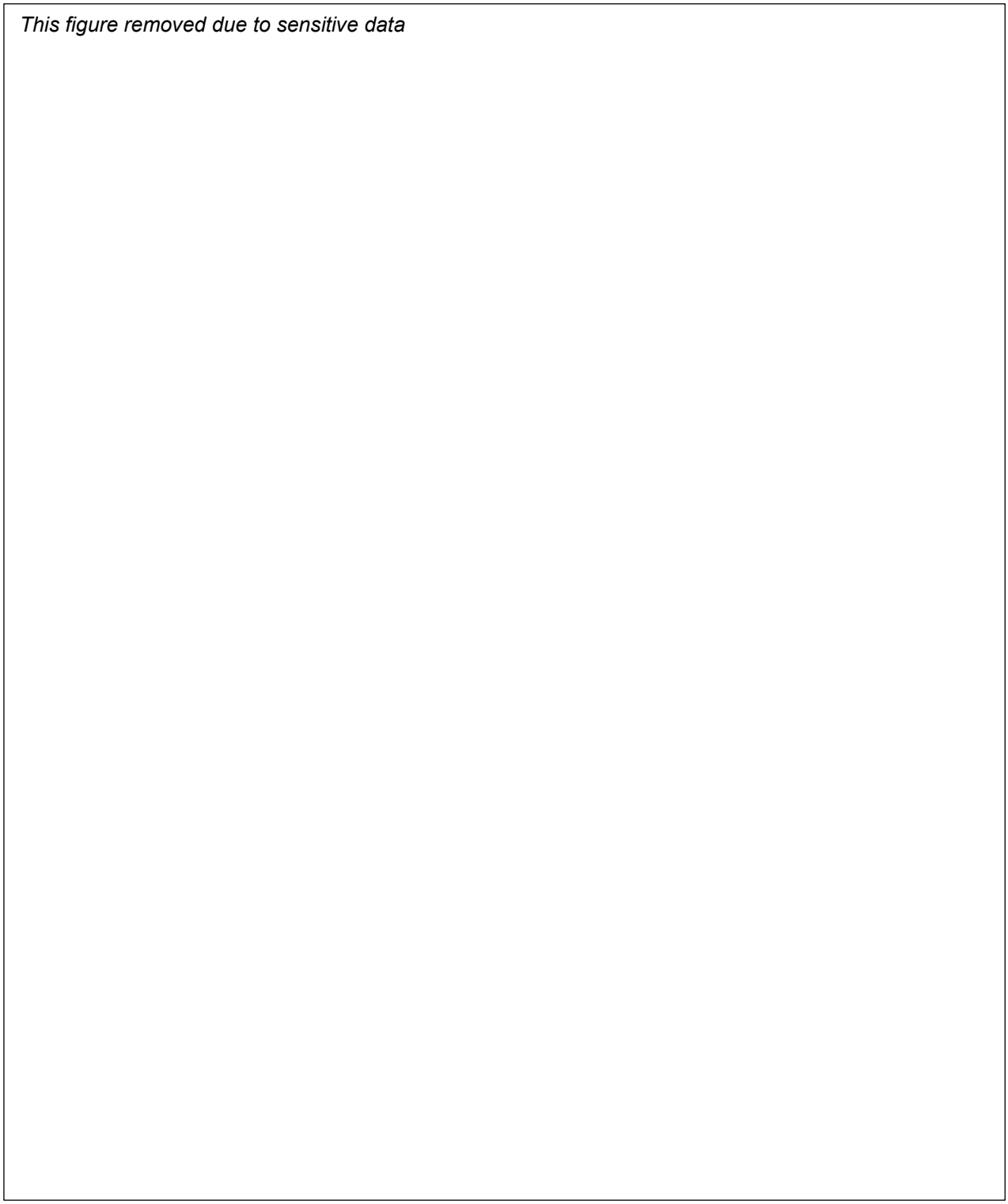


Figure 6.6 Zone 7: Relationship between Aboriginal objects and values, and the proposal site. (Source: GML)

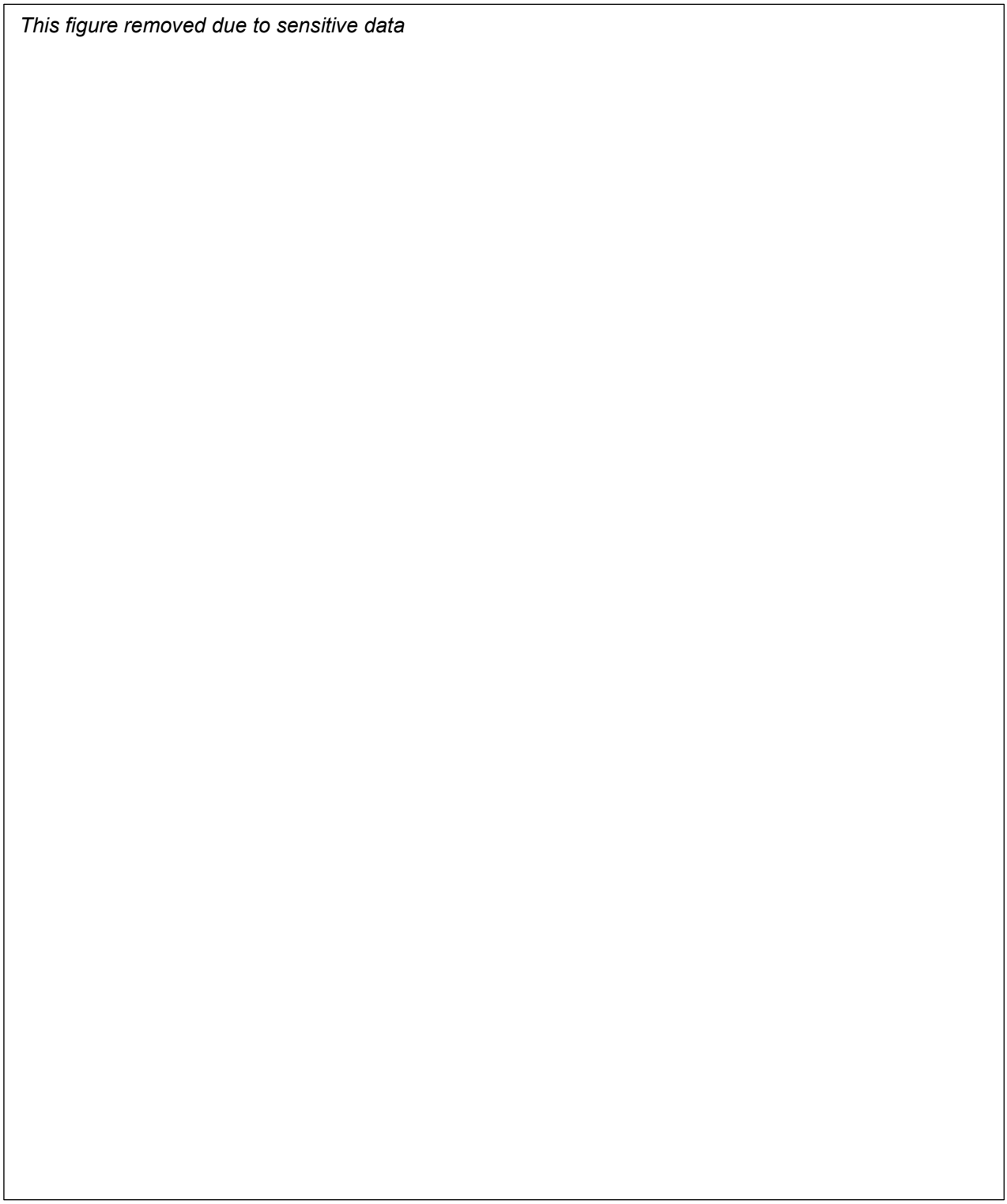


Figure 6.7 Zone 11: Relationship between Aboriginal objects and values, and the proposal site. (Source: GML)

7.0 Cultural Heritage Values and Statement of Significance

The best practice guide to managing heritage places is the Burra Charter. It defines cultural significance as:

> *Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups*[1]

7.1 Assessing Cultural Heritage Values

An assessment of aesthetic and social/spiritual values of Aboriginal cultural significance can only be made with the assistance of the relevant Aboriginal community because Aboriginal people are the primary source of information about their cultural heritage values. Consulting with Aboriginal people at an early stage of the assessment process ensures they have meaningful opportunities to inform the assessment. Aboriginal people must have control of their cultural knowledge and how it is used and shared, and therefore restriction of cultural knowledge may be an important part of the value of the cultural knowledge. Management decisions relating to Aboriginal cultural heritage values must involve the relevant Aboriginal people to ensure appropriate management is undertaken in accordance with the cultural heritage values.[2]

In line with the Burra Charter's five principal values (social, spiritual, historical, scientific and aesthetic) and the NSW Heritage Office's publication *Assessing Heritage Significance*,[3] four composite assessment criteria are generally used to assess the Aboriginal heritage values of a study area.[4]

The four criteria are:

- Social/cultural/spiritual value:[5] 'an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons'.
- Historic value:[6] 'an item is important in the course, or patterning, of NSW's cultural or natural history (or cultural or natural history of the local area)'.
- Aesthetic value:[7] 'an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)'.
- Scientific value:[8] 'an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)'.

Consultation with the RAPs, investigation into the background history of the study area and local region, the field inspection and archaeological excavations have facilitated the development of an understanding of the key social, historic and scientific values associated with the sites and objects within the study area.

7.2 Significance Assessment

7.2.1 Social/Cultural/Spiritual Value

Discussions of the social, cultural and spiritual values of the study area were held during the test excavation program. Overall, the key cultural value of the area relates to the presence of the archaeological signature representing the past use of the landscape by Aboriginal people. It also derives from the connection between the general study area and the known cultural sites in the vicinity including

scarred trees further from the study corridor and the known cultural sites in the Bethungra Range to the southeast.

The study area crosses the plains to the west of the Bethungra Ranges which are a significant area for the Wiradjuri people. Caves within these ranges are associated with a cultural story relating to the creation of the Murrumbidgee River and the transformation of Wiradjuri culture from patriarchal to matriarchal (Section 4.2.2.1). The river systems across these plains provided resources in support of the cultural activity in nearby areas such as the ranges.

The archaeological sites themselves are of significance to the local Aboriginal community as a tangible demonstration and connection to the understanding that this landscape was used by Aboriginal people in the past. This evidence concretes the relationship between the known cultural sites in the surrounding areas and the day-to-day way of life of the people who valued those places in the past.

The archaeological evidence within the study area has cultural value to the local Aboriginal community.

Scarred trees and ring trees identified in close proximity to the study area were also discussed as being of significance as tangible indicators of traditional marking of the landscape, the procurement of resources and other ceremonial activities. There are two scarred trees within the study area, noting that while none are affected by the current proposal, the presence of these trees in the general vicinity conveys the significance of the landscape to the local Aboriginal community.

7.2.2 Historic Values

The study corridor crosses a landscape which is representative of the historic pattern of rural land use in NSW. However, there is no specific connection between this historic rural land use and the Aboriginal cultural heritage of the area, except for the historic impact on past cultural sites.

There are no known historic values directly associated with the study area.

7.2.3 Aesthetic Value

The study area has low aesthetic value with the main landscapes dominated by cleared and cultivated paddocks. The overall aesthetic of the area reflects the historic pattern of rural land use and does not specifically relate to the Aboriginal cultural heritage of the area.

The study area does not hold aesthetic values in connection to Aboriginal heritage.

7.2.4 Scientific Value

This assessment has sought to identify Aboriginal heritage objects and sites within the study area and obtain sufficient information to allow the values of those objects and sites to be determined. Following Heritage NSW guidelines for assessing scientific value,[9] five key criteria have been considered during the examination of the scientific value/significance of the identified sites and places within the study area. These criteria are:

- Research potential—does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
    - Integrity and condition—integrity refers to the level of modification a site has been subject to (the cultural and natural formation process) and whether the site could yield intact archaeological deposits, which could be spatially meaningful. Condition considers the state of the material, which is especially relevant for organic materials.

  - Complexity—the demonstrated or potential ability of a site to yield a complex assemblage (stone, bone and/or shell) and/or features (hearths, fire pits, activity areas).
  - Archaeological potential—the potential to yield information (from subsurface materials which retain integrity, stratigraphical or not) that will contribute to an understanding of contemporary archaeological interest, or which could be saved for future research potential.
  - Connectedness—whether the site can be connected to other sites at the local or regional level through aspects such as type, chronology, content (ie materials present, manufacturing processes), spatial patterning or ethnohistorical information.
- Representativeness—how much variability (outside and/or inside the study area) exists, what is already conserved, and how much connectivity is there?
- Rarity—is the study area important in demonstrating a distinctive way of life, custom, process, land use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential—does the study area contain teaching sites or sites that might have teaching potential?
- Archaeological landscapes—the study of the cultural sites relating to Aboriginal peoples within the context of their interactions in the wider social and natural environment they inhabited. Landscapes can be large or small depending upon specific contexts (ie local or regional conditions); they may also be influenced by Aboriginal social and demographic factors (which may no longer be apparent).

A statement of Aboriginal scientific significance has been prepared that summarises the salient values as drawn from the above criteria.

7.2.4.1 Thresholds and Grading

Based on the Heritage NSW guidelines there are no prescribed thresholds or grading levels for the evaluation of these significance criteria. Assessments are comparative to other parts of the study area, other sites and places in the area, and also based on the assessments of integrity, condition and potential information yield drawn from professional practice. The Heritage NSW guidelines note that, ‘Assessment of each of the criteria (above) should be graded in terms that allow the significance to be described and compared; for example, as high, moderate or low’.

The assessments set out below use this system of comparative grading of high, moderate, low and no (nil) as discussed within each criterion.

7.2.4.2 Scientific Assessment against Criteria

The study area has been assessed against each of the criteria, defined above.

Research Potential

The study area has yielded archaeological deposits in three zones (Zones 1, 2 and 4).

The excavation in Zone 1 demonstrated a consistent, low-density scatter of artefactual material over a wide area some clusters of higher artefact densities around TUs 19, 46 and 58. The cluster at TU46 in particular suggests a possible area of focused cultural activity and further investigation in this area may

have the potential to yield more information about the Aboriginal use of this area. The stratigraphic profile in this area has provided little useful data on the chronology of the use of the area, although the variation in depth at which artefacts were found indicates the likelihood that occupation occurred over a substantial period of time.

The completed test excavation in Zone 2 has yielded a small number of artefacts overall (N=39) at an average density of 2.4 artefacts/m^2 in the test excavations and has demonstrated the potential to yield further archaeological objects in the immediate area. Like Zone1, the stratigraphy in Zone 2 was largely undifferentiated with artefact depth below the surface providing the most apparent marker of the passage of time.

Although detailed conclusions have not been drawn about the Aboriginal use of this portion of the landscape around Billabong and Ulandra Creeks, the archaeological evidence to date suggests a pattern of low-intensity, repeated occupation over a lengthy time period. Further investigation of that supposition/conclusion would be possible from the nature and extent of the archaeology recovered to date. On that basis, Zones 1 and 2 have low to moderate ongoing research potential.

Zone 4 yielded a total of 12 artefacts from unstratified and mostly disturbed contexts. Any occupation site that had been formed here in the distant past has been subject to mechanical disturbance and erosion. This area retains little or no research potential.

Integrity and Condition

The integrity and condition of archaeological sites across the study area is largely affected by the degree of agricultural activity on the landscape, and the proximity of that work to the watercourses which have been shown to have the highest level of archaeological sensitivity. Artefacts have been found in the ploughed zones of paddocks in Zones 1, 2 and 4, on the surface as well as within the upper 200–300mm of the soil profile. All of these artefacts are indicative of the presence of sites that have been disturbed by ploughing and no longer retain any contextual integrity. Only the few artefacts at deeper levels (500–600mm) are likely to have any association with undisturbed archaeological sites. Therefore, the integrity and condition of the archaeological sites and zones along the study area in considered to be low.

Complexity

None of the test excavation zones investigated to date has demonstrated the ability to yield a complex assemblage of objects and evidence related to Aboriginal occupation. Both the assemblage complexity and stratigraphic complexity were low.

Archaeological Potential

Across the test excavation zones, the archaeological deposits have generally demonstrated the potential to yield a low, unfocused density of stone objects reflective of a background scatter, with the exception of the three clusters of more focused activity on the edge of Zone 1. Zones 1 and 2 currently have a demonstrated level of further archaeological potential, while the review of the predictive modelling as a result of the test excavation also indicates the reasonable likelihood that the margins of Run Boundary Creek and Isobel Creek may also have archaeological potential.

The archaeological potential of these zones may also include the possibility of some further research into whether or not there is any evidence for changes in stone material through time. This archaeological potential would be restricted to the area with intact soil profiles—mainly around watercourses not impacted by agricultural activity.

On that basis, the study area has both known and predicted areas of archaeological potential which may yield some significant information about the Aboriginal use of the area in the past.

Connectedness

On the basis of stone artefact evidence only, it is apparent that the choices of raw materials for the artefacts found at these sites show a degree of connectedness with other sites in the area. However, there is insufficient evidence to formulate any further connections at this stage, as the excavation results have not revealed any defined chronological or spatial patterning.

Representativeness

At this stage there are few other excavated examples in the local region to assist in a comparative analysis to understand representativeness.

Rarity

At this stage there are few other excavated examples in the local region to assist in a comparative analysis to understand the rarity of archaeological signatures in the study area.

Education Potential

The archaeology of the study area may have the potential to shed some light on the occupation of the local landscape around the Bethungra, Cootamundra and Stockinbingal region. On that basis, the study area holds some—albeit low—potential to be an informative resource. The presence of Scarred tree ARTC19 with a definitive coolamon style scar has some educational potential.

Archaeological Landscapes

The study area demonstrates only a small portion of what would appear to be a sparsely occupied cultural landscape. Key cultural activity is reported to have occurred in the Bethungra Range to the southeast, while the archaeological evidence indicates that subsistence occurred around the watercourses of the lower slopes and flats associated with Billabong Creek and its tributaries.

Within this landscape the study area was not the focus of activity, although it does coincide with smaller areas of possibly intermittent occupation around the watercourses. On that basis the study area is within a wider Aboriginal cultural landscape, although this is only expressed archaeologically around the southern end of the study area.

There is currently no evidence of a definable archaeological landscape in the northern half of the study area.

7.2.4.3 Summary Scientific Significance

The following table outlines the scientific significance of each AHIMS registered item:

Table 7.1 Summary scientific significance of each site.

Object	AHIMS Number	Level of Scientific Significance
Scarred Tree 50-5-0117	50-5-0117	Nil (not a scar tree)
Scarred Tree 50-5-0120	50-5-0120	Nil (not a scar tree)
Scarred Tree 50-5-0121	50-5-0121	Nil (not a scar tree)
Scarred Tree ARTC 18	50-5-0286	High

Object	AHIMS Number	Level of Scientific Significance
Scarred Tree ARTC 20	AHIMS# pending	High
Artefact Sites ARTC1–4	50-5-0266, 50-5-0267, 50-5-0274, 50-5-0276	Low
Artefact Site ARTC5	50-5-0275	Moderate
Site Zone 1 – Three areas of higher artefact density	50-5-0280	Moderate
Site Zone 1 – Two areas of lower artefact density	50-5-0280	Low
Scarred Tree ARTC 6	50-5-0277	High
Site Zone 2– Two areas of higher artefact density	50-5-0278	Low to moderate
Artefact Site ARTC7	50-5-0285	Low
ARTC8	50-5-0284	Low
PAD Zone 4	50-5-0287	Nil
ARTC9	50-5-0283	Low
PAD Zone 5	-	-
PAD Zone 6	-	-
PAD Zone 7 South	50-5-0281	Nil
PAD Zone 7 North	50-5-0288	Nil
Artefact Sites ARTC12–17	50-5-0268, 50-5-0269, 50-5-0270, 50-5-0271, 50-5-0272	Low
Artefact Site ARTC10 and ARTC 11	50-2-0054, 50-2-0055	Low
PAD Zone 11	50-2-0056	Nil
PAD Zone 11 East	50-2-0057	Nil
Scar Tree ARTC 19	50-2-0058	High

7.3 Statement of Significance

Overall the study area is considered to have a low level of significance, mainly through its cultural value to the local Aboriginal community and based on some of its low-key indicators of scientific significance.

The archaeological sites themselves are considered to be of some contemporary cultural significance to the local Aboriginal community as a tangible demonstration and connection to the understanding that this landscape was used by Aboriginal people in the past. This evidence concretes the relationship between the known cultural sites in the surrounding areas and the day-to-day way of life of the people who valued those places in the past.

The archaeology of the study area also has low to moderate scientific significance based on its residual archaeological potential in Zones 1 and 2 which have the capacity to provide further detailed information on the nature of past Aboriginal occupation in the area along the margins of key watercourses. On that basis, it has low to moderate ongoing research potential.

7.4 Endnotes

1 Australia ICOMOS 2013, *The Burra Charter*, Australia ICOMOS.

2 Department of Environment, Climate Change and Water 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, Department of Environment, Climate Change and Water, p 2.

3 NSW Heritage Office 2001, *Assessing Heritage Significance,* NSW Heritage Office, Sydney.

4 Office of Environment and Heritage 2011, *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*, Office of Environment and Heritage, Sydney; this guide provides a background for undertaking an Aboriginal cultural heritage values assessment in accordance with the Burra Charter and NSW Heritage Office's *Assessing Heritage Significance 2001*. The approach recommended by the former DPIE has been adhered to for this report.

5 NSW Heritage Office 2001, 'Criteria D' in *Assessing Heritage Significance,* NSW Heritage Office, Sydney.

6 NSW Heritage Office 2001, 'Criteria A' in *Assessing Heritage Significance,* NSW Heritage Office, Sydney.

7 NSW Heritage Office 2001, 'Criteria C' in *Assessing Heritage Significance,* NSW Heritage Office, Sydney.

8 NSW Heritage Office 2001, 'Criteria E' in *Assessing Heritage Significance,* NSW Heritage Office, Sydney.

9 Office of Environment and Heritage 2011, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, p 10.

8.0 Impact Assessment

This section provides a description of the Aboriginal values that may be harmed directly or indirectly by the proposed activity (outlined in Section 1).

As stated in Section 6.3, the following Aboriginal objects, sites, places and landscapes have been identified within the study area. Table 8.1 defines whether these will be harmed by the proposed activity. The relationship between the sites and the proposal is shown at the end of Section 6 in Figure 6.3 to 6.7.

8.1 Construction Impacts

The impact of any development proposal on Aboriginal heritage can be defined as the harm to, the diminution of, or the removal of the attributes and reasons for its significance. The harm to, diminution or removal of significance can result from changes to sites, places and their context, and can be measured as being either direct or indirect. The NSW OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, 2011, refers to these processes as 'harm' and define direct and indirect harm as follows: [1]

> ***Direct harm*** *may occur as the result of any activity which disturbs the ground including, but not limited to, site preparation activities, installation of services and infrastructure, roadworks, excavating detention ponds and other drainage or flood mitigation measures, and changes in water flows affecting the value of a cultural site.*
>
> ***Indirect harm*** *may affect sites or features located immediately beyond, or within, the area of the proposed activity. Examples of indirect impacts include, but are not limited to, increased impact on art in a shelter site from increased visitation, destruction from increased erosion and changes in access to wild food resources*

The proposal comprises the construction over a total length of 42.5km—including approximately 39km of new, greenfield single track—8 new bridges at watercourses, two road overbridges, and one grade separated bridge, upgrades to numerous crossings and sidings, and the installation and upgrade of 120 drainage culverts. These works require formation earthworks, deposition of construction materials (including rail ballast), temporary construction facilities compounds, stockpiles, fuel storage, laydown areas, borrow pits, temporary access roads and staff parking.

A summary of the total impacts of the project is outlined in Table 8.3.

8.1.1 Direct impacts

Seven of the 22 identified sites within the study area will be completely or partially impacted by the proposal. These are identified in Table 8.1. Artefact scatters that cross both high and low density zones (eg 50-5-0280) are listed for each of these densities. Discussion regarding mitigation measures for impact to these sites is provided in Section 9.

8.1.2 Indirect impacts

Indirect impacts to heritage sites can derive from vibration, noise, changes to the visual setting of a place and changes to the land surface stability from erosion and sedimentation.

Indirect impacts are considered to have little application to the majority of identified objects and sites. Subsurface sites that comprise isolated artefacts or low density artefact scatters will not be affected by impacts to surface conditions from vibration, noise, or changes to the visual setting.

Sites that may be affected by indirect impacts from changes to the visual setting include Scarred Trees ARTC 18, 19 and 20. RAPs identified that a buffer of 50m should be provided between the final alignment and the locations of all scarred trees. The design of the proposal maintains this buffer, between permanent works and the three scar trees ARTC18, 19 and 20. However, the 50m buffer is not able to be maintained at ARTC18 and ARTC20 during construction work due to their location along the access road in Zone 3. A buffer to ensure avoidance of damage to each tree would be implemented. The actual area of this buffer would be determined in consultation with an arborist.

While indirect impacts from vibration can occur to some site types such as rock shelters, no sites sensitive to vibration were identified during this assessment. Therefore, both direct and indirect impacts caused by vibration are not anticipated.

Changes to erosion and sedimentation rates from construction activities near watercourses may have the potential to indirectly affect sites further downstream from assessment areas. However, the potential for these impacts would be suitably managed through the implementation of standard erosion and sediment controls along the proposal.

It is considered that there will be minimal indirect impact to subsurface or surface artefact sites located outside of the proposal area. In the instance of scarred trees located outside of the proposal area, the 50m buffer stated by the RAPs should be upheld. Scarred Tree ARTC18 is located just outside of the proposal site boundary, and is outside of the 50m buffer from the final permanent works of the proposal but is in close proximity to the proposal site, and therefore will require a suitable buffer to be established during construction of the proposal.

Scarred tree ARTC20 is outside of the 50m buffer from the final permanent works of the proposal but is within the proposal site. A suitable buffer around this tree will need to be determined in consultation with an arborist and maintained during construction of the proposal.

Potential harm from both direct and indirect impacts are outlined in Table 8.1 below.

Table 8.1 Identified Potential Harm to Aboriginal Heritage.

Site	AHIMS #	Scientific Significance	Type of Harm	Degree of Harm	Consequence	Comments
Scarred Tree 50-5-0117, 50-5-0120, 50-5-0121	50-5-0117, 50-5-0120, 50-5-0121	Nil	Nil	Nil	Nil	Not a site. AHIMS site record to be updated
Scarred Tree ARTC18	50-5-0286	High	Indirect	Nil	Nil	Outside of the proposal site.
Scarred Tree ARTC20	AHIMS# pending	High	Indirect	Nil	Nil	Within proposal site. To be avoided
Artefact Sites ARTC 1–4	50-5-0266, 50-5-0267, 50-5-0274, 50-5-0276,	Low	Nil	Nil	Nil	Outside of the proposal site.
Artefact Site ARTC5	50-5-0275	Moderate	Nil	Nil	Nil	Collected during Test Excavation
Site Zone 1	50-5-0280	Moderate	Direct	Partial – less than 20%	Potential loss of values	The southern edge of two of the three high-density areas in Zone 1 will be impacted by the proposal site.

Site	AHIMS #	Scientific Significance	Type of Harm	Degree of Harm	Consequence	Comments
Zone 1 – low density scatter	50-5-0280	Low	Direct	Partial – 75%	Potential loss of values	The two lower-density areas in Zone 1 will be substantially impacted by the proposal site.
Scarred Tree ARTC6	50-5-0277	High	Indirect	Nil	Nil	Outside of the proposal site.
Site Zone 2	50-5-0287	Low to Moderate	Direct	Total	Loss of values	The two high-density areas in Zone 2 will be totally impacted by the construction zone.
Artefact Site ARTC7	50-5-0285	Low	Nil	Nil	Nil	Outside of the proposal site.
ARTC8	50-5-0284	Low	Nil	Nil	Nil	Outside of the proposal site.
ARTC9	50-5-0283	Low	Nil	Nil	Nil	Outside of the proposal site.
PAD Zone 5	-	-	Direct	Total	Loss of values	Currently within the proposal site The significance of this zone is predicted to be moderate-high adopting a precautionary approach.
PAD Zone 6	-	-	Direct	Total	Loss of values	Currently within the proposed alignment. The significance of this zone is predicted to be moderate-high adopting a precautionary approach.
Artefact Sites ARTC12 and 16	50-5-0268, 50-5-0272	Low	Direct	Total	Loss of values	Isolated artefacts could not be found again during the testing program.
Artefact Sites ARTC13–15, 17	50-5-0269, 50-5-0270, 50-5-0271, 50-5-0273	Low	Nil	Nil	Nil	Outside of the proposal site.
Artefact Site ARTC10 and 11	50-2-0054, 50-2-0055	Low	Direct	Total	Loss of values	Isolated artefacts could not be found again during the testing program.
Scarred Tree ARTC19	50-2-0058	High	Indirect	Nil	Nil	Outside of the proposal site.

8.2 Operation Impacts

Direct and indirect impacts caused by ongoing operation and maintenance works are not anticipated, as these will be confined to areas impacted by works during the proposal. Where activities are to occur outside of a defined project limit, consultation with regulators should be undertaken to determine any

additional assessments, monitoring, approvals or amendments required to existing approvals and management plans. The implementation of these mitigation measures should result in no or reduced impacts.

8.3 Cumulative Impacts

Cumulative harm relates to the impact the proposed activity will have on the entire representative archaeological resource of Australia through the accumulation of multiple impacts over a period of time. The consideration of cumulative harm is a recent development. Prior to the implementation of heritage legislation in NSW in the 1970s (Section 2.2) and more broadly across the Commonwealth in the 1980s and 1990s (Section 2.1), an unknown quantity of Aboriginal heritage sites, places, and cultural areas were lost through agriculture, infrastructure construction, and other development.

The potential for cumulative impacts between the proposal and other adjacent Inland Rail sections is considered in Table 8.2. These sections include the Stockinbingal to Parkes (S2P) and Albury to Illabo (A2I) portions.

Table 8.2 Impacts to Aboriginal Cultural Heritage Sites by Other Inland Rail Proposals.

Proposal	Cumulative Impact
Albury to Illabo (A2I)	A review of the EIS for the A2I project indicates that no impacts to cultural heritage are anticipated for the project, therefore there are no cumulative impacts with the proposal.
Stockinbingal to Parkes (S2P)	A review of the environmental impact assessments for two parts of the S2P project (Lachlan River Bridge, and Horizontal Clearances) indicates that no impacts to cultural heritage are anticipated. The environmental impact assessment for other parts of the S2P project was not available at the time of writing, and potential cumulative impacts to cultural heritage could not be confirmed.

Four other major developments with the potential to increase cumulative impact with the proposal have been identified. These developments are described in Table 8.3

Table 8.3 Other Major Developments in Proximity to the Proposal.

Project	Distance from the Proposal Site	Project Details	Status and Indicative Timing	Potential Cumulative Impacts
Illabo Solar	4km south	Development of an 80MW solar farm with energy storage and associated infrastructure	The project is currently on hold (and, as such, does not formally require consideration). The construction phase of the proposal would take between 12 and 24 months; however, no construction start date has been provided.	A 2018 preliminary desktop Aboriginal heritage assessment did not identify any previously recorded sites within the proposal area. No site assessment or consultation with the Aboriginal community was undertaken as part of this.
Cootamundra Solar Farm	15km east	Development of a 5MW solar farm with a Battery Energy Storage Facility (BESS) and associated infrastructure	Development assessment of the project is currently being completed. No published timeframe for construction at the time of writing.	A 2022 Aboriginal Archaeological Impact Assessment (AAIA) concluded that the proposal would not harm significant Aboriginal cultural heritage values.

Humelink	60km south-east	Development of a new 500kV transmission line which will connect Wagga Wagga, Bannaby and Maragle.	Environmental assessment of the project is currently being completed. Subject to planning approval, the construction phase of the project is anticipated to commence in 2024 and be completed in 2026.	The impact of this project on Aboriginal cultural heritage will be assessed as the project progresses. A 2021 preliminary heritage assessment found 291 recorded AHIMS sites in the study area, and that the project could have a potential impact on Aboriginal cultural heritage.
Grade separating road interfaces	1.5km south-west	Transport for NSW is currently in the early planning stages to grade separate road and rail interfaces at four locations where Inland Rail crosses the NSW road network. The nearest grade separation proposal is the Olympic Highway at Harris Gates proposal, located north of Illabo.	Subject to planning approval, the construction phase of the project is anticipated to commence in early 2025 and be completed in early 2027.	Potential impacts on Aboriginal cultural heritage have not been assessed at this stage and cannot be determined yet.

Table 8.4 Overview of Impacts to Values.

Value	Manifest through	Degree of Harm	Consequence of Harm
Social / Cultural / Spiritual	The presence of the Aboriginal archaeological signature.	Total to partial	Partial loss of value. Loss of tangible connections due to the destruction of Aboriginal archaeological sites.
Historic	The study area has no identified historical values in connection with Aboriginal Heritage.	None	No loss of value.
Scientific	The presence of the Aboriginal archaeological signature. Zone of archaeological potential.	Total to partial	Loss of research opportunity and scientific analysis value.
Aesthetic	The study area has no identified aesthetic values in connection with Aboriginal heritage.	None	No loss of value.

8.4 Endnotes

[1] NSW OEH Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW, 2011, p12.

9.0 Avoiding and Mitigating Harm

To address the potential impacts to Aboriginal heritage, a range of standard and site-specific mitigation measures are proposed. The management and mitigation measures identified are based on consideration of:

- legal requirements under the terms of the NPW Act, as amended;
- the Heritage NSW Code of Practice, which was adopted by the NPW Regulation 2009 (NPW Regulation) made under the NPW Act, and which came into force on 1 October 2010;
- the assessment of the Aboriginal cultural heritage values in the subject area;
- the relevant information provided by the local Aboriginal community members who participated in this assessment; and
- the size of the study area, the size of the remaining areas with archaeological sensitivity and likely impacts posed by the project proposal.

Environmental management for the proposal would be carried out in accordance with the environmental management approach as detailed in Chapter 27 of the EIS (Approach to environmental management and mitigation).

This would include an Aboriginal cultural heritage management plan, prepared as part of the Construction Environmental Management Plan (CEMP).

9.1 Summary of Mitigation and Management Measures

The mitigation measures to manage impacts to Aboriginal heritage from the proposal are outlined in Table 9.1. It is noted that no measures relevant to the operational phase of the proposal have been identified.

Mitigation measures proposed in Technical Paper 5 (water quality) would address potential soil and water quality impacts.

Table 9.1 Summary of Mitigation and Management Measures.

Ref	Impact type	Mitigation management measure	Phase
AH-1	Avoiding and minimising impacts on Aboriginal heritage	Detailed design and construction planning would avoid direct impacts on identified items/sites of Aboriginal heritage significance as far as reasonably practicable. The location of construction compounds and associated access routes would be reviewed to ensure, as far as practicable, they are not located in areas of medium or high archaeological potential.	Detailed design / pre-construction
AH-2	Management of salvaged items	A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be included in the Aboriginal cultural heritage management plan (mitigation measure AH-9 to ensure any artefacts salvaged are managed in accordance with the requirements of the *National Parks and Wildlife Act 1974* (NSW). This includes artefacts within the areas of Zone 1 and Zone 2. The methodology would include the process for consultation with Heritage NSW and registered Aboriginal Parties in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010) the Aboriginal Cultural Heritage	Detailed design / pre-construction

Ref	Impact type	Mitigation management measure	Phase
		Consultation Requirements for Proponents 2010 (DECCW, 2010), and the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects. Registered Aboriginal parties would be engaged to assist in the salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process. Detailed analysis and reporting of cultural material collected would be provided to the NSW Department of Planning and Environment.	
AH-3	Management of salvaged items	Archaeological survey and test excavation (if required) would be performed prior to the commencement of impact works at Zone 5 and 6 to confirm the precise nature and extent of the archaeological resource and to inform the selection of the applicable mitigation measures.	Detailed design / pre-construction
AH-4	Management of salvaged items	Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the archaeological survey (mitigation measure AH-3). The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH-9).	Detailed design / pre-construction
AH-5	Avoiding and minimising impacts on Aboriginal heritage	A pre-construction survey would be undertaken to update the AHIMS record and/or confirm the locations of the previously listed AHIMS sites that could not be located during the site survey: • Artefact Sites ARTC12 and 16 (AHIMS 50-5-0268, 50-5-0272) • Artefact Sites ARTC10 and 11 (AHIMS 50-2-0054, 50-2-0055) Surveys would be undertaken with registered Aboriginal parties in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010). If the sites are located, impacts would be avoided as far as practicable and protection measures put in place in accordance with the Aboriginal cultural heritage management plan (mitigation measure AH-9). Any sites with the potential to be impacted would be managed in accordance with the salvage methodology (mitigation measure AH-2).	Detailed design / pre-construction
AH-6	Impacts on artefact scatters	Surface collection (salvage) of artefacts that have been identified in Zones 1, 2, 4, 7 and 11 would occur prior to construction in accordance with the approved salvage methodology.	Detailed design / pre-construction
AH-7	Avoiding and minimising impacts on Aboriginal heritage	For registered AHIMS sites and Aboriginal sites identified during archaeological surveys located in close proximity to, but outside of, the proposal site, the extent of these sites would be demarcated with high visibility fencing as far as practicable to avoid accidental impact during construction impacts. This particularly applies to scarred trees ARTC6, ARTC18 and ARTC19. The sites would also be clearly marked on all mapping and plans used by contractors working on the project. Scarred tree ARTC20 which is located within proposal site, should be marked on all mapping and plans used by contractors working on the project and should be fenced with high visibility fencing to avoid accidental impact during construction works. Potential excavation near the tree should include consideration of a tree protection zone, defined in consultation with an arborist.	Detailed design / pre-construction
AH-8	Avoiding and minimising impacts	Clearing extents/site boundary/limit of works would be consistent with project extents defined in a condition of approval and would be clearly	Detailed design / pre-construction

Ref	Impact type	Mitigation management measure	Phase
	on Aboriginal heritage	defined with flagging or marking tape, signage or other suitable means to delineate no go areas.	
AH-9	Protecting Aboriginal heritage and minimising impacts during construction	An Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage, including: • a salvage methodology (mitigation measure AH-2) • an unexpected finds procedure (mitigation measure AH-11) • plans and installation procedures for fencing and protective coverings • induction package for construction workers and supervisors • erosion and sediment controls in accordance with *Managing Urban Stormwater: Soils and construction – Volume 1* (Landcom, 2004) to minimise the potential for erosion impacts to Aboriginal sites located close to watercourses/drainage lines • measures to manage the potential for impacts to potential Aboriginal heritage items (including burial sites) located in sensitive landscapes (such as alluvium landscapes) • measures to protect sites close to the proposal site from inadvertent impacts • outcomes of further investigations (mitigation measures AH-3 and AH-5). The plan would be prepared in consultation with registered Aboriginal parties and the NSW Department of Planning and Environment.	Construction
AH-10	Protecting Aboriginal heritage and minimising impacts during construction	A requirement for cultural heritage awareness training would be included in the Aboriginal cultural heritage management plan. Cultural heritage awareness training would be provided by an Aboriginal representative at the commencement of substantial works for the project.	Construction
AH-11	Unexpected finds	An unexpected finds procedure would be developed and included in the Aboriginal cultural heritage management plan to provide a consistent method for managing any unexpected Aboriginal heritage items discovered during construction, including potential heritage items or objects and a flow chart of the procedure on the findings of skeletal remains.	Construction
AH-12	Update AHIMS records	AHIMS records would be updated for AHIMS Register locations no longer considered to be sites: Scarred Tree 50-5-0117 (AHIMS 50-5-0117) Scarred Tree 50-5-0120 (AHIMS 50-5-0120) Scarred Tree 50-5-0121 (AHIMS 50-5-0121) Zone 1 - low density scatter (AHIMS 50-5-0280) (part) PAD Zone 7 North (AHIMS 50-5-0281) PAD Zone 7 South (AHIMS 50-5-0288) PAD Zone 8 (AHIMS 50-5-0282) PAD Zone 11 (AHIMS 50-2-0056) PAD Zone 11 East (AHIMS 50-2-0057)	Construction

10.0 Conclusions

The proposal is located within an Aboriginal cultural landscape and contains zones with Aboriginal archaeological potential. Section 9 includes a summary of management recommendations for all of the known Aboriginal sites, places, landscapes, values and areas of archaeological potential across the project proposal.

Based on the findings of this report, the following heritage recommendations are made:

- Prepare a Construction Heritage Management sub-plan as part of the CEMP. The Construction Heritage Management Plan should detail the measures to be implemented during construction to minimise the potential for impacts, manage heritage and outline procedures for any unexpected finds in accordance with heritage legislation and ARTC procedures.
- A Cultural Heritage induction and Unexpected Finds Stop Work Procedure should be developed for all personnel working on the project, as part of the Construction Heritage Management sub-plan.
- All existing records in the AHIMS database relating to this proposal should be updated in conjunction with issuing the final report. This applies specifically to the sites noted in Section 9.3.
- Aboriginal community collection of surface artefacts should be undertaken in Zones 1, 2, 7 and 11 prior to any construction activities.
- Test excavation should be undertaken if required of the PADs in Zones 5 and 6.
- Salvage excavation should be undertaken for the areas of higher artefact density in Zones 1 and 2 where they will be impacted by the proposal site.
- Scar tree ARTC20 should be fenced during construction.

The proposal comprises a new rail corridor that would connect to the existing freight rail network near Illabo and Stockinbingal in New South Wales. This assessment has included research, survey and test excavation investigations in consultation with the local Registered Aboriginal Parties to determine if Aboriginal cultural objects are present within the study area, and to establish the nature and extent of any archaeological evidence that may exist relating to Aboriginal occupation of the area. The investigation has found that the proposal crosses an Aboriginal cultural landscape which retains archaeological and cultural evidence of Aboriginal occupation. In particular the landforms around Billabong and Ulandra Creeks have archaeological sites which indicate the repeated use of the landscape over a lengthy period of time. These sites may be impacted by the construction of the proposal and therefore a series of measures are outlined in Section 9.0 to mitigate those impacts.

11.0 References

- AECOM. (2010). Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 – Bethungra to Wagga Wagga. Prepared for APA Group.
- Andersson, K. (2010). Soil Landscapes of the Cootamundra 1:250,000 sheet. Sydney: NSW Department of Environment, Climate Change and Water.
- Australia ICOMOS. (2013). The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (the Burra Charter).
- Australian Law Reform Commission, Australian Government. Defining Native Title. Retrieved 4 July 2018, from https://www.alrc.gov.au/publications/establishing-native-title-rights-and-interests
- Boot, P., & Heffernan, K. A Preliminary Archaeological Survey of Jumping Creek, Queanbeyan, NSW. Prepared for Kinhill Engineers.
- Briggs, R. (2011). Carved Trees: Aboriginal Cultures of Western NSW, SLNSW Exhibition Guide. Sydney: State Library of NSW.
- Dearling, C. (2007). Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work, within Ulandra Nature Reserve and Adjacent Areas, near Bethungra, NSW. Prepared for Transgrid, Property and Environment Southern Yass.
- Department of Environment, Climate Change and Water (now Heritage NSW). (2010). Aboriginal Cultural Heritage Consultation Requirements for Proponents.
- Department of Environment, Climate Change and Water (now Heritage NSW). (2010). Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.
- GML Heritage. (2018). ARTC Inland Rail—Aboriginal Archaeological Research Design. Prepared for WSP.
- GML Heritage. (2019). ARTC Inland Rail, Aboriginal Archaeological Research Design for Test Excavations. Prepared for WSP and ARTC.
- GML Heritage. (2020). The Former Belconnen Naval Transmission Station Baldwin Drive, Lawson ACT—Post-Excavation Report. Prepared for Defence Housing Australia and WSP.
- Holdaway, S., & Stern, N. (2004). A record in stone. Melbourne: Museum Victoria and Aboriginal Studies Press.
- Kamminga, J. (1996). Assessment of Significance and Presentation of Options for Management of a Volcanic-stone Procurement Place in Stage 2 of the Fyshwick Expansion Area, ACT. Prepared for CMPS&F Pty Ltd, Consulting Engineers.
- Kelly, A. (1980). Bowen-Young Branch Line of the Natural Gas Pipeline: A Detailed Record of Zone A, site BY/4. DECC Report No. 478.

- Kelton, J. An Archaeological Survey for the Proposed Telecom Optic Fibre Cable Route: Bethrunga to Cootamundra, South West Slopes of NSW. Prepared for Telecom Australia.
- Knight, T. (2011). Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment. Prepared for Transgrid, Yass.
- Niche Environment and Heritage. (2016). Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment. Prepared for Parsons Brinckerhoff.
- NSW Heritage Office. (2001). Assessing Heritage Significance. Sydney: NSW Heritage Office.
- NSW Office of Environment and Heritage (now Heritage NSW). (2011). Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales.
- Paton, R., & Hughes, P. (1980). An Archaeological Investigation of the Ulandra Nature Reserve, NSW. Prepared for the National Parks and Wildlife Service, Tumut.
- Saunders, P. (1994). Block 2099 Jerrabomberra, ACT: Preliminary Cultural Resource Survey and Artefact Collection. Prepared for the Land Division, Department of the Environment, Land and Planning.
- Silcox, R. (1987). Test Excavations at Cunningham Creek, near Murrumburrah, NSW. Prepared for the Public Works Department, NSW.
- Silcox, R., & Koettig, M. (1988). Barton Highway Extension at Yass: Survey and Test Excavations on the Proposed Alternative Route. Prepared for Kinhill Stearns Pty Ltd.
- South Western Slopes - Regional History. Retrieved 1 August 2019, from https://www.environment.nsw.gov.au/bioregions/SouthWesternSlopes-RegionalHistory.htm
- Tindale, N. (1974). Aboriginal tribes of Australia. Berkeley, California: University of California Press.
- Witter, D. (1980). An Archaeological Pipeline Survey between Wagga Wagga and Young. Prepared for the National Parks and Wildlife Service, Sydney

12.0 Appendices

Appendix A

Niche Environment and Heritage, Inland Rail Illabo to Stockinbingal—Aboriginal Objects Due Diligence Desktop Assessment, prepared for Parsons Brinckerhoff, June 2016

Appendix B

Property Descriptions for properties partially covered by the project footprint

Appendix C

Consultation Log

Appendix D

Stage 1 consultation letters and newspaper advertisement

Appendix E

GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design, Draft Report, prepared for WSP and Parsons Brinckerhoff, October 2018

Appendix F

GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design for Test Excavations, Draft Report, prepared for WSP and ARTC, February 2019

Appendix G

GML Heritage Pty Ltd, ARTC Inland Rail, I2S Revised Alignment—Archaeological Research Design, Aboriginal Cultural Heritage, prepared for WSP and ARTC, December 2020

Appendix H

Context sheets for Test Units (TU) excavated during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix I

Photo log for photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix J

Photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Appendix K

Aboriginal Heritage Information Management System (AHIMS) site cards for Aboriginal sites recorded prior to and during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix A Aboriginal objects due diligence desktop assessment

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix A

Niche Environment and Heritage, Inland Rail Illabo to Stockinbingal—Aboriginal Objects Due Diligence Desktop Assessment, prepared for Parsons Brinckerhoff, June 2016

This Appendix removed due to sensitive data

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix B Property descriptions

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix B

Property Descriptions for properties partially covered by the project footprint.

Table B.1 Lot and DPs within the Cootamundra-Gundagai Regional LGA.

Lot	DP	Section Number	Lot	DP	Section Number	Lot	DP	Section Number
A	32837		3	758928	12	11	758928	14
C	32837		3	758928	13	11	758928	13
1	103343		4	758928	13	12	758928	13
17	111694		4	758928	12	12	758928	12
B	172780		5	758928	13	2	789254	
1	173592		5	758928	14	2	813819	
3	250017		5	758928	11	1	819690	
1	377393		5	758928	12	3	869982	
1	537977		6	758928	13	158	915952	
1	540611		6	758928	12	159	915952	
2	542942		6	758928	14	1	952541	
1	546133		6	758928	11	1	952965	
1	561560		7	758928	12	2	952965	
2	561560		7	758928	14	1	957869	
2	570265		7	758928	11	1	1018725	
1	581176		7	758928	13	3	1031243	
22	618553		8	758928	14	5	1045925	
1	727946		8	758928	11	6	1045925	
2	727946		8	758928	12	2	1088439	
3	727946		8	758928	13	1	1093937	
2	734764		9	758928	11	188	1120849	
22	750598		9	758928	14	64	1172415	
167	750598		9	758928	13	65	1172415	
91	750619		9	758928	12	10	1195365	
273	750619		10	758928	11	1	1200550	
275	750619		10	758928	12	4001	1205138	
1	758928	12	10	758928	14	4002	1205139	
1	758928	13	10	758928	13	4003	1205140	
2	758928	13	11	758928	12	2	1214399	
2	758928	12	11	758928	11			

Table B.2 Lot and DPs within the Junee LGA.

Lot	DP	Lot	DP	Lot	DP	Lot	DP
6	121766	113	751396	89	751398	199	751401
7	121766	114	751396	94	751398	200	751401
4	134014	119	751396	100	751398	220	751401
1	237404	123	751396	126	751398	221	751401
3	237404	125	751396	24	751401	223	751401
1	533415	133	751396	31	751401	279	751401
2	533415	179	751396	32	751401	282	751401
3	591854	184	751396	70	751401	303	751401
2	610833	185	751396	103	751401	322	751401
1	631000	186	751396	104	751401	1	939264
2	631000	190	751396	105	751401	10	1048423
24	751396	9	751398	109	751401	20	1116265
25	751396	21	751398	112	751401	21	1116265
30	751396	27	751398	117	751401	1	1173278
54	751396	49	751398	169	751401	22	1219717
104	751396	86	751398	173	751401	3	1240872
112	751396	87	751398	174	751401		

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix C Consultation log

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix C

Consultation log

This Appendix removed due to sensitive data

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix D Stage 1 consultation letters and newspaper advertisements

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix D

Stage 1 consultation letters and newspaper advertisement

This Appendix removed due to sensitive data

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix E Aboriginal archaeological research design

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix E

GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design, Draft Report, prepared for WSP and Parsons Brinckerhoff, October 2018

ARTC Inland Rail

Aboriginal Archaeological Research Design

Draft Report

Report prepared for WSP | Parsons Brinkerhoff

October 2018

Sydney Office Level 6, 372 Elizabeth Street Surry Hills NSW Australia 2010 T +61 2 9319 4811
Canberra Office 2A Mugga Way Red Hill ACT Australia 2603 T +61 2 6273 7540
GML Heritage Pty Ltd ABN 60 001 179 362

www.gml.com.au

Report Register

The following report register documents the development and issue of the report entitled ARTC Inland Rail—Aboriginal Archaeological Research Design, undertaken by GML Heritage Pty Ltd in accordance with its quality management system.

Job No.	Issue No.	Notes/Description	Issue Date
17-0169	1	Draft Report	25 October 2018

Quality Assurance

GML Heritage Pty Ltd operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

Project Manager:	Jodi Cameron	**Project Director & Reviewer:**	Martin Rowney
Issue No.	1	**Issue No.**	1
Signature		**Signature**	
Position:	Heritage Consultant	**Position:**	Senior Associate
Date:	25 October 2018	**Date:**	25 October 2018

Contents Page

1.0 Introduction

The Australian Rail Track Corporation Ltd (ARTC) is working to build a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central west New South Wales (NSW) and Toowoomba in Queensland. Known as the Inland Rail Programme, the route has been split into 13 projects, totalling approximately 1,700km in length. GML Heritage Pty Ltd (GML) has been engaged by WSP | Parsons Brinckerhoff to prepare an Aboriginal cultural heritage assessment report (ACHAR) to address the Environmental Assessment Requirements set out by the Secretary of the Department of Planning and Environment for the approval path for the Illabo to Stockinbingal project. An application for State Significant Infrastructure (SSI) has been made for the project. The application has not been determined at this stage.

As part of the ACHAR, this Aboriginal Archaeological Research Design (ARD) has been prepared to define the methodology and research parameters for the investigation of Aboriginal heritage along the route between Illabo and Stockinbingal (the study area). This report is in line with NSW state Aboriginal heritage processes for best practice after the stipulated requirements in the Secretary's Environmental Assessment Requirements (SEARs). This methodology fulfils Stage 2 and 3 of the Department of Environment, Climate Change and Water (DECCW) *Aboriginal cultural heritage consultation requirements for proponents* (the Consultation Requirements).[1] The current methodology aims to:

- ensure Aboriginal archaeological constraints and opportunities are adequately addressed and appropriately managed throughout the life of the project;
- consult with the Aboriginal community regarding the cultural significance of the study area; and
- ensure that any risks to Aboriginal heritage values (both intangible and tangible) are appropriately identified and mitigated.

1.1 The Study Area

The study area is the proposed rail line, approximately 37km long, running between Illabo and Stockinbingal (Figure 1.1 and Figure 1.2). The study area is approximately 160km northwest of Canberra and 310km west of the NSW coast. Stockinbingal is within the Cootamundra-Gundagai Regional LGA and Illabo is within Junee LGA. The proposed rail line crosses 156 property boundaries. The Lot and DPs for properties within the Cootamundra-Gundagai Regional LGA are listed in Table 1.1 and the Lot and DPs within Junee LGA are listed in Table 1.2.

Table 1.1 Lot and DPs within the Cootamundra-Gundagai Regional LGA.

Lot	DP	Section Number	Lot	DP	Section Number	Lot	DP	Section Number
A	32837		3	758928	12	11	758928	14
C	32837		3	758928	13	11	758928	13
1	103343		4	758928	13	12	758928	13
17	111694		4	758928	12	12	758928	12
B	172780		5	758928	13	2	789254	
1	173592		5	758928	14	2	813819	
3	250017		5	758928	11	1	819690	
1	377393		5	758928	12	3	869982	
1	537977		6	758928	13	158	915952	
1	540611		6	758928	12	159	915952	
2	542942		6	758928	14	1	952541	
1	546133		6	758928	11	1	952965	
1	561560		7	758928	12	2	952965	
2	561560		7	758928	14	1	957869	
2	570265		7	758928	11	1	1018725	
1	581176		7	758928	13	3	1031243	
22	618553		8	758928	14	5	1045925	
1	727946		8	758928	11	6	1045925	
2	727946		8	758928	12	2	1088439	
3	727946		8	758928	13	1	1093937	
2	734764		9	758928	11	188	1120849	
22	750598		9	758928	14	64	1172415	
167	750598		9	758928	13	65	1172415	
91	750619		9	758928	12	10	1195365	
273	750619		10	758928	11	1	1200550	
275	750619		10	758928	12	4001	1205138	
1	758928	12	10	758928	14	4002	1205139	
1	758928	13	10	758928	13	4003	1205140	
2	758928	13	11	758928	12	2	1214399	
2	758928	12	11	758928	11			

Table 1.2 Lot and DPs within the Junee LGA.

Lot	DP	Lot	DP	Lot	DP	Lot	DP
6	121766	113	751396	89	751398	199	751401
7	121766	114	751396	94	751398	200	751401

Lot	DP	Lot	DP	Lot	DP	Lot	DP
4	134014	119	751396	100	751398	220	751401
1	237404	123	751396	126	751398	221	751401
3	237404	125	751396	24	751401	223	751401
1	533415	133	751396	31	751401	279	751401
2	533415	179	751396	32	751401	282	751401
3	591854	184	751396	70	751401	303	751401
2	610833	185	751396	103	751401	322	751401
1	631000	186	751396	104	751401	1	939264
2	631000	190	751396	105	751401	10	1048423
24	751396	9	751398	109	751401	20	1116265
25	751396	21	751398	112	751401	21	1116265
30	751396	27	751398	117	751401	1	1173278
54	751396	49	751398	169	751401	22	1219717
104	751396	86	751398	173	751401	3	1240872
112	751396	87	751398	174	751401		

1.2 Proposed Works

The proposed works are listed below; however, due to the size and nature of the project, minor details may change during construction.

The current design includes:

- construction of 37 kilometres of new, single track standard gauge railway;
- installation of 43 new culverts and five new bridges;
- two turnouts;
- two crossing loops;
- installation of 13 road/level crossings;
- tie-in works to the existing rail line north of Illabo and at Stockinbingal; and
- associated works include signalling and communications, signage, fencing, services and utilities.

As part of the project, the following activities will also be undertaken:

- construction of access roads and access tracks;
- permanent and temporary changes to the road network; and
- construction of compounds.

1.3 Statutory Context

The following statutory controls are relevant to the study area and therefore this report:

- *Environmental Planning and Assessment Act 1979* (NSW) (EPA Act);
- *National Parks and Wildlife Act 1974* (NSW) (NPW Act);
- *Junee Local Environmental Plan 2012*; and
- *Cootamundra Local Environmental Plan 2013*.

Under Section 90 of the NPW Act, the Proponent would require an Aboriginal Heritage Impact Permit (AHIP) should the development activities harm any Aboriginal object or Aboriginal place. The OEH requires the appropriate management of other Aboriginal heritage social values, if connected with a study area.

However, as the approval process for this project is determined under the EPA Act as a State Significant Infrastructure (SSI) project the Aboriginal heritage approval process will need to address the SEARs. The Aboriginal heritage assessment process to satisfy the SEARs mirrors the NSW Aboriginal heritage requirements; however, an AHIP will not be necessary.

This project aims to determine if harm can be avoided to any Aboriginal sites across the study area.

1.4 Objectives of this Aboriginal Archaeological Research Design

To understand, assess and provide management for Aboriginal heritage an ACHAR is being produced. Development of the ACHAR requires a series of stages including a program of Aboriginal community consultation, an archaeological survey, and archaeological test excavation (where relevant). This ARD provides the framework for the program of archaeological survey.

Archaeological survey will be undertaken in collaboration and consultation with the project's Registered Aboriginal Parties (RAPs). The aim of consulting with Aboriginal people is to facilitate a process for RAPs to contribute culturally appropriate information, as well as to participate in the determination of the cultural significance of Aboriginal objects and/or places that may be present within the study area. Consultation also provides an opportunity for RAPs to have input into the development of cultural heritage management options.

The objectives of the assessment are to:

- understand the number, extent, type, condition, integrity and archaeological potential of Aboriginal heritage sites and places within the study area;
- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- prepare a cultural values assessment for all identified aspects of Aboriginal cultural heritage identified within the study area;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;
- minimise impacts to Aboriginal cultural heritage through prudent, feasible and pragmatic design solutions;

- determine where impacts are unavoidable and develop a series of impact mitigation strategies; and
- provide clear recommendations for the conservation of archaeological values and mitigation of impacts to these values.

1.5 Authors

This report has been prepared by Jodi Cameron, Heritage Consultant, and Lara Tooby, Graduate Heritage Consultant, with review and strategic input by Martin Rowney, Senior Associate.

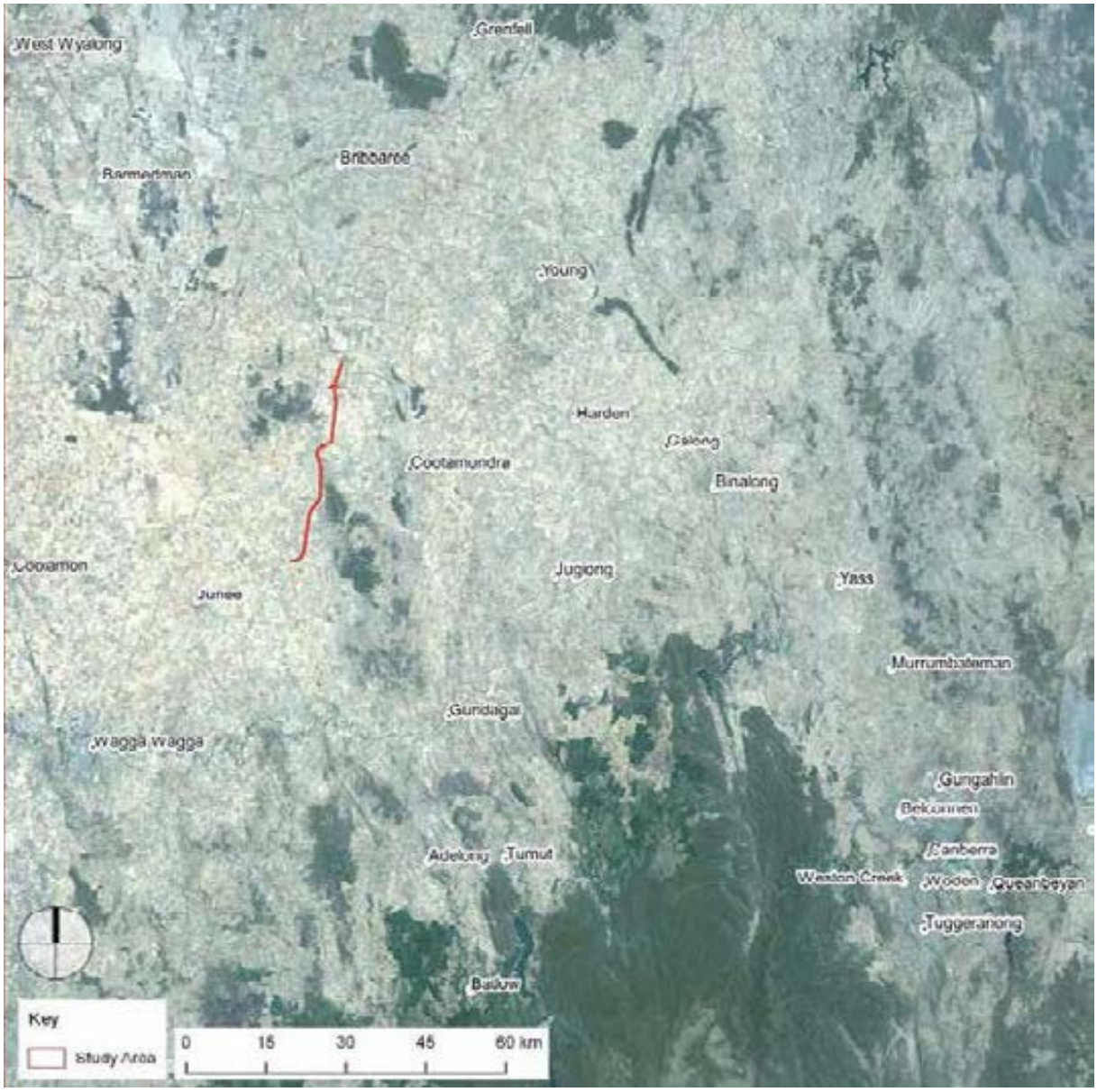


Figure 1.1 Study area within Central NSW. (Source: NSW Land and Property Information [LPI] with GML additions, 2018)

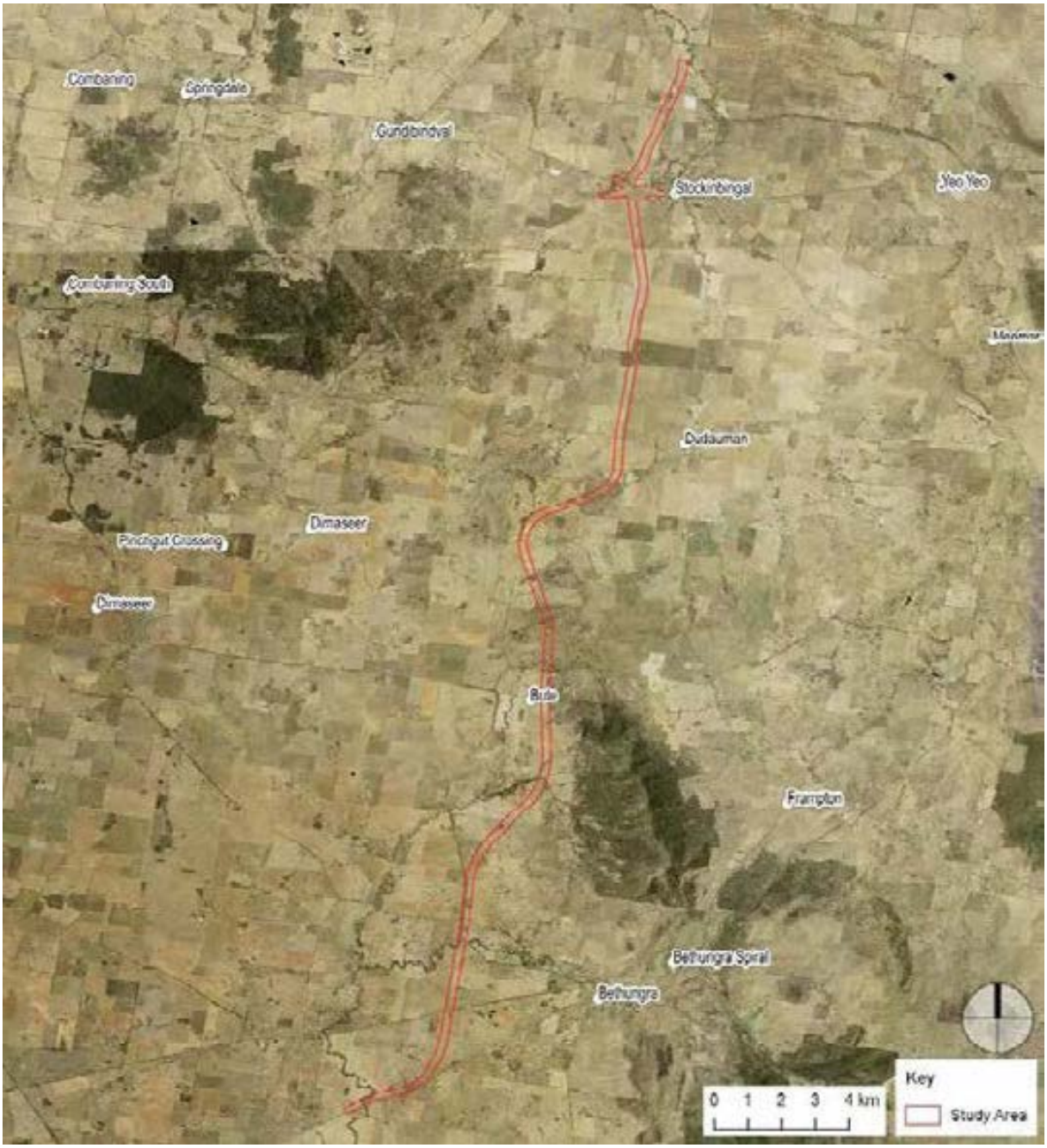


Figure 1.2 Study area between Illabo and Stockinbingal. (Source: NSW LPI with GML additions, 2018)

1.6 Endnotes

1 Department of Environment, Climate Change and Water, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

2.0 Archaeological and Environmental Context

2.1 Archaeological Context

The purpose of this section is to synthesise available information from previous archaeological and ethnohistorical studies to provide context and a baseline for what is known about Aboriginal cultural heritage in the subject area.

2.1.1 Summary Ethnohistory

The study area lies within the traditional lands of the Wiradjuri language group.[1] The Wiradjuri group occupies the largest geographic area of New South Wales of all Aboriginal groups.[2] Wiradjuri Country includes the Macquarie, Lachlan and Murrumbidgee Rivers, which would have provided a variety of resources, including being the primary source of food.[3]

The Wiradjuri people used carved trees to mark the burial site of a celebrated man whose passing had great effect on the community.[4] Often, only one tree was carved at each burial site; however, in some cases up to five carved trees have been identified for one burial.[5]

It is estimated that 2000–3000 people lived in the Wagga Wagga LGA before the arrival of Europeans. After the arrival of Europeans in Sydney, the impact on Aboriginal people was soon felt. European occupation caused the alienation of Aboriginal people from their traditional lands and cultural practice.[6] The smallpox epidemic was devastating to the population and as Europeans moved into the area, conflicts and negative attitudes increased. The violent incidents were termed the 'Wiradjuri wars' and the effects on the Wiradjuri population were severe.[7]

2.1.2 Aboriginal Heritage Information Management System Search

On 17 July 2018, GML undertook a search of the OEH Aboriginal Heritage Information Management System (AHIMS) database from GDA Zone 55, eastings 566209–582392 to northings 6145993–6182214, with a 0km buffer surrounding the study area. This study area had the same coordinates as the Niche[8] AHIMS extensive search report, undertaken on 1 March 2016.

The 2018 GML search identified 72 Aboriginal sites, which is an increase from the 34 listed sites identified in the Niche AHIMS extensive search report. Since March 2016, a member of the local Aboriginal community recorded 37 sites (including artefact scatters, modified trees, a waterhole and grinding groove) and one of the project RAPs recorded one additional site (a modified tree).

The search area of 17 July 2018 (GML) and 1 March 2016 (Niche) did not cover the northernmost Stockinbingal portion of the study area. To check whether any sites were in this area, a basic search was done on 18 September 2018. The search confirmed there were no Aboriginal sites in this northern area of the site, and therefore the 17 July 2018 extensive search results could be relied upon to show all sites in the study area.

In early October, the study area was extended approximately 50–100m north. To check whether any sites were in this area, another basic search was done on 17 October 2018. The search confirmed there were no Aboriginal sites in this extended area, and therefore the 17 July 2018 extensive search results could be relied upon to show all sites in the study area.

The results of the search are shown in Table 2.1 and Figure 2.1, Figure 2.2 and Figure 2.3.

Table 2.1 Results of AHIMS Search.

Site Feature	Frequency	Percentage %
Grinding Groove	1	1.4
Modified Tree (Carved or Scarred)	31	43
Potential Archaeological Deposit	1	1.4
Stone Arrangement	1	1.4
Stone Artefact Site	37	51.4
Waterhole	1	1.4
Total	**72**	

The results of the AHIMS search show that stone artefact sites are the most common within the region, making up 51% of all sites. Stone based sites and artefacts by nature preserve best in the archaeological record. Modified trees are also a dominant site type in this region (43%). One modified tree is within the study area and four others are in close proximity to the study area. This range of site types suggests that the region was used in multiple ways. Stone artefact sites are commonly associated with resource (food) procurement, processing and discard. Modified trees are also associated with broader traditions and cultural practices.

2.1.3 Relevant Local Literature

Young to Wagga Wagga Looping Gas Pipeline—Heritage Assessment—AECOM, 2010[9]

AECOM undertook an assessment, including survey, of the 61km pipeline route Stage 1—Bethungra to Wagga Wagga. Thirty-six Aboriginal sites (30 artefact scatters and six isolated finds) were identified during the survey. The impact assessment found that 29 sites would be impacted by the proposal. The significance assessment found all sites that were to be impacted had low scientific significance but high cultural significance.

Their analysis of these sites noted a number of site distribution patterns associated with landforms and environmental elements mainly associated with water sources. In particular, they noted that relatively few sites recorded were in close proximity to a reliable water source with a stream order of four or higher. Most of the sites were in fact located within the vicinity of lower order, ephemeral streams, and two-thirds of all sites were located within 50m of a water course, with 200m being the maximum distance from water for the sites recorded for this study.

The landform data recorded along with those 36 sites reveals that 26 of the sites are associated with flat or low-gradient landforms including valley flats, plains and lower slopes, while five were in mid-slope contexts and five were in crest or ridge contexts.

One of AECOM's observations was that the environmental conditions would have favoured main creek lines and smaller adjoining tributaries as primary zones for occupation. This observation was partly borne out by its findings, although with less emphasis on the main creek lines and more on the ephemeral water courses.

AECOM assessed the predictive modelling as showing that the most likely Aboriginal site occurrences would be open artefact scatters and areas of subsurface archaeological potential within 200m of high order creeks and rivers on a range of landforms including creek banks, creek flats and terraces, and

also on lower slopes and ridges overlooking water sources. Smaller open sites were also predicted to occur near ephemeral low order streams but were unlikely to occur where those water sources were first order streams with no defined channel.[10]

They concluded that their modelling generally confirmed Dan Witter's 1980s[11] model that Aboriginal land use in this general area was associated with well-watered areas.

The study area for the Wagga Wagga to Young gas pipeline ran adjacent to the current study area at the Illabo end of the corridor and was approximately 20km to the east at the Stockinbingal end.

The pipeline is 24km longer than the current study area and passed close to the southern end of the current study area. The landforms and landscape features traversed in AECOM's assessment would be similar to the conditions of the current study area.

Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales—Due Diligence—Tom Knight, 2011[12]

Tom Knight undertook a due diligence assessment for a 120m section of a fire trail in Ulandra Nature Reserve to inform and advise maintenance works. Knight observed that Ulandra Nature Reserve contained multiple AHIMS sites, six being within one kilometre of the study area. Knight relocated one previously recorded site (AHIMS # 50-5-0068) within the study area and concluded that no other Aboriginal sites existed within the section of the fire trail. AHIMS site 50-5-0068 had previously been salvaged and works on the fire trail were able to proceed following the conditions of the s90 permit.

This due diligence assessment covered an area to the southeast of the current study area. Ulandra Nature Reserve is approximately 12km from the current study area and would be representative of the current study area prior to land clearing and European occupation.

Knight also reviewed a range of other archaeological assessments which had been undertaken in the Ulandra Nature Reserve, including a survey undertaken by Paton and Hughes in 1985 in which seven artefacts scatters and 15 isolated finds were recorded. Notable among these recordings was that most were within a valley context while only a comparatively smaller number of sites were recorded on ridges and slopes. Knight concluded that open valleys in the area were generally more heavily used than the surrounding ridge tops. The availability of water had a marked influence on the likely location of artefact scatter sites and therefore 'most archaeological evidence would subsequently be found in association with low gradient, well drained locations adjacent to water sources such as stream banks, terraces and footslopes'.[13]

Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work Within Ulandra Nature Reserve and Adjacent Areas, Near Bethungra, NSW—Aboriginal Cultural Heritage Report—Charles Dearling Archaeological and Cultural Heritage Consultants, 2007[14]

This assessment concluded works in and surrounding the Ulandra Nature Reserve undertaken by Charles Dearling Archaeological and Cultural Heritage Consultants between 2002 and 2007. The archaeological works were in response to essential repairs required on Transgrid transmission lines which passed through the Ulandra Nature Reserve.

The initial assessment of the study area in 2002 identified 28 Aboriginal sites, comprising 22 artefact scatters and six isolated finds, within the Ulandra Nature Reserve.[15] The scatters were generally small containing less than 10 artefacts each, although the largest scatter contained 48 artefacts comprising

mainly debitage with cores and a small number of formalised tool types, all made from quartz, chert and siltstone.

Further survey in 2004 resulted in another seven artefact scatters and three isolated finds being recorded. A total of 146 artefacts were recorded from these sites, most of which were found along low-gradient spur crests.

Based on these surveys, Dearling hypothesised that the occupation of this area was largely characterised by low-gradient, well-drained locations in close association with water sources such as stream banks, terraces and foot slopes.

Of the sites found during the previous two surveys, 13 sites would be impacted by the Transgrid's proposed project works. Before works commenced, a s90 Consent with Salvage was issued to Transgrid and artefact collection was undertaken. Five of the larger sites contained a total of 1,495 artefacts. The assessment recommended further programs of collection under the s90 consent, as required by additional repair works.

This body of works indicates that artefact sites are common across the region and are strongly correlated with low-gradient slopes and terraces close to water, with less emphasis on ridge and crest environments. There are a number of locations across the current study area that reflect these landform criteria.

Summary

Overall the previous archaeological studies in the local area all support a basically similar model of site distribution which focuses around water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

Artefact sites, including scatters and isolated finds, are the dominant findings. The majority of artefacts were made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.

All studies note that scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

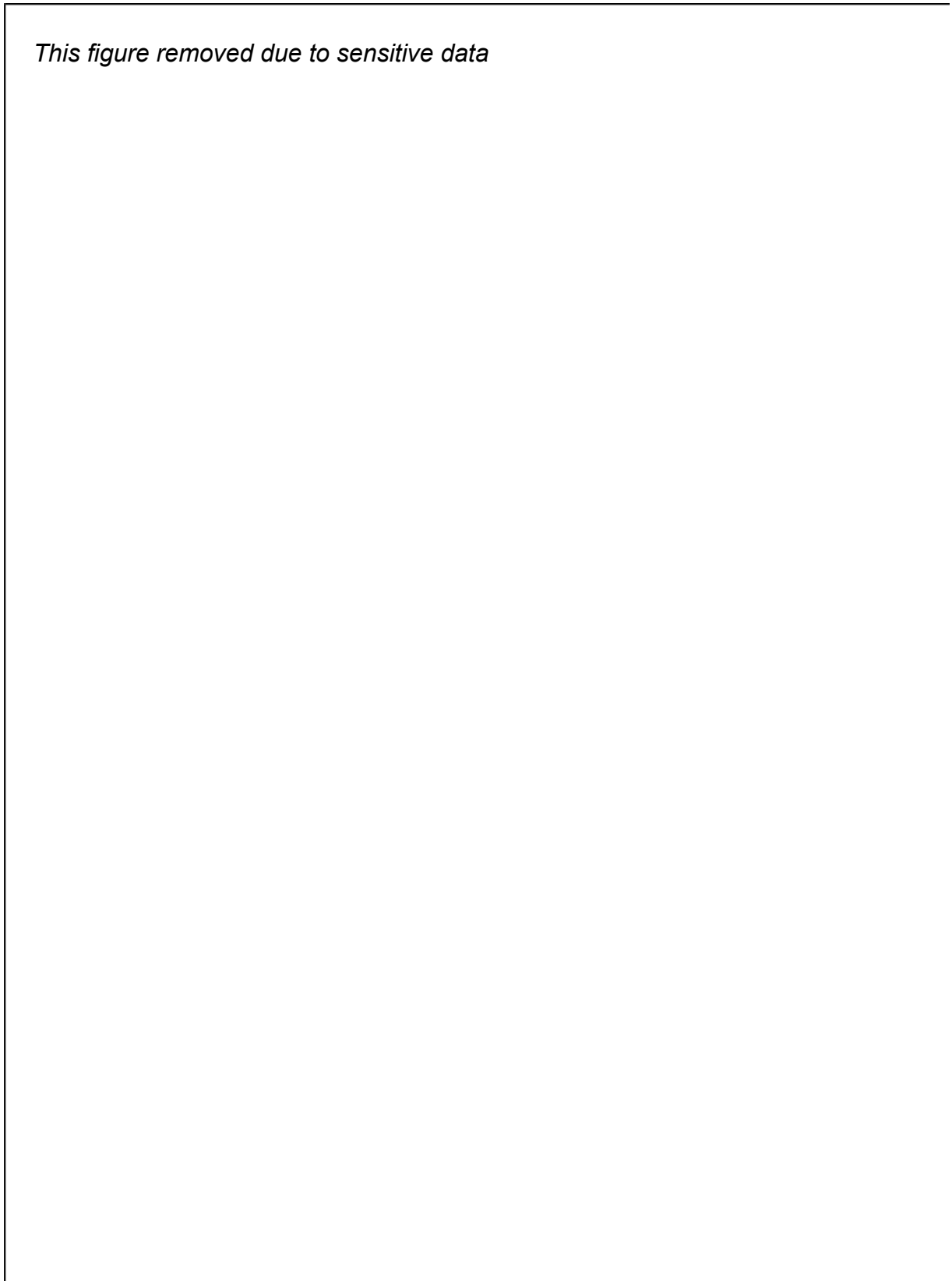


Figure 2.1 The three AHIMS search areas. (Source: NSW LPI with GML additions, 2018)

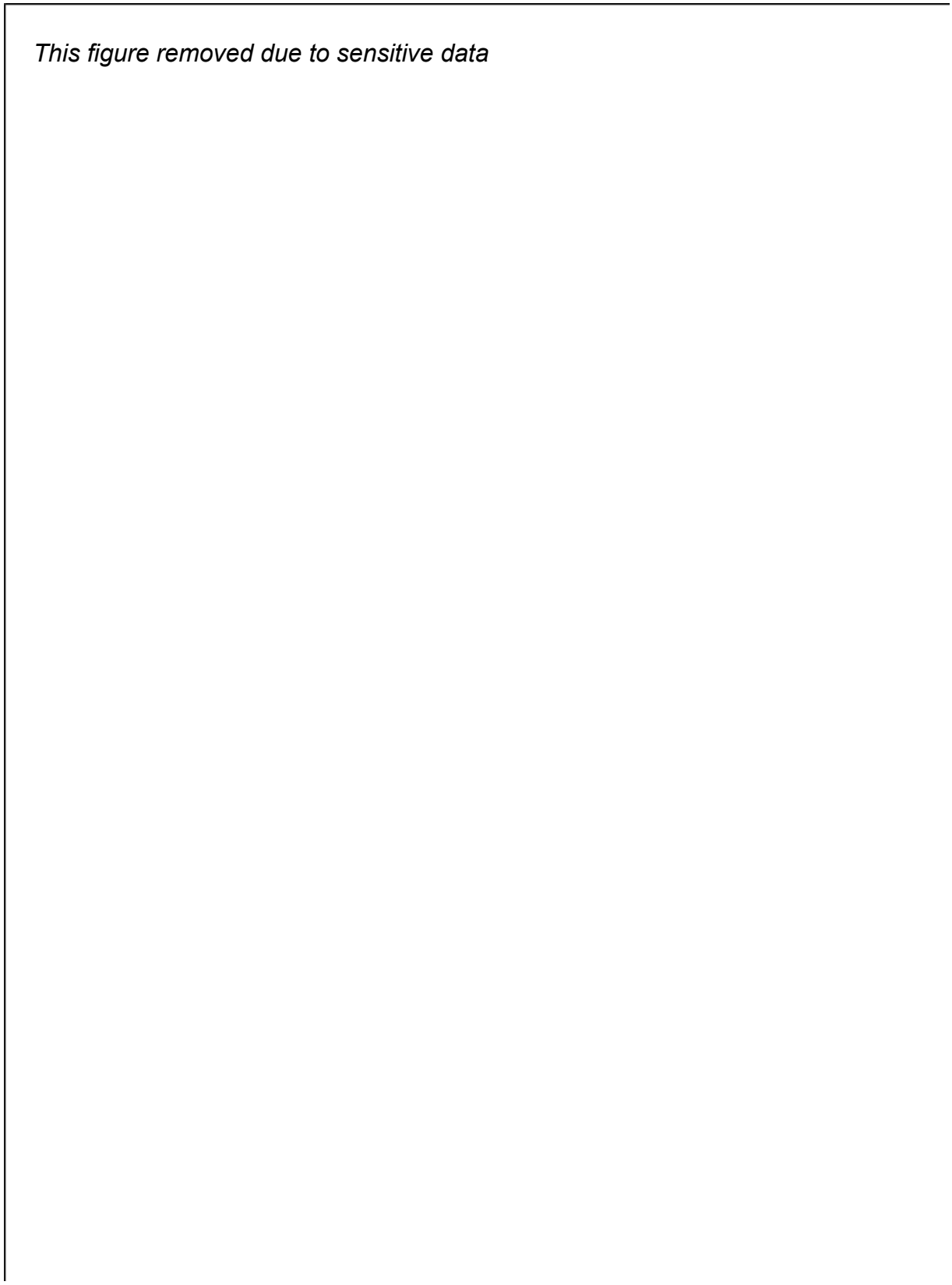


Figure 2.2 AHIMS search results. (Source: NSW LPI with GML additions, 2018)

Figure 2.3 Detailed AHIMS search results. (Source: NSW LPI, with GML additions, 2018)

2.2 Landscape Context

The purpose of this section is to provide environmental contextual information for use in developing a predictive model of Aboriginal site locations associated with the study area. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources, including water, flora and fauna, and suitable raw materials for the manufacture of stone tools and other items, had (and continues to have) a significant influence on the way in which people utilise the landscape.

Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials, whether Aboriginal or non-Aboriginal, whilst current vegetation and erosional regimes affect the visibility and detectability of sites and objects. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

The study area passes through 12 soil landscapes (Figure 2.4) and crosses six creeks (Figure 2.9). The length of the study area is always in close proximity to water. The farthest point from within the study area to water is 3.2km. The soils, landforms and landscape features of each landscape are summarised below and in Figure 2.4 to Figure 2.8.

2.2.1 Bethungra (bt) Erosional[16]

Landscape

Rolling to steep hills formed on Silurian volcanic rocks. Elevation 320–730m, local relief 70–260m, slopes from 10–32% up to 40% in some steeper terrain. Partially to extensively cleared eucalypt woodlands.

Soils

Very shallow (<25cm), moderately well-drained Paralithic Leptic Rudosols (Lithosols) on upper slopes, crests and along ridgelines. Moderately deep (<100cm), moderate to imperfectly drained Reticulate Dystrophic Red Kurosols (Red Podzolic Soils) and Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on mid to lower slopes. Moderately deep (<100cm), poorly drained Bleached-Mottled Mesotrophic Brown Chromosols (Yellow Podzolic Soils) on lower slopes. Deep (>100cm), poorly drained mottled Eutrophic Brown Sodosols (Solodic Soils) along creek lines and in depressions.

2.2.2 Comerford (cz) Erosional[17]

Landscape

Undulating low hills and rises formed on Devonian igneous and sedimentary rocks. Elevation 280–370m and <448m near Dirnaseer Road, local relief 20–80m, slopes 3–10% and <15% on steeper terrain. Extensively cleared, mid–high open eucalypt woodland.

Soils

Shallow (<50cm), well-drained Paralithic Leptic Rudosols (Lithosols) and Basic Paralithic Orthic Tenosols (Earthy Sands) on crests and ridgelines. Moderately deep (<100cm), imperfectly drained Mottled Magnesic Red Kurosols (Red Podzolic Soils; Solodic Soils) on mid to upper slopes. Mottled Eutrophic Red Chromosols (Red Podzolic Soils) on upper to lower slopes, and Mottled Eutrophic Brown Dermosols (Brown Podzolic Soils) on lower slopes.

2.2.3 Eurongilly (er) Transferral[18]

Landscape

Gentle to undulating rises and footslopes formed on Quaternary colluvium. Elevation 220–300m, local relief <30m, slopes <5%. Extensively cleared mid-high open eucalypt woodlands.

Soils

Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Non-calcic Brown Soils; Redbrown Earths) on mid to upper slopes. Deep (>100cm), imperfectly drained Haplic and Mottled Red and Brown Chromosols (Brown Podzolic Soils), imperfectly drained Haplic and Bleached Red Kurosols (Red Podzolic Soils), moderately well-drained Haplic Eutrophic Red and Brown Dermosols (Brown Podzolic Soils), and moderately well-drained Haplic Eutrophic Red Kandosols (Red Earths) on mid to lower slopes. Deep (>100cm), imperfectly and poorly drained Bleached-Mottled Mesotrophic Brown Chromosols and Sodosols (Yellow Podzolic Soils; Solodic Soils) on lower slopes to drainage lines.

2.2.4 Frampton (fr) Transferral[19]

Landscape

Gentle to undulating colluvial rises, foot slopes and plains formed on recent Quaternary colluvium derived from Silurian volcanics. Elevation 200–400m, local relief <30m, slopes <6%. Extensive to totally cleared mid–high open eucalypt woodlands.

Soils

Shallow (<50cm), moderately well-drained Palic Paralithic Tenosols (Earthy Sands) on upper slopes adjacent to Bethungra Range. Deep (>100cm), imperfectly drained Mottled Calcic and Eutrophic Red Chromosols (Red-brown Earths; Non-calcic Brown Soils) and Mottled and Mottled-Sodic Mesotrophic Red Dermosols (Non-calcic Brown Soils) on mid to upper slopes, along with deep (>100cm), moderately well drained Haplic Red Kandosols (Red Earths). Deep (>100cm), imperfectly drained Mottled Eutrophic Yellow and Brown Chromosols (Yellow and Brown Podzolic Soils) and Eutrophic Yellow Sodosols (Solodic Soils) on lower slopes. Deep (>100cm), poorly drained Bleached-Mottled Dystrophic Brown Chromosols (Brown Podzolic Soils) in drainage depressions.

2.2.5 Ironbong Creek (ig) Alluvial[20]

Landscape

Gently undulating alluvial plains formed on Quaternary alluvium. Elevation 220–340m, local relief <9m, slopes <2%. Extensively cleared eucalypt woodlands.

Soils

Moderately deep (>50cm), imperfectly drained Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on terraces. Moderately deep (>50cm), imperfectly drained Haplic Eutrophic Red Kandosols (Red Earths), and deep (>100cm) imperfectly drained Hypocalcic Mottled-Subnatric Brown Sodosols (Solodic Soils) on surrounding plains. Deep (>100cm), imperfectly drained Haplic Mesotrophic Brown Kandosols and Rudosols (Alluvial Soils) along creek lines.

2.2.6 Narraburra (nr) Stagnant Alluvial[21]

Landscape

Broad alluvial plains formed on Quaternary alluvium. Wind-blown sand deposits and prior stream formations occur throughout the plains. Elevation 227–280m, local relief <9m, slopes <9%. Extensively cleared mid–high open eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Rudosols (Alluvial Soils) and poorly drained Bleached Mesotrophic Sodosols (Solodic Soils; Soloths) along current creek floodplains and in drainage depressions. Deep (>100cm), well-drained Basic Stratic Rudosols (Earthy Sands) adjacent to some creek lines. Deep (>100cm), Bleached-Mottled Mesotrophic Red Chromosols and Haplic Magnesic Red Kurosols (Red Podzolic Soils) on adjacent levees and plains. Deep (>100cm), imperfectly drained Bleached Hypocalcic Red Chromosols and Mottled Calcic Brown Chromosols (Red-brown Earths) on surrounding plains. Brown Dermosols (intergrades of Brown Podzolic Soils to Non-calcic Brown Soils) are also present. Deep (>100cm), imperfectly drained Endocalcareous-Endohypersodic Crusty Red Vertosols (Red Clays) and imperfectly drained Endocalcareous Grey Vertosols (Grey Clays) also occur on back plains.

2.2.7 Oakville (oe) Transferral[22]

Landscape

Gently undulating foot slopes and plains formed on recent Quaternary colluvium. Elevation 260–360m, local relief <30m, slopes <5%. Extensively cleared eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Mottled Eutrophic Red Chromosols (Red Podzolic Soils) and Bleached-Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on upper to lower slopes. Deep (>100cm), moderately well-drained Eutrophic Subnatric Red Sodosols (Solodic Soils) on some midslopes. Deep (>100cm), poorly drained Mottled Eutrophic Brown Sodosols (Solodic Soils) in drainage depressions and along creek lines.

2.2.8 Reynolds (ry) Transferral[23]

Landscape

Gentle to undulating foot slopes and plains formed on recent Quaternary alluvium and colluvium derived from intermediate Ordovician volcanics. Elevation 275–320 m, local relief <20 m, slopes <4%. Extensive to totally cleared eucalypt woodlands.

Soils

Deep (>100 cm), well-drained Haplic Mesotrophic Red Dermosols and Chromosols (structured Red Earths; Brown and Red Podzolic Soils) on mid to upper slopes. Deep (>100 cm), imperfectly drained Mottled Mesotrophic Brown Chromosols (Brown Podzolic Soils) on lower slopes.

2.2.9 Stony Hill (sl) Erosional[24]

Landscape

Undulating low hills and rises formed on Silurian sedimentary rocks. Elevation 280–420m, local relief 9–40m, slopes from 3–10% up to 25% on some steeper terrain. Extensively cleared mid–high open eucalypt woodlands.

Soils

Soils are variable and complex. Shallow (<50cm), well-drained gravelly Paralithic Leptic Rudosols (Lithosols) on mid to upper slopes and crests. Moderately deep (>50cm), imperfectly drained Basic Paralithic Bleached-Leptic Tenosols (Earthy Sands) and shallow (<50cm), well-drained gravelly Acidic Red Kandosols (Red Earths) on some upper slopes. Shallow (<50cm), imperfectly drained Mottled Dystrophic Red Dermosols and Chromosols (Brown Podzolic Soils) and well-drained Haplic Mesotrophic Red Kandosols (Red Earths) on mid to lower slopes.

2.2.10 Temora (te) Erosional[25]

Landscape

Undulating low hills and rises formed on Ordovician volcanics. Elevation 260–336m, local relief 20–50m, slopes 3–10% and <25% on steeper slopes. Extensively to totally cleared mid-high open Eucalypt woodlands.

Soils

Shallow (<25cm) Acidic Paralithic Leptic Rudosol (Lithosol) and moderately deep to deep (50–150cm), well-drained Haplic Calcic Red Chromosols (Red-brown Earths) on upper slopes and crests. Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), well-drained Haplic and Sodic Calcic Eutrophic Red Chromosols and Dermosols (Non-calcic Brown Soils; Red-brown Earths; structured Red Earths) also on midslopes.

2.2.11 Twins Range (ti) Erosional[26]

Landscape

Undulating to rolling low hills, hills and plateau formed on Silurian volcanics. Elevation 360–530m, local relief 30–120m, slopes 3–11% and <20% on steeper terrain. Extensively cleared low to mid–high open eucalypt woodlands.

Soils

Shallow (<25cm), well-drained Acidic Paralithic Orthic Tenosols (Earthy Sands) and moderately deep (<100cm), imperfectly drained Mottled Mesotrophic Red and Brown Chromosols (Red Podzolic Soils) on hillcrests. Very deep (>1.5m), imperfectly drained Mottled to Mottled-Sodic Mesotrophic Red Chromosols (Red Podzolic Soils), moderately deep (<100cm), moderately well-drained Haplic Red Kandosols (Red Earths) and shallow (<50cm), imperfectly drained Haplic Eutrophic Grey Dermosols to moderately deep Haplic Calcic Red Dermosols and Chromosols (Red-brown Earths) on mid to upper slopes. Deep (>100cm), poorly drained Bleached-Mottled Eutrophic Brown and Yellow Chromosols (Yellow Podzolic Soils) and Haplic Hypocalcic Red Dermosols (Red-brown Earths) on mid to lower slopes. Moderately deep (<100cm) to deep (>100cm), poorly drained Bleached-Mottled Red and Brown Eutrophic Sodosols (Solodic Soils) and Orthic Tenosols (Earthy Sands) on lower slopes and flats.

2.2.12 Wattle Valley (wv) Erosional[27]

Landscape

Undulating valley consisting of low hills, rises, colluvial foot slopes and flats formed on Silurian volcanic and plutonic rocks. Elevation 320–540m, local relief 20–60m, slopes 3–15% and <20% on steeper terrain. Extensively to totally cleared mid–high open eucalypt woodlands.

Soils

Moderately deep (>50cm) Mottled Mesotrophic Red Kurosols (Red Podzolic Soils) on upper slopes and crests. Shallow to moderately deep (<70cm), moderately well-drained Haplic Mesotrophic Brown Kandosols (Red Earths) on upper slopes. Deep (>100cm), imperfectly drained Bleached-Mottled Mesotrophic Red Kurosols and Brown Chromosols (Red and Brown Podzolic Soils) and moderately deep (<100cm) Haplic Mesotrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), imperfectly drained Eutrophic Mottled-Subnatric Brown Sodosols (Solodic Soils) on alluvial flats and in drainage depressions.

2.2.13 Land Use History

The study area traverses multiple working farms. The land would have undergone significant changes over time. Vegetation clearance, construction of roads, tracks, dams, fences, ploughing, crops and grazing are some of the activities that have impacted on the landscape. These impacts create erosion and other disturbances which reduce the potential for Aboriginal archaeological sites across the study area.

2.2.14 Summary of Landscape Context

The AHIMS results indicate that the region surrounding the current study area contains multiple Aboriginal archaeological sites, the majority of which are stone artefacts and modified trees. Figure 2.10 combines the AHIMS search results with the Cootamundra soil landscape and creek lines. It shows that the AHIMS sites are in close proximity to creek lines and many are on the same soil landscapes as those that are crossed by the current study area.

As discussed above, the current study area crosses 12 soil landscapes. They fall into four soil groups: Erosional, Transferral, Alluvial and Stagnant Alluvial. Erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Alluvial and Stagnant Alluvial soil landscapes vary between moderately deep and deep across all landforms.

Prior to European occupation, the study area would have been covered in open eucalypt woodlands which would have minimised erosion and artefact movement. Modified trees may be found in any soil landscape, in areas with mature vegetation. During and post land clearing, modified trees may have been destroyed and stone artefacts in erosional landscapes may have been displaced from their original discard point. Artefact movement down slopes is common in these situations. Soil landscapes with deep soil profiles are generally more stable and artefacts in these areas often undergo less displacement. Therefore, it can be predicted that artefacts may be found in the majority of the Transferral, Alluvial and Stagnant Alluvial landscapes and in the mid to lower slopes of Erosional landscapes.

As such, in terms of comparability with surrounding areas, if no impacts have occurred within the study area it could contain intact stone based archaeological deposits. An analysis of the study area's more

recent history shows that it has not been subject to a substantial quantity of impact associated with pastoral land use. Furthermore, mature trees across the study area may have been modified by Aboriginal people in the past.

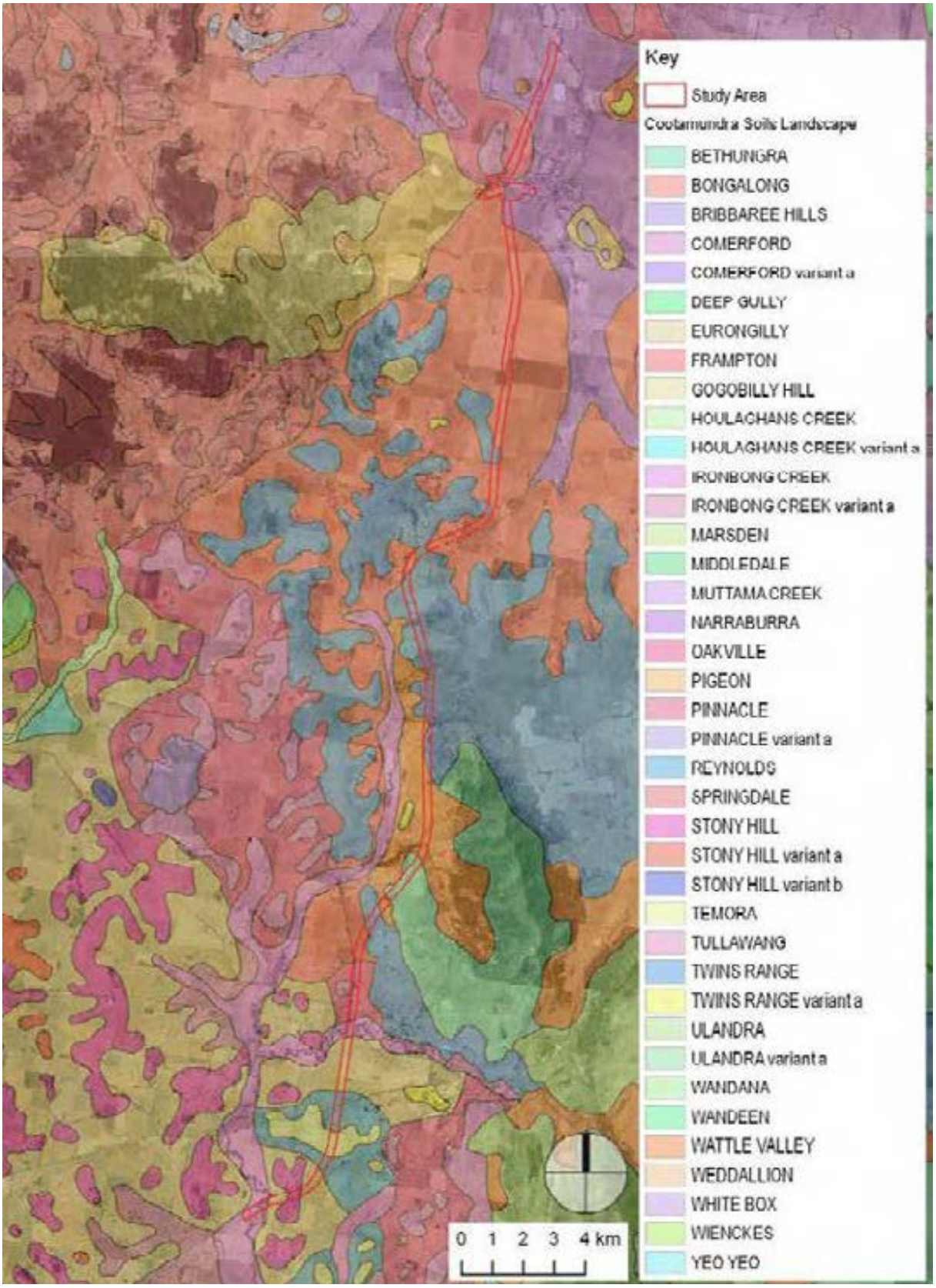


Figure 2.4 Soil landscapes of the study area. (Source: NSW LPI with GML additions, 2018)

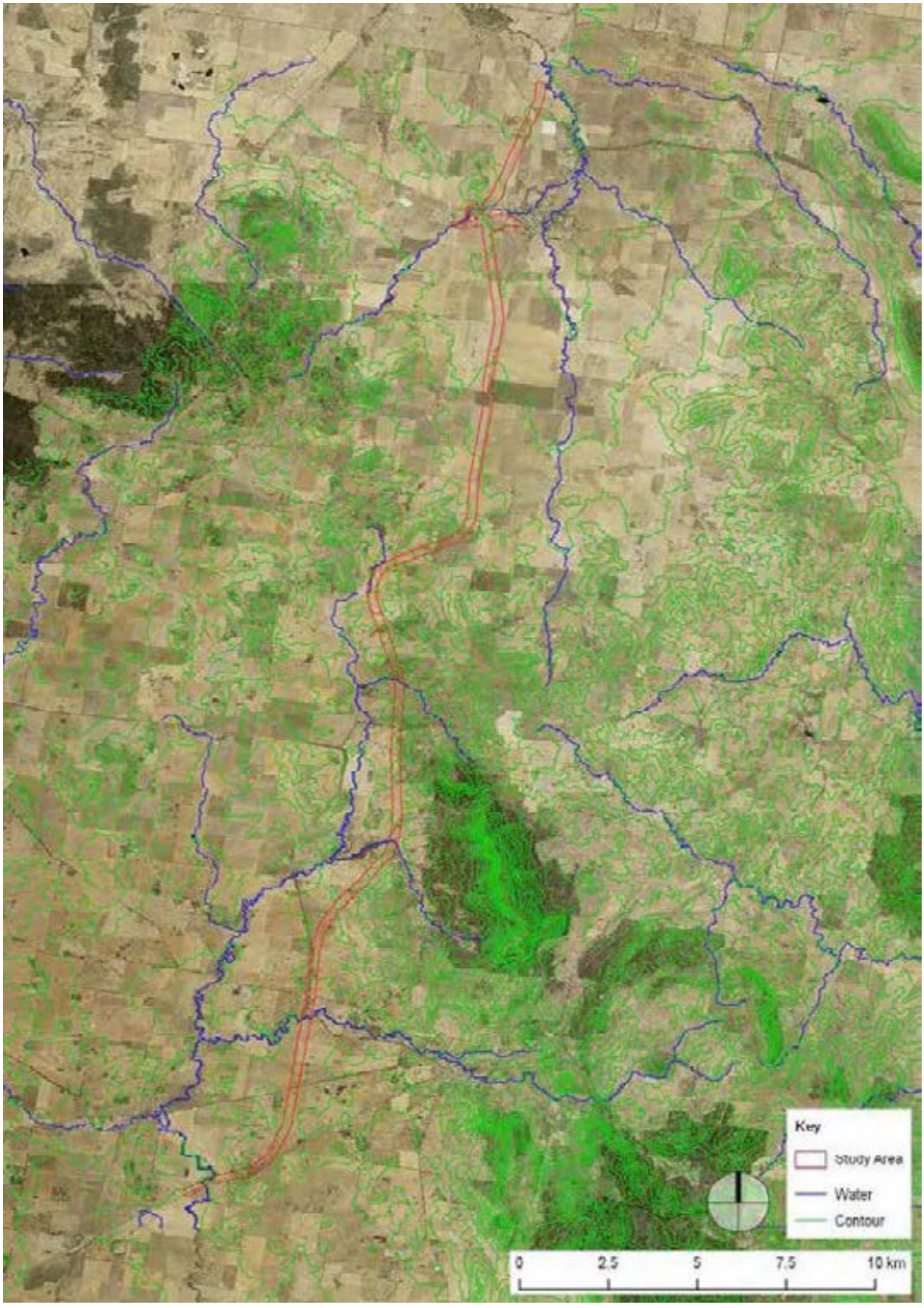


Figure 2.5 Hydrology and contour lines across the study area. (Source: NSW LPI with GML additions, 2018)

Figure 2.6 Hydrology and contour lines across the northern section of the study area. (Source: NSW LPI with GML additions, 2018)

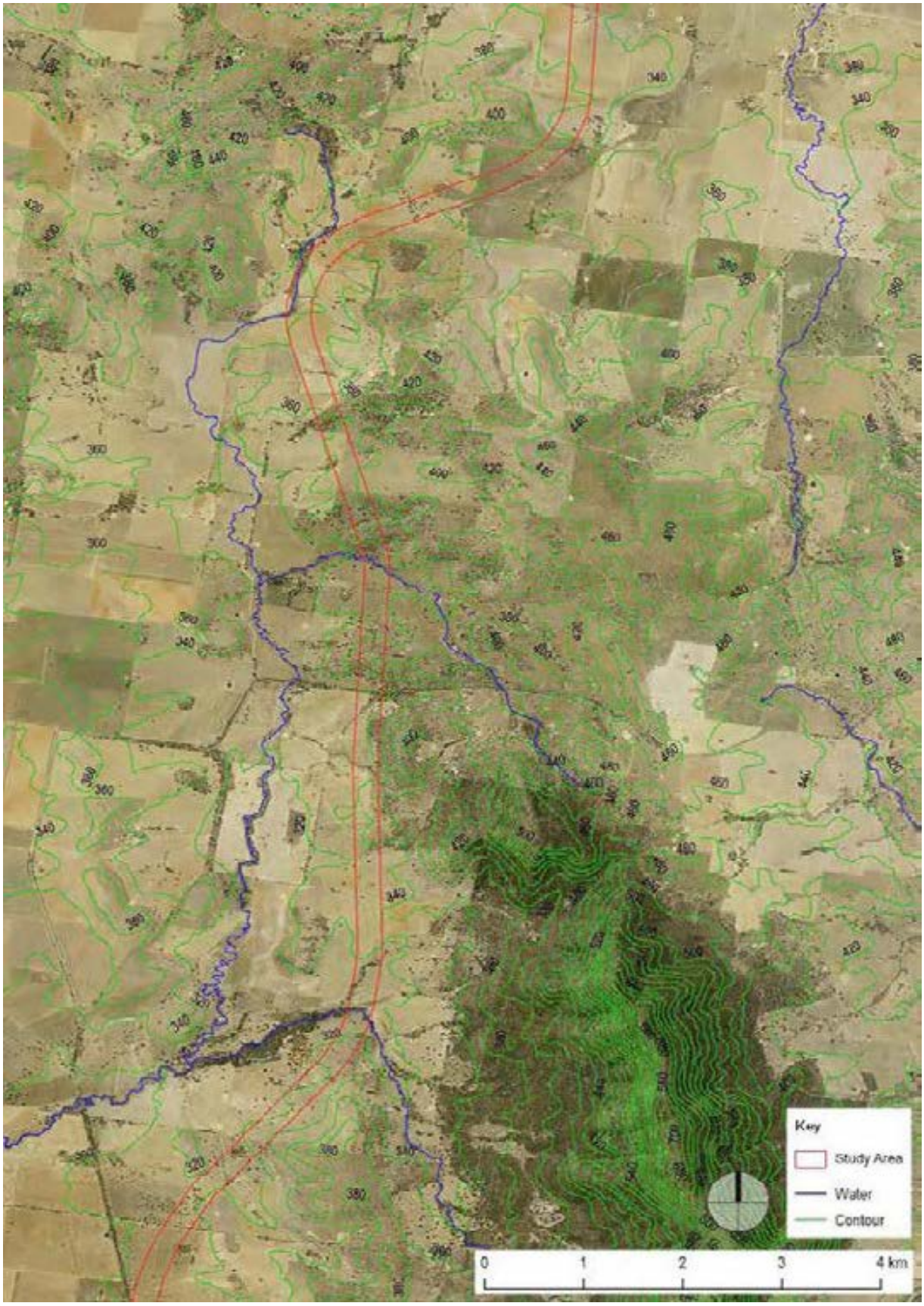


Figure 2.7 Hydrology and contour lines across the middle section of the study area. (Source: NSW LPI with GML additions, 2018)

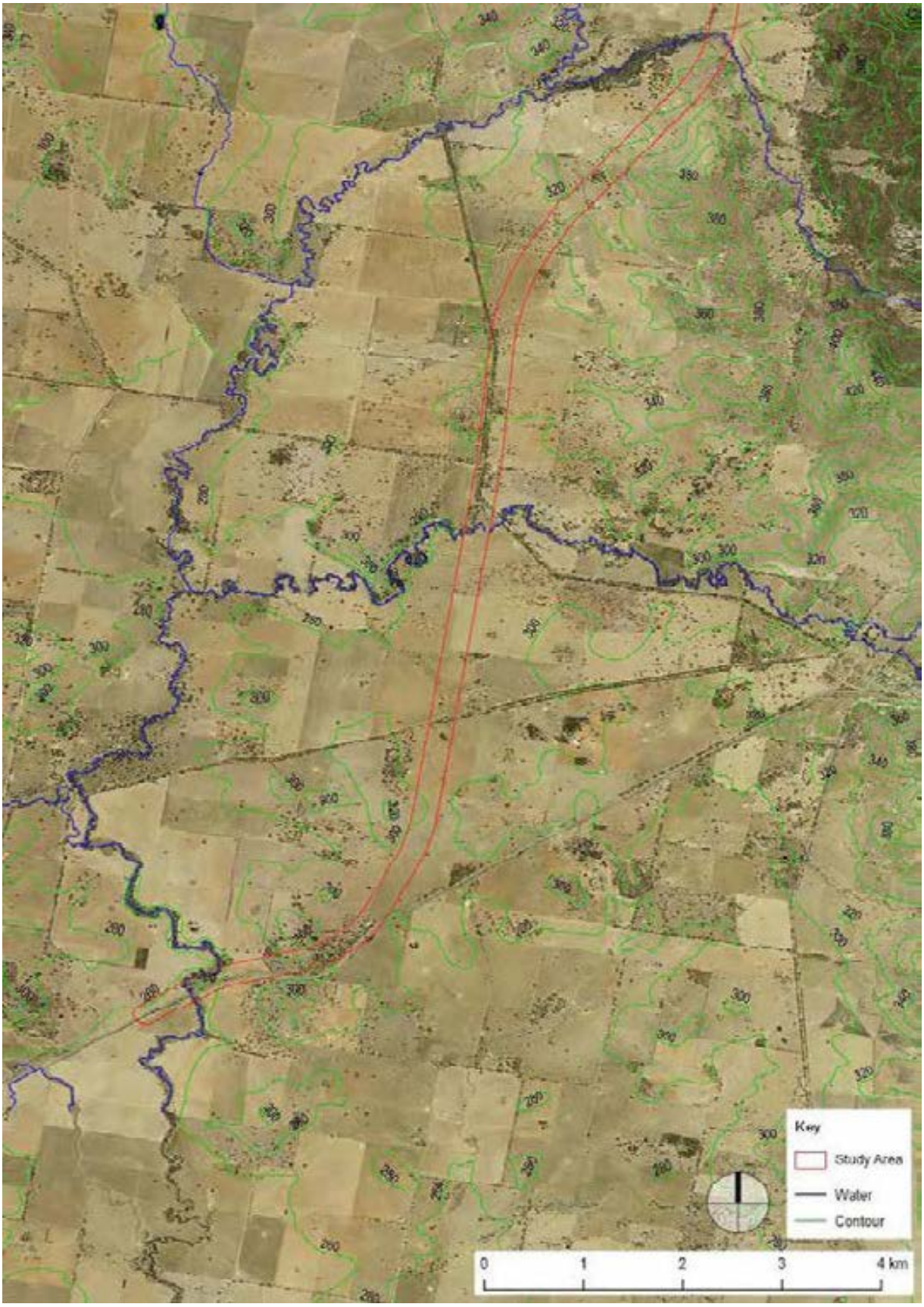


Figure 2.8 Hydrology and contour lines across the southern section of the study area. (Source: NSW LPI with GML additions, 2018)

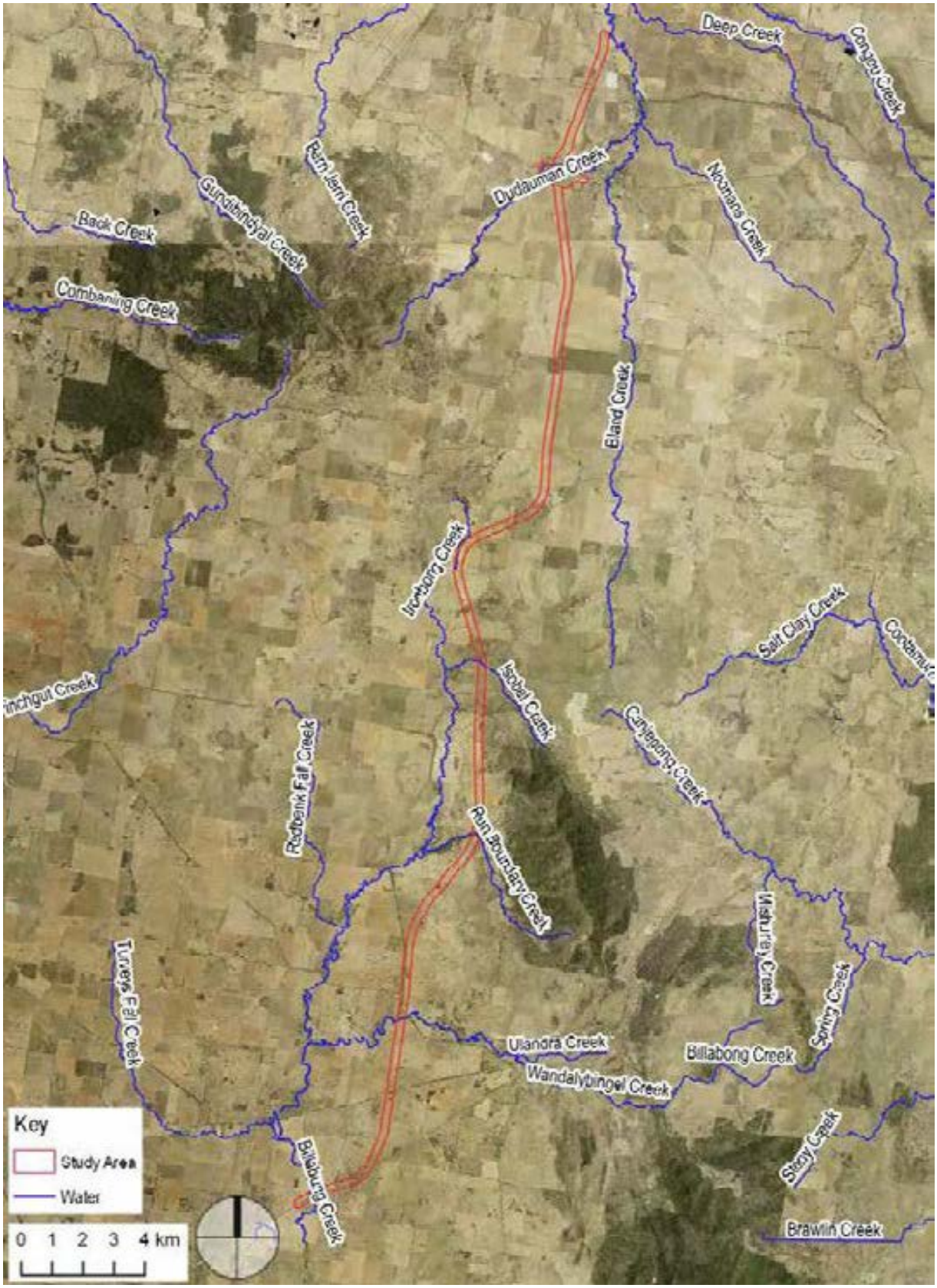


Figure 2.9 Water sources across the study area. (Source: NSW LPI with GML additions, 2018)

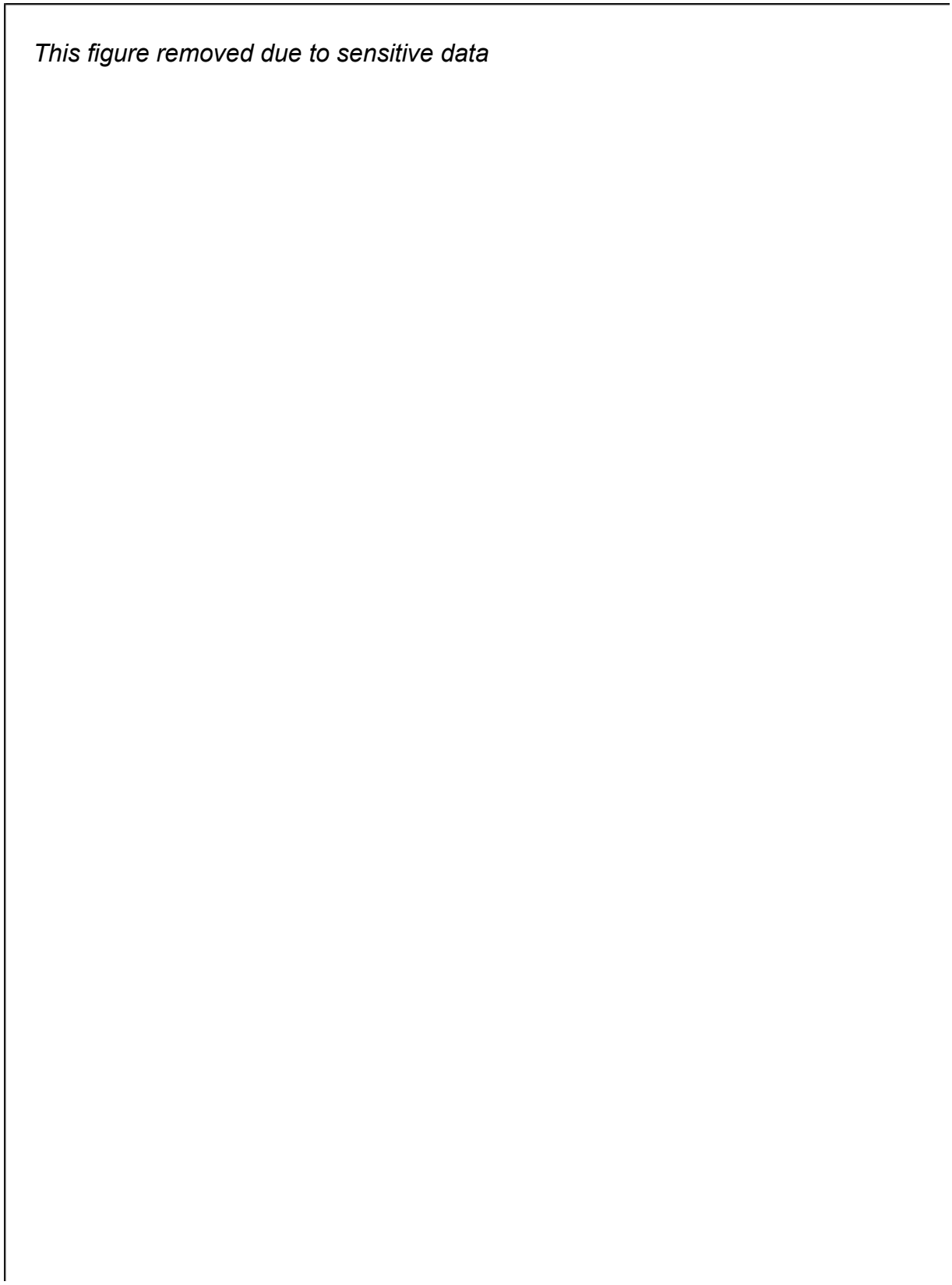


Figure 2.10 AHIMS sites in reference to soil landscapes and creek lines. (Source: NSW LPI with GML additions, 2018)

2.3 Aboriginal Archaeological Potential

Findings from other archaeological reports in the local area include general predictive modelling statements for the distribution of Aboriginal archaeological sites in the area based on background data and ground survey.

These include the notion that Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

These predictions can also be related to the current study area due to the similarity of the landforms and environment. The study area is mainly low-relief undulating plains with variations in elevation from approximately 260m.a.s.l. grading up to approximately 400m.a.s.l. Key changes in topography occur to the southwest of the alignment where the alignment touches on the lower toe-slopes of a 700m-high range which is linked to the Ulandra Nature Reserve to the south. The section of the study area starting approximately 10km north of Illabo and extending for approximately 15km shadows the western side of this range, crosses two semi-permanent creek lines (Run Boundary Creek and Isabel Creek) and runs parallel to the permanent watercourse, Ironbong Creek. It also covers the most undulating part of the landscape crossing a range of low-gradient toe-slopes and moderately elevated terraces within the vicinity of the water courses and near a range of ephemeral watercourses in between.

This stretch of the study area is the most likely to contain Aboriginal archaeological sites due to its high correlation with landforms and watercourses as outlined in the predictive modelling.

This overall view supports the preliminary modelling noted in the 2016 Desktop Assessment[28] which concluded with the identification of a range of sensitive areas within 200m of watercourses. This general statement can be refined further with reference to the specifics of the landforms within the study area.

Key predictive modelling statements include:

- Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—although sites may also occur in close proximity to Ironbong Creek, Run Boundary Creek, Isabel Creek and Ulandra Creek.
- Aboriginal occupation sites are most likely to occur on low-gradient, well-drained landforms in close proximity to those water sources. This therefore indicates that the highest area of alignment with the potential for sites to occur is the 15km stretch starting 10km north of Illabo.
- Artefact sites, including scatters and isolated finds, are the dominant findings with the majority of artefacts being made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.
- Scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

Figure 2.11 shows the areas of sensitivity previously outlined in the 2016 Desktop Assessment.

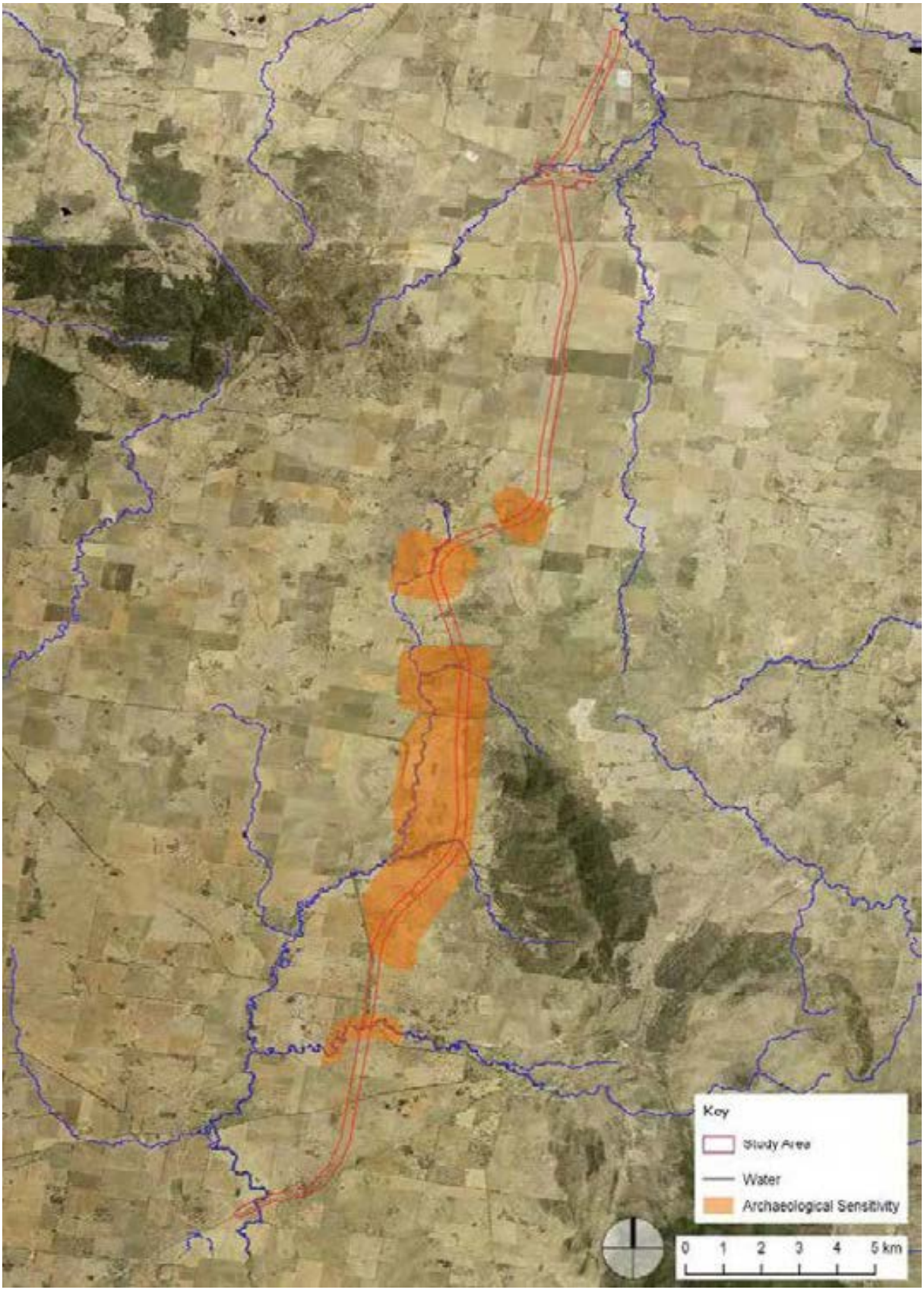


Figure 2.11 Proposed sampling locations from the results of the due diligence. (Source: Niche, 2016)

2.4 Endnotes

[1] AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.
[2] Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.
[3] AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.
[4] Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.
[5] Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.
[6] Briggs, R, ed. 2011, *Carved Trees: Aboriginal Cultures of Western NSW*, SLNSW Exhibition Guide, State Library of NSW, Sydney, p 8.
[7] AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.
[8] Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.
[9] AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.
[10] AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010. p50.
[11] Witter, D 1980, An Archaeological Pipeline Survey between Wagga Wagga and Young, report prepared for the National Parks and Wildlife Service, Sydney.
[12] Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011.
[13] Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011, p 5.
[14] Dearling, C, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work, within Ulandra Nature Reserve and Adjacent Areas, near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, December 2007.
[15] Dearling, C, Aboriginal Cultural Heritage Study, Access Track Upgrades: Transgrid Power Line, Ulandra Nature Reserve and Environs, Near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, February 2004.
[16] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 87.
[17] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 108.
[18] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 326.
[19] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 311.
[20] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 458.
[21] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 503.
[22] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 369.
[23] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 385.
[24] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 246.
[25] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 251.
[26] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 261.
[27] Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 283.
[28] Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

3.0 Aboriginal Community Consultation

3.1 Aboriginal Community Consultation to Date

Aboriginal community consultation was initiated in accordance with the DECCW *Aboriginal cultural heritage consultation requirements for proponents*.[1] Stage 1.1 letters to statutory bodies were sent on 5 April 2018, requesting contact details for Aboriginal people who may have an interest in the study area. These statutory bodies included the:

- OEH;
- Young Local Aboriginal Land Council;
- Wagga Wagga Local Aboriginal Land Council;
- Office of The Registrar, Aboriginal Lands Right Act 1983;
- National Native Title Tribunal;
- Native Titles Service Corporation;
- Junee Council;
- Cootamundra Gundagai Council;
- City of Wagga Wagga Council; and
- Greater Sydney Catchment Management Authority.

Following the receipt of responses from Stage 1.1, a number of potential Aboriginal stakeholders were identified. Stage 1.2 letters were sent to the identified Aboriginal people on 9 October 2018, and an advertisement was placed in *The Riverina Leader* on 26 September 2018. Both the Stage 1.2 letters and the advertisement invited Aboriginal people with an interest in the study area to register as a stakeholder to be involved in consultations. Registrations were accepted until 24 October 2018.

Eleven Aboriginal parties registered an interest in the project. The following list of stakeholders are the Registered Aboriginal Parties (RAPs) for the project:

This table removed due to sensitive data

This table removed due to sensitive data

All registrations of interest were acknowledged via phone or email.

3.2 Cultural Heritage Assessment Program

The Office of Environment and Heritage (OEH) has defined a number of stages during the Aboriginal consultation process.[2] The following table provides a synopsis of the process to date.

Stage	Status
Write to statutory bodies to obtain contact details for Aboriginal people who may have an interest in the project.	Complete
Write to identified Aboriginal people, inviting them to register an interest in the project.	Complete
Place an advertisement in local print media, inviting Aboriginal people with cultural knowledge of the area to register an interest in the project.	Complete
Record names of Aboriginal people who have registered an interest in the project.	Complete
Advise the Local Aboriginal Land Councils (LALCs) and OEH of RAPs' details (subject to privacy requests).	Complete
Present information regarding proposed project to RAPs.	This document
Provide methodology for the cultural heritage and archaeological assessment to RAPs.	This document
Invite RAPs to provide input for the assessment methodology.	Pending
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Forthcoming
Invite RAPs to comment on potential management outcomes.	Forthcoming
Prepare draft ACHAR and provide to RAPs for comment.	Forthcoming
Incorporate RAPs' comments into final ACHAR.	Forthcoming
Provide final ACHAR (and AHIP application) to the RAPs, LALC and OEH.	Forthcoming

3.3 Roles and Expectations

The DECCW[3] Consultation Requirements list a number of responsibilities and expectations for both the Aboriginal community and the proponent regarding the assessment of the study area's cultural heritage.

The Aboriginal community is responsible for determining who is authorised to speak for Country and its associated cultural heritage. If there is a dispute regarding who has the right to speak for Country, it is up to the Aboriginal community, not the proponent or OEH, to resolve the dispute in a timely manner.[4]

RAPs are also responsible for providing information relating to Aboriginal cultural heritage relevant to the study area to assist in managing its cultural significance in an appropriate manner.[5]

It is expected that:

- Aboriginal people providing knowledge regarding the cultural heritage of the study area are trusted and allowed by the rest of the Aboriginal community to speak for Country;[6]
- people speaking for Country hold knowledge about the cultural significance of their heritage and are able to provide input into appropriate management strategies;[7]
- RAPs have an understanding of the commercial environment in which the proponent is operating and the constraints associated with this environment;[8] and
- RAPs understand that the Secretary of the Department of Planning and Environment in consultation with the Chief Executive of the OEH is the final decision maker relating to the approval of works relating to the SSI project and that these decisions may not be consistent with the views of the RAPs.[9]

The proponent is responsible for consulting with the Aboriginal community and managing the consultation process in accordance with the Consultation Requirements.[10]

It is expected that:

- the proponent would develop and implement appropriate consultation methods, in accordance with the Consultation Requirements;[11]
- Aboriginal views are considered and appropriately incorporated into the assessment process;[12] and
- the consultation process is accurately documented, including both the consultation undertaken and the input from the RAPs.[13]

3.4 Endnotes

1 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
2 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
3 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
4 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 36.
5 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.
6 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.
7 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.
8 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.
9 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.
10 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

[11] Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 6.

[12] Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

[13] Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

4.0 Assessment Methodology

4.1 Approach to Assessment

The overall project objectives are outlined in Section 1.0 and include assessing the archaeological sensitivity of the project corridor, avoiding impacts through design measures and mitigating impacts that are unavoidable.

The key objective of this stage of the assessment project is to understand the nature of the Aboriginal archaeological environment along the study corridor so that design solutions can be used as the primary mechanism for managing environmental impacts where possible.

To achieve this objective, a staged approach is required for the assessment in which the results of the 2016 due diligence assessment are first tested and verified through archaeological survey. This process will help to inform the design process and facilitate the implementation of prudent, feasible and pragmatic design solutions to minimise potential impacts.

Further stages of information gathering and assessment through archaeological test excavation may also be warranted at later stages and would be the subject of a second, specific Aboriginal Archaeological Research Design which is formulated on the results of the surveys and any revised potential impacts from the iterative design process. The stages are outlined below.

4.2 Archaeological Survey

4.2.1 Methodology

An archaeological survey will be undertaken with the aim of assessing those areas of proposed rail alignment that have been previously assessed as having archaeological sensitivity.

The due diligence assessment from 2016 noted four zones of sensitivity, covering approximately 14.3km along the corridor. These four zones were nominated based on proximity to watercourses and relative proximity to known sites. No survey has been undertaken of these zones to date. These zones approximately correlate with the predictive modelling and therefore the targeting of these zones of sensitivity will also provide the opportunity to test the predictive model.

To confirm and understand the nature of the sensitivities of these zones, each zone needs to be surveyed and ground-truthed by pedestrian survey. Where possible, pedestrian survey will be systematic across the landscape within the nominal 250m-wide project corridor but will also opportunistically target areas of higher ground surface visibility.

Sites and objects found will be recorded including GPS-based site location data, description and photographs. Areas assessed as having the potential to contain archaeological deposits (PADs) will also be recorded and their extent will be mapped and defined based on landform type and integrity. The survey would also be used to assess areas of potential ground-surface disturbance and notes will be made regarding the soil condition and evidence of disturbance, where required.

The field team will include two archaeologists for one week, along with a select number of RAPs to be determined in conjunction with ARTC after the close of the RAP registration period.

Limitations to the approach are anticipated to derive from the availability of access to the properties and also the ground surface visibility and ground conditions, including inundation. Therefore, the proposed

survey areas, shown in Figure 4.1 to Figure 4.4 are based on the areas of sensitivity previously identified and the correlation with properties where access permission has been provided by the landowner.

Approach for Access Limitations

Where areas of the proposed rail corridor are not accessible for field survey due to access denial by property owners, alternative approaches to assessment will be required until further access arrangements can be made.

A detailed approach will be formulated on a case-by-case basis based on:

- further understanding of the study area environment as gleaned from the site survey;
- the nature of the areas of sensitivity on site; and
- the proximity of areas of sensitivity to property boundaries.

Our proposed approach at this stage would include a combination of:

- refining the predictive modelling as much as possible based on survey results, detailed topographic mapping and landform observations from elsewhere along the study area; and
- opportunistic viewing of areas across property boundaries.

Due to the limitation of this approach, the threshold for areas being assessed as having sensitivity will necessarily be lower than other areas where we have full access.

Areas considered as having sensitivity will be included in the subsequent test excavation program.

Survey and Assessment Outcomes

Outcomes from the updated desktop assessment and the field survey will inform the ongoing design process. The locations of identified Aboriginal objects and sites, along with refined areas of sensitivity, will be provided to the project design team to assist in design re-evaluation to avoid sites, objects and areas of sensitivity where possible.

Where this is not possible, recommendations will be provided on areas that will need further investigation as part of the process of formulating mitigation and management measures.

All Aboriginal objects and sites identified during the survey will be reported to OEH for inclusion on AHIMS.

Further Investigation If Required

Test Excavation

Areas of sensitivity requiring further investigation will be subject to a test excavation program under the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code of Practice).

The test excavation program will include a detailed sampling strategy based on the results of the site survey and assessments of areas of sensitivity. An Archaeological Research Design (ARD) outlining the test excavation proposal would be prepared and, as part of the ongoing RAP consultation process, would be sent to the RAPs for their information and endorsement.

The test excavation program would test the predictive modelling of the areas of sensitivity to understand the nature, extent and significance of the archaeological resources. To confirm and test the null hypothesis about areas considered as having no sensitivity, some of the test excavation program would also include a percentage of test pits outside of the areas of sensitivity. The details of that balance would be determined during the preparation of the ARD.

Based on the requirements of the Code of Practice, the test excavations would comprise a series of hand excavated test units (TUs) set out on systematic grids and based at 10m or 20m intervals. The expansion of individual TUs would occur based on the excavation results where higher artefact densities are recovered.

As part of the ongoing RAP consultation process, the test excavation program would include the RAPs to assist in the work.

Assessment Deliverables

An ACHAR and Archaeological Technical Report (ATR) would be prepared based on the results of the test excavations. This report would detail the nature, extent and significance of the archaeological resources, any cultural values identified by the RAPs, as well as identifying the impacts and providing mitigation measures such as design alterations or proposed salvage excavation. This report would also be sent to the RAPs for their information and endorsement.

Mitigation

Where test excavations identify archaeological sites and objects that are assessed as having high significance, design solutions will be sought to avoid impacts to those sites. Where sites cannot be avoided by modification to the project design, a program of salvage excavation would be required.

The nature of that salvage excavation would be based on the specific correlation between the known project impact corridor and the nature and extent of any affected Aboriginal objects and sites.

4.3 Significance Assessment

Management of Aboriginal cultural heritage within the study area is largely based on an assessment of its significance.[1] Generally, an assessment of the significance of Aboriginal cultural heritage considers two factors—archaeological (or scientific) values, and the cultural values identified by the RAPs.

Consideration of these two values would allow an assessment of the significance of cultural heritage within the study area. An assessment of the cultural significance of any objects or places identified within the study area will be sought from the RAPs prior to the finalisation of the ACHAR. Should any restrictions apply to the cultural knowledge supplied (for example, male-only information), these will be strictly adhered to by the proponent.

The archaeological significance of any Aboriginal objects or places identified within the study area would be assessed in accordance with *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* (the Burra Charter).[2] Any archaeological potential would be mapped and zoned as high, moderate or low, based on consideration of the predictive model for the study area and the assessed archaeological significance criteria.

4.4 Community Input

This methodology has been provided to all RAPs for their review and comment. Any input from the RAPs will be considered in the final methodology for the project.

GML is currently planning the archaeological survey component of this project. We will soon contact RAPs to discuss their involvement in this work. The archaeological survey will occur following the 28-day review period for this methodology.

In accordance with OEH guidelines, please provide written and/or oral comments by 23 November 2018. Please advise when commenting if you wish to be involved in the physical archaeological site inspection phase of this project. All participants will be required to have a good level of physical fitness and be able to walk up to 10km per day.

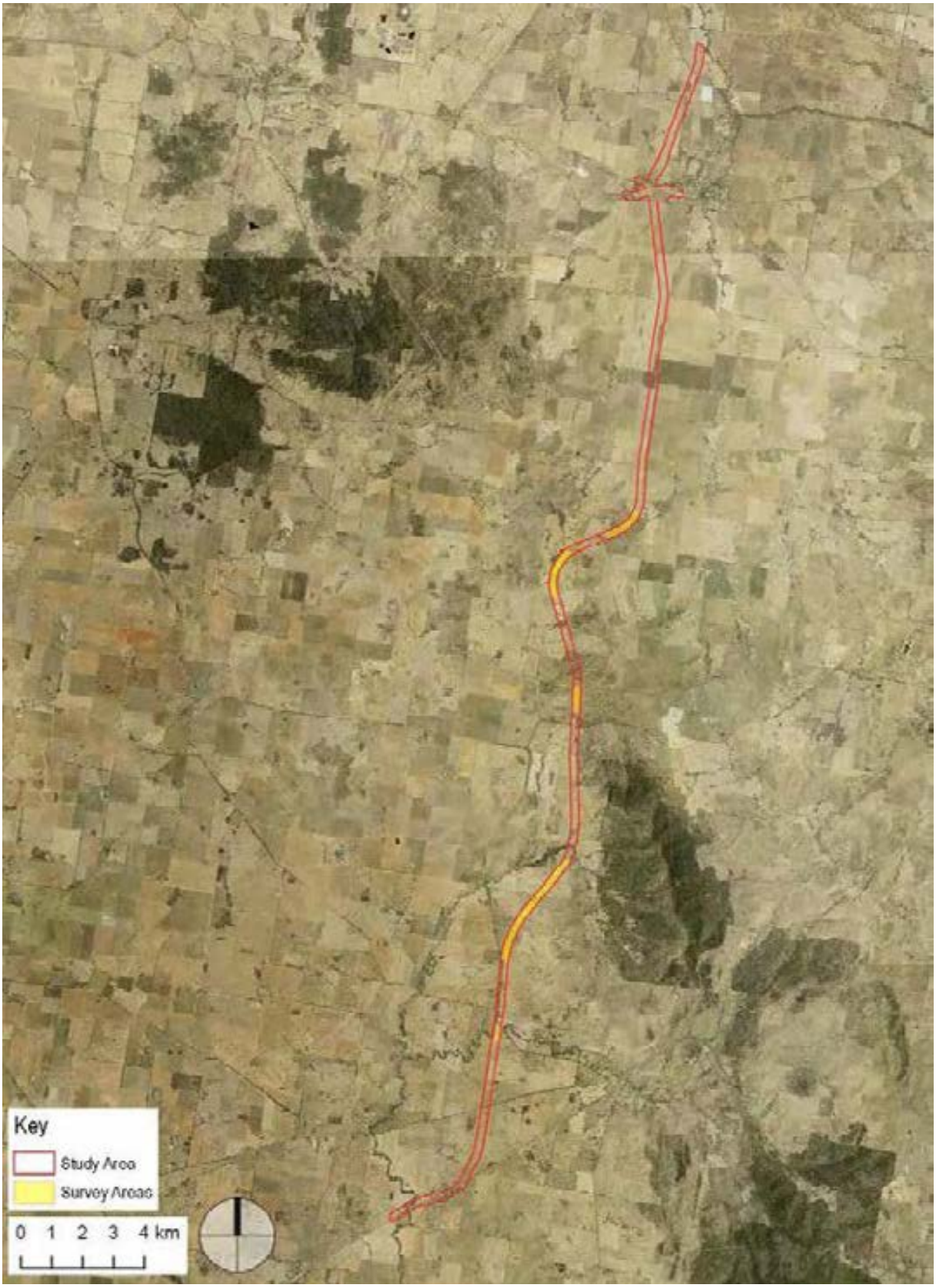


Figure 4.1 Proposed survey locations for Aboriginal archaeology. (Source: NSW LPI with GML additions, 2018)

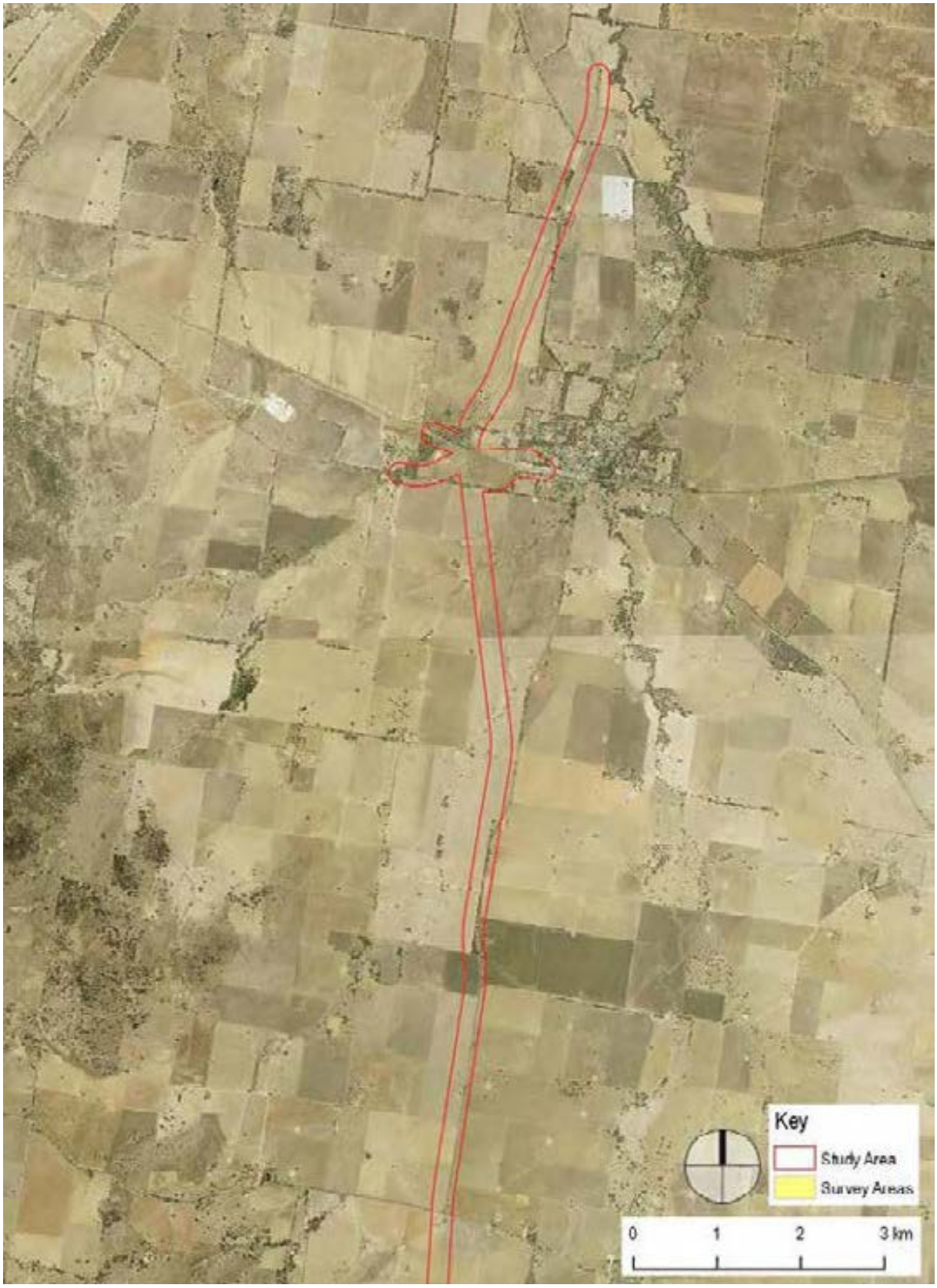


Figure 4.2 Proposed survey locations for Aboriginal archaeology. No survey locations are proposed in the northern section of the study area. (Source: NSW LPI with GML additions, 2018)

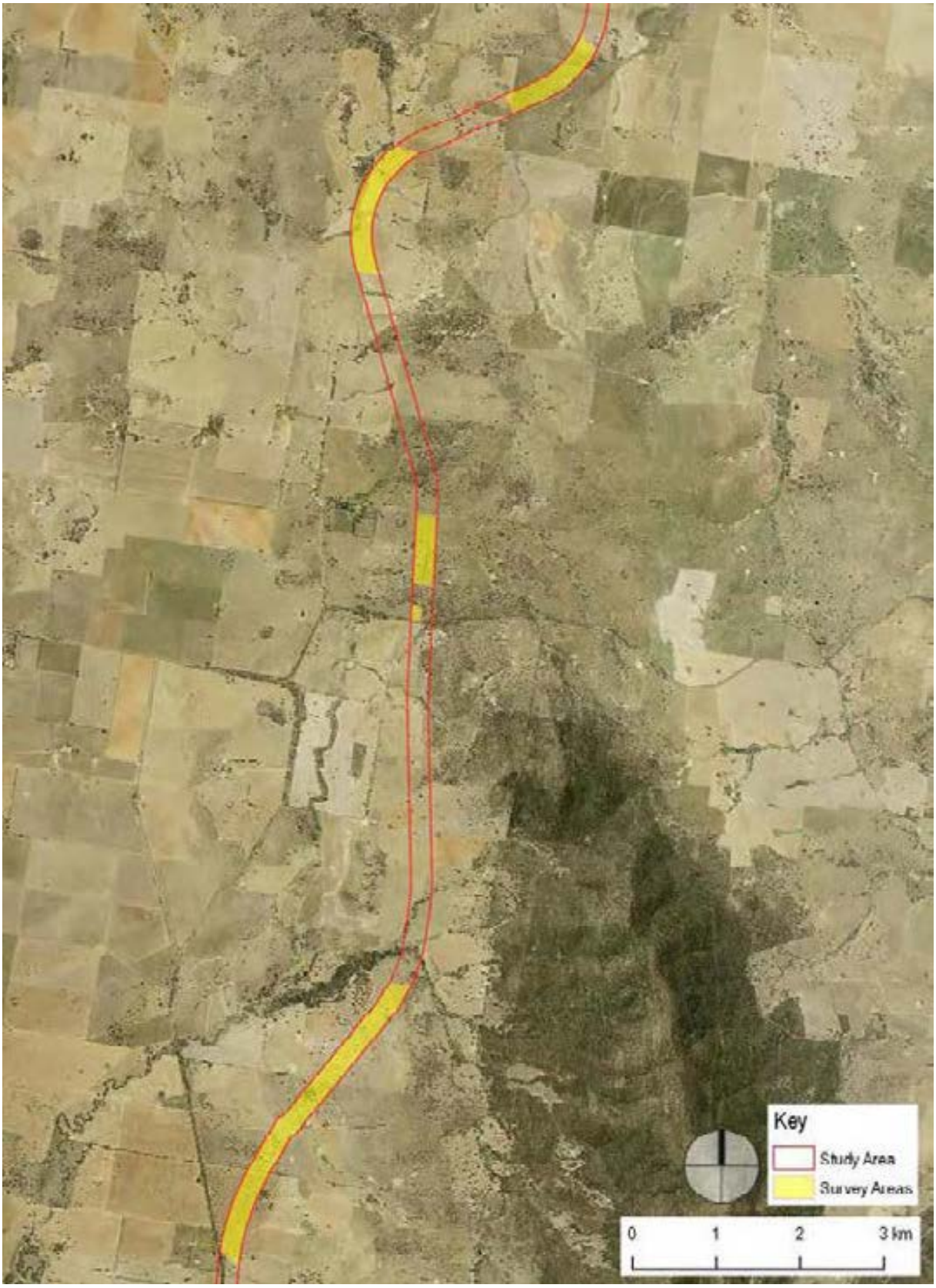


Figure 4.3 Proposed survey locations for Aboriginal archaeology in the mid-section of the study area. (Source: NSW LPI with GML additions, 2018)

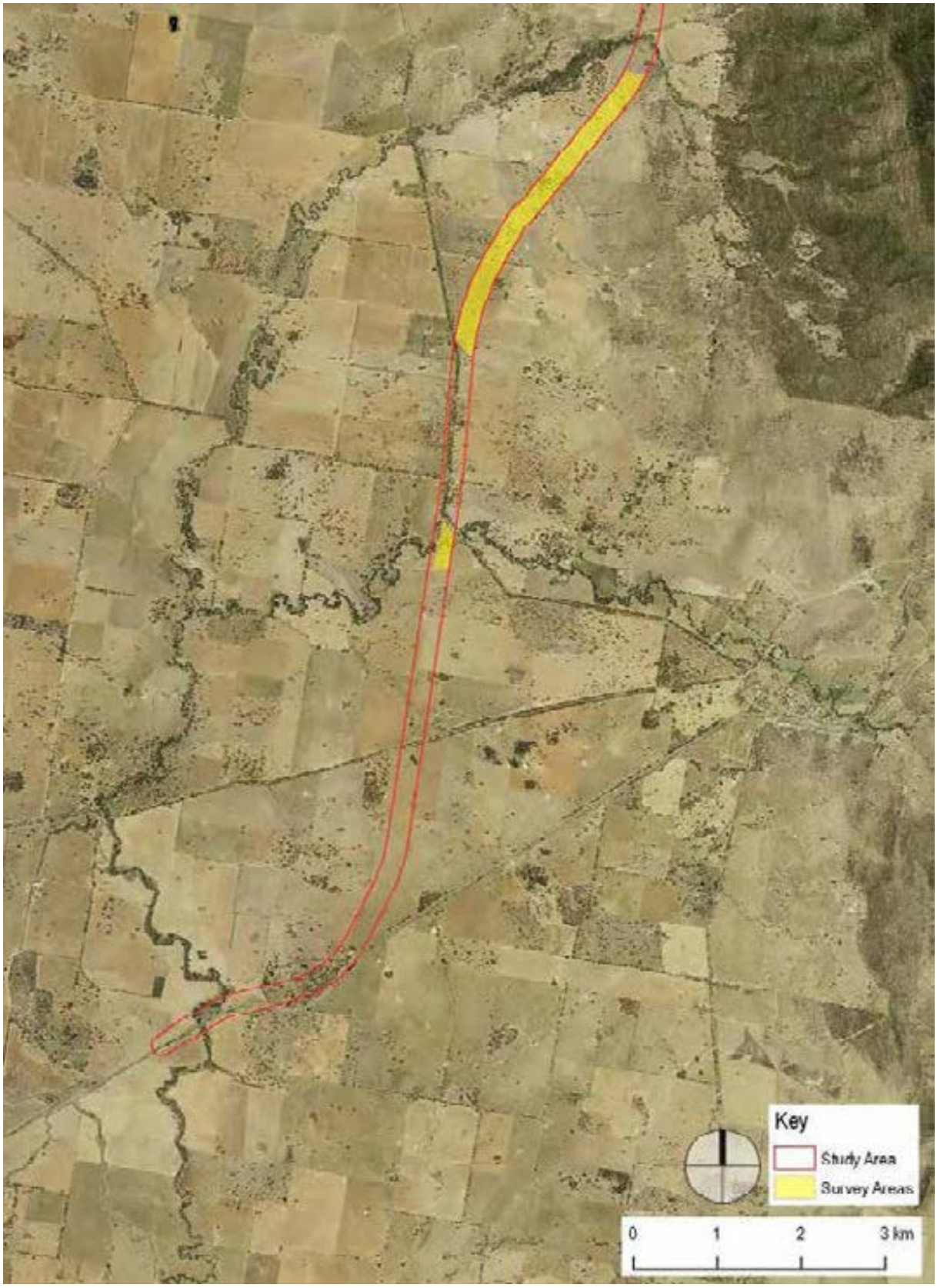


Figure 4.4 Proposed survey locations for Aboriginal archaeology in the southern section of the study area. (Source: NSW LPI with GML additions, 2018)

4.5 Endnotes

1 Department of Environment, Climate Change and Water 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

2 Marquis-Kyle, P and Walker, M 2004, *The Illustrated Burra Charter*, third revision, Australia ICOMOS.

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix F Aboriginal archaeological research design for test excavations

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix F

GML Heritage Pty Ltd, ARTC Inland Rail—Aboriginal Archaeological Research Design for Test Excavations, Draft Report, prepared for WSP and ARTC, February 2019

ARTC Inland Rail

Aboriginal Archaeological Research Design for Test Excavations

Draft Report

Report prepared for WSP and ARTC

February 2019

Sydney Office Level 6, 372 Elizabeth Street Surry Hills NSW Australia 2010 T +61 2 9319 4811
Canberra Office 2A Mugga Way Red Hill ACT Australia 2603 T +61 2 6273 7540
GML Heritage Pty Ltd ABN 60 001 179 362
www.gml.com.au

Report Register

The following report register documents the development and issue of the report entitled ARTC Inland Rail—Aboriginal Archaeological Research Design for, undertaken by GML Heritage Pty Ltd in accordance with its quality management system.

Job No.	Issue No.	Notes/Description	Issue Date
17-0169	1	Draft Report	7 February 2019
17-0169	2	Draft Report	19 February 2019
17-0169	3	Draft Report	22 February 2019

Quality Assurance

GML Heritage Pty Ltd operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

Project Manager:	Jodi Cameron	**Project Director & Reviewer:**	Martin Rowney
Issue No.	2	**Issue No.**	2
Signature		**Signature**	
Position:	Heritage Consultant	**Position:**	Senior Associate
Date:	22 February 2019	**Date:**	22 February 2019

Contents Page

1.0 Introduction

The Australian Rail Track Corporation Ltd (ARTC) is working to build a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central west New South Wales (NSW) and Toowoomba in Queensland. Known as the Inland Rail Programme, the route has been split into 13 projects, totalling approximately 1,700km in length.

GML Heritage Pty Ltd (GML) has been engaged by WSP to prepare an Aboriginal cultural heritage assessment report (ACHAR) to address the Environmental Assessment Requirements set out by the Secretary of the Department of Planning and Environment for the approval path for the Illabo to Stockinbingal project.

As part of the ACHAR, an Aboriginal Archaeological Research Design (AARD) was prepared in October 2018 to outline the methodology and research parameters for the initial pedestrian survey investigation of Aboriginal heritage along the route between Illabo and Stockinbingal (the study area). As a result of the survey work, a number of sites, isolated artefacts and areas of Potential Archaeological Deposit (PAD) were identified. These areas warrant further investigation to inform the project design and to assist in minimising project impacts.

This document provides an update to the October 2018 survey investigation AARD by outlining the methodology and research parameters for the ongoing investigation through test excavations.

This Test Excavation AARD is in line with NSW state Aboriginal heritage processes for best practice after the stipulated requirements in the Secretary's Environmental Assessment Requirements (SEARs). This methodology continues the requirements of Stages 2 and 3 of the Department of Environment, Climate Change and Water (DECCW) *Aboriginal cultural heritage consultation requirements for proponents* (the Consultation Requirements).[1] The current methodology aims to:

- identify Aboriginal cultural heritage within the study area through detailed investigation of areas of predicted archaeological sensitivity;
- ensure Aboriginal cultural and archaeological constraints and opportunities are adequately identified and appropriately managed throughout the life of the project;
- consult with the Aboriginal community regarding the cultural significance of the study area; and
- ensure that any risks to Aboriginal heritage values (both intangible and tangible) are appropriately identified and mitigated.

1.1 The Study Area

The study area is the proposed rail line, approximately 37km long, running between Illabo and Stockinbingal (Figure 1.1 and Figure 1.2). The study area is approximately 160km northwest of Canberra and 310km west of the NSW coast. Stockinbingal is within the Cootamundra-Gundagai Regional LGA and Illabo is within Junee LGA. The proposed rail line crosses 156 property boundaries. The Lot and DPs for properties within the Cootamundra-Gundagai Regional LGA are listed in Table 1.1 and the Lot and DPs within Junee LGA are listed in Table 1.2.

Table 1.1 Lot and DPs within the Cootamundra-Gundagai Regional LGA.

Lot	DP	Section Number	Lot	DP	Section Number	Lot	DP	Section Number
A	32837		3	758928	12	11	758928	14
C	32837		3	758928	13	11	758928	13
1	103343		4	758928	13	12	758928	13
17	111694		4	758928	12	12	758928	12
B	172780		5	758928	13	2	789254	
1	173592		5	758928	14	2	813819	
3	250017		5	758928	11	1	819690	
1	377393		5	758928	12	3	869982	
1	537977		6	758928	13	158	915952	
1	540611		6	758928	12	159	915952	
2	542942		6	758928	14	1	952541	
1	546133		6	758928	11	1	952965	
1	561560		7	758928	12	2	952965	
2	561560		7	758928	14	1	957869	
2	570265		7	758928	11	1	1018725	
1	581176		7	758928	13	3	1031243	
22	618553		8	758928	14	5	1045925	
1	727946		8	758928	11	6	1045925	
2	727946		8	758928	12	2	1088439	
3	727946		8	758928	13	1	1093937	
2	734764		9	758928	11	188	1120849	
22	750598		9	758928	14	64	1172415	
167	750598		9	758928	13	65	1172415	
91	750619		9	758928	12	10	1195365	
273	750619		10	758928	11	1	1200550	
275	750619		10	758928	12	4001	1205138	
1	758928	12	10	758928	14	4002	1205139	
1	758928	13	10	758928	13	4003	1205140	
2	758928	13	11	758928	12	2	1214399	
2	758928	12	11	758928	11			

Table 1.2 Lot and DPs within the Junee LGA.

Lot	DP	Lot	DP	Lot	DP	Lot	DP
6	121766	113	751396	89	751398	199	751401
7	121766	114	751396	94	751398	200	751401

Lot	DP	Lot	DP	Lot	DP	Lot	DP
4	134014	119	751396	100	751398	220	751401
1	237404	123	751396	126	751398	221	751401
3	237404	125	751396	24	751401	223	751401
1	533415	133	751396	31	751401	279	751401
2	533415	179	751396	32	751401	282	751401
3	591854	184	751396	70	751401	303	751401
2	610833	185	751396	103	751401	322	751401
1	631000	186	751396	104	751401	1	939264
2	631000	190	751396	105	751401	10	1048423
24	751396	9	751398	109	751401	20	1116265
25	751396	21	751398	112	751401	21	1116265
30	751396	27	751398	117	751401	1	1173278
54	751396	49	751398	169	751401	22	1219717
104	751396	86	751398	173	751401	3	1240872
112	751396	87	751398	174	751401		

1.2 Proposed Works

The proposed works are listed below; however, due to the size and nature of the project, minor details may change during construction.

The current design includes:

- construction of 37 kilometres of new, single track standard gauge railway;
- installation of 43 new culverts and five new bridges;
- two turnouts;
- two crossing loops;
- installation of 13 road/level crossings;
- tie-in works to the existing rail line north of Illabo and at Stockinbingal; and
- associated works include signalling and communications, signage, fencing, services and utilities.

As part of the project, the following activities will also be undertaken:

- construction of access roads and access tracks;
- permanent and temporary changes to the road network; and
- construction of compounds.

1.3 Statutory Context

The following statutory controls are relevant to the study area and therefore this report:

- *Environmental Planning and Assessment Act 1979* (NSW) (EPA Act);
- *National Parks and Wildlife Act 1974* (NSW) (NPW Act);
- *Junee Local Environmental Plan 2012*; and
- *Cootamundra Local Environmental Plan 2013*.

Under Section 90 of the NPW Act, the Proponent would require an Aboriginal Heritage Impact Permit (AHIP) should the development activities harm any Aboriginal object or Aboriginal place. The OEH requires the appropriate management of other Aboriginal heritage social values, if connected with a study area.

However, as the approval process for this project is determined under the EPA Act as a State Significant Infrastructure (SSI) project the Aboriginal heritage approval process will need to address the SEARs. The Aboriginal heritage assessment process to satisfy the SEARs mirrors the NSW Aboriginal heritage requirements; however, an AHIP will not be necessary.

This project aims to determine if harm can be avoided to any Aboriginal sites across the study area.

1.4 Objectives of this Aboriginal Archaeological Research Design

To understand, assess and provide management guidance for Aboriginal heritage an ACHAR is being prepared.

Development of the ACHAR requires a series of stages, including a program of Aboriginal community consultation, an archaeological survey, and archaeological test excavation. This ARD provides the framework for the archaeological test excavation and draws directly from the background information and findings of the survey.

The archaeological survey was undertaken in collaboration and consultation with the project's Registered Aboriginal Parties (RAPs). The requirement for test excavation was discussed with those RAPs participating in the survey, and all of the RAPs have been asked to review and comment on the methodology outlined for this ARD.

The objectives of the assessment are to:

- understand the nature, extent and significance of the Aboriginal cultural heritage values throughout the study corridor, including the number, extent, type, condition, integrity and archaeological potential of identified and predicted Aboriginal heritage sites and places within the study area;
- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;
- prepare a cultural values assessment for all identified aspects of Aboriginal cultural heritage identified within the study area;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;

- minimise impacts to Aboriginal cultural heritage through prudent, feasible and pragmatic design solutions;
- determine where impacts are unavoidable and develop a series of impact mitigation strategies; and
- provide clear recommendations for the conservation of archaeological values and mitigation of impacts to these values.

1.5 Authors

This report has been prepared by Martin Rowney, GML Senior Associate, and Jodi Cameron, GML Heritage Consultant.

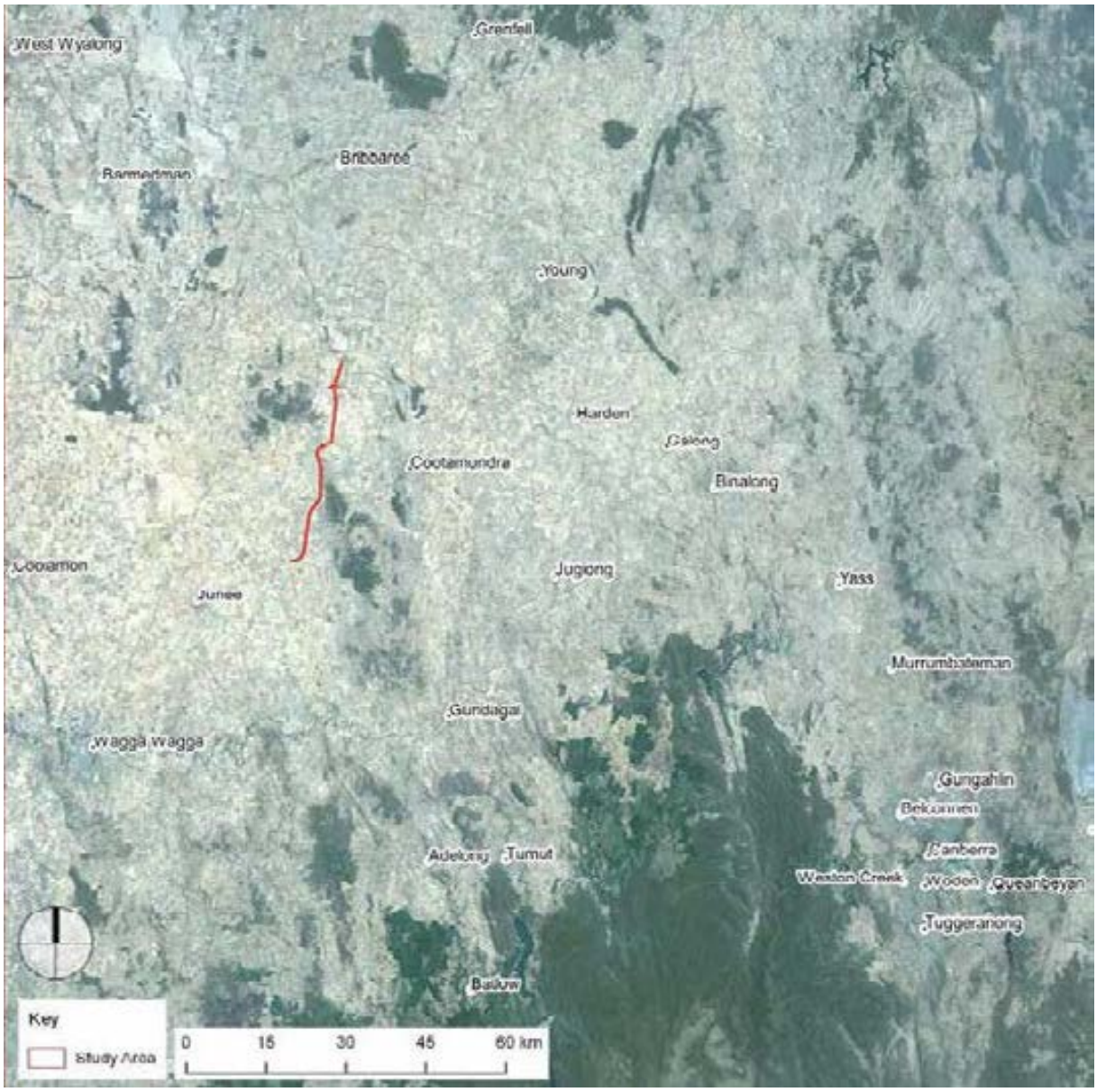


Figure 1.1 Study area within Central NSW. (Source: NSW Land and Property Information [LPI] with GML additions, 2018)

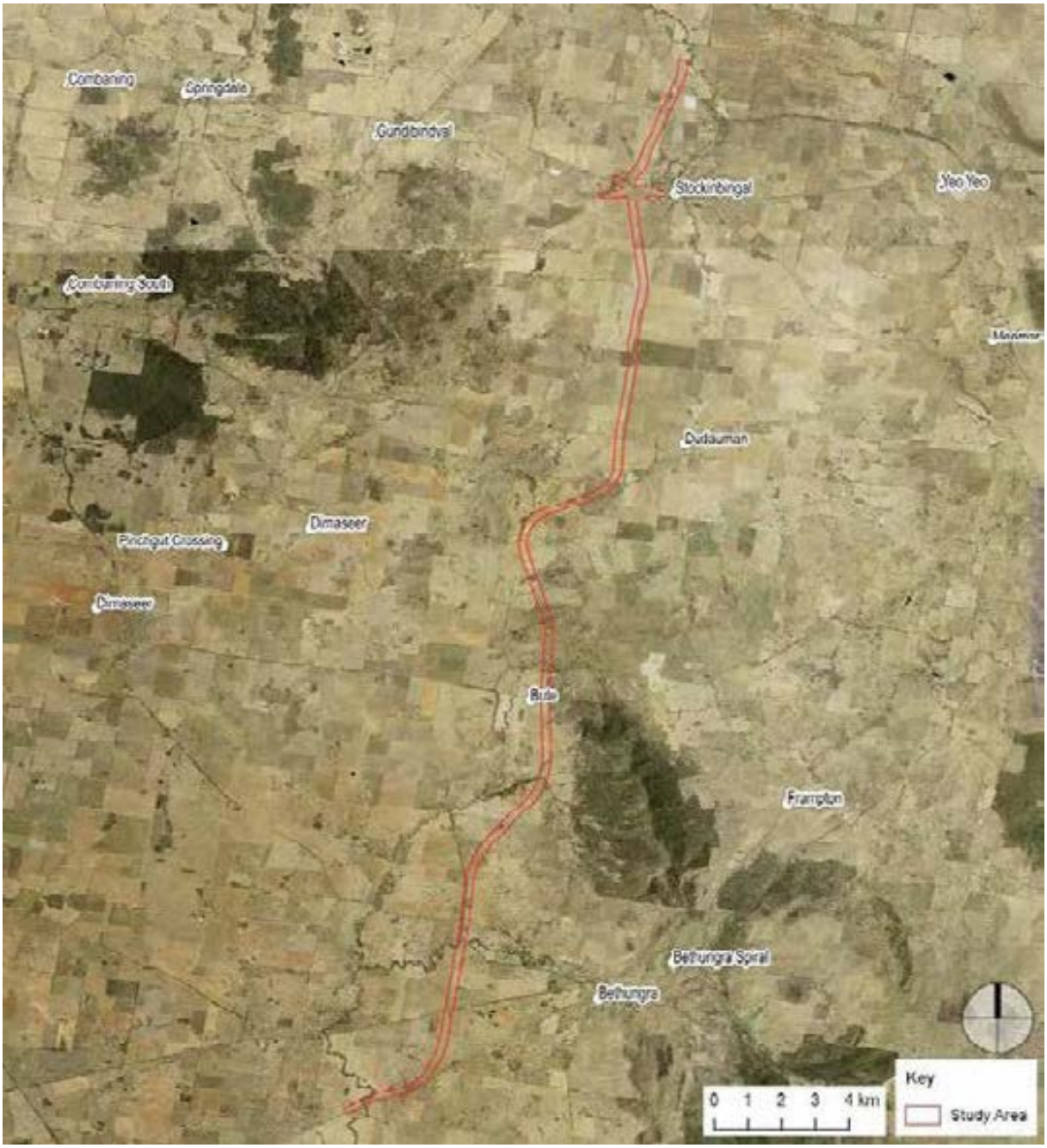


Figure 1.2 Study area between Illabo and Stockinbingal. (Source: NSW LPI with GML additions, 2018)

1.6 Endnotes

[1] Department of Environment, Climate Change and Water, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

2.0 Archaeological and Environmental Context

2.1 Archaeological Context

The purpose of this section is to synthesise available information from previous archaeological studies to provide context and a baseline for what is known about Aboriginal cultural heritage in the subject area.

2.1.1 Aboriginal Heritage Information Management System Search

On 17 July 2018, GML undertook a search of the OEH Aboriginal Heritage Information Management System (AHIMS) database from GDA Zone 55, eastings 566209–582392 to northings 6145993–6182214, with a 0km buffer surrounding the study area. This study area had the same coordinates as the Niche[1] AHIMS extensive search report, undertaken on 1 March 2016 for the Due Diligence reporting.

The 2018 GML search identified 72 Aboriginal sites, which is an increase from the 34 listed sites identified in the Niche AHIMS extensive search report. Since March 2016, members of the local Aboriginal community recorded 38 sites (including artefact scatters, modified trees, a waterhole and grinding groove).

The search area of 17 July 2018 (GML) and 1 March 2016 (Niche) did not cover the northernmost Stockinbingal portion of the study area. To check whether any sites were in this area, a basic search was done on 18 September 2018. The search confirmed there were no Aboriginal sites in this northern area of the site, and therefore the 17 July 2018 extensive search results could be relied upon to show all sites in the study area.

In early October, the study area was extended approximately 50–100m north. To check whether any sites were in this area, another basic search was undertaken on 17 October 2018. The search confirmed there were no Aboriginal sites in this extended area, and therefore the 17 July 2018 extensive search results could be relied upon to show all sites in the study area.

The results of the search are shown in Table 2.1 and Figure 2.1, Figure 2.2 and Figure 2.3.

Table 2.1 Results of AHIMS Search.

Site Feature	Frequency	Percentage %
Grinding Groove	1	1.4
Modified Tree (Carved or Scarred)	31	43
Potential Archaeological Deposit	1	1.4
Stone Arrangement	1	1.4
Stone Artefact Site	37	51.4
Waterhole	1	1.4
Total	**72**	

The results of the AHIMS search show that stone artefact sites are the most common within the region, making up 51% of all sites. Stone based sites and artefacts by nature preserve best in the archaeological record. Modified trees are also a dominant site type in this region (43%). One modified tree is within the study area and four others are in close proximity to the study area. This range of site types suggests that the region was used in multiple ways. Stone artefact sites are commonly associated with resource

(food) procurement, processing and discard. Modified trees are also associated with broader traditions and cultural practices.

2.1.2 Relevant Local Literature

Young to Wagga Wagga Looping Gas Pipeline—Heritage Assessment—AECOM, 2010[2]

AECOM undertook an assessment, including survey, of the 61km pipeline route Stage 1—Bethungra to Wagga Wagga. Thirty-six Aboriginal sites (30 artefact scatters and six isolated finds) were identified during the survey. The impact assessment found that 29 sites would be impacted by the proposal. The significance assessment found all sites that were to be impacted had low scientific significance but high cultural significance.

Their analysis of these sites noted a number of site distribution patterns associated with landforms and environmental elements mainly associated with water sources. In particular, they noted that relatively few sites recorded were in close proximity to a reliable water source with a stream order of four or higher. Most of the sites were in fact located within the vicinity of lower order, ephemeral streams, and two-thirds of all sites were located within 50m of a water course, with 200m being the maximum distance from water for the sites recorded for this study.

The landform data recorded along with those 36 sites reveals that 26 of the sites are associated with flat or low-gradient landforms including valley flats, plains and lower slopes, while five were in mid-slope contexts and five were in crest or ridge contexts.

One of AECOM's observations was that the environmental conditions would have favoured main creek lines and smaller adjoining tributaries as primary zones for occupation. This observation was partly borne out by its findings, although with less emphasis on the main creek lines and more on the ephemeral water courses.

AECOM assessed the predictive modelling as showing that the most likely Aboriginal site occurrences would be open artefact scatters and areas of subsurface archaeological potential within 200m of high order creeks and rivers on a range of landforms including creek banks, creek flats and terraces, and also on lower slopes and ridges overlooking water sources. Smaller open sites were also predicted to occur near ephemeral low order streams but were unlikely to occur where those water sources were first order streams with no defined channel.[3]

They concluded that their modelling generally confirmed Dan Witter's 1980s[4] model that Aboriginal land use in this general area was associated with well-watered areas.

The study area for the Wagga Wagga to Young gas pipeline ran adjacent to the current study area at the Illabo end of the corridor and was approximately 20km to the east at the Stockinbingal end.

The pipeline is 24km longer than the current study area and passed close to the southern end of the current study area. The landforms and landscape features traversed in AECOM's assessment would be similar to the conditions of the current study area.

Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales—Due Diligence—Tom Knight, 2011[5]

Tom Knight undertook a due diligence assessment for a 120m section of a fire trail in Ulandra Nature Reserve to inform and advise maintenance works. Knight observed that Ulandra Nature Reserve

contained multiple AHIMS sites, six being within one kilometre of the study area. Knight relocated one previously recorded site (AHIMS # 50-5-0068) within the study area and concluded that no other Aboriginal sites existed within the section of the fire trail. AHIMS site 50-5-0068 had previously been salvaged and works on the fire trail were able to proceed following the conditions of the s90 permit.

This due diligence assessment covered an area to the southeast of the current study area. Ulandra Nature Reserve is approximately 12km from the current study area and would be representative of the current study area prior to land clearing and European occupation.

Knight also reviewed a range of other archaeological assessments which had been undertaken in the Ulandra Nature Reserve, including a survey undertaken by Paton and Hughes in 1985 in which seven artefacts scatters and 15 isolated finds were recorded. Notable among these recordings was that most were within a valley context while only a comparatively smaller number of sites were recorded on ridges and slopes. Knight concluded that open valleys in the area were generally more heavily used than the surrounding ridge tops. The availability of water had a marked influence on the likely location of artefact scatter sites and therefore 'most archaeological evidence would subsequently be found in association with low gradient, well drained locations adjacent to water sources such as stream banks, terraces and footslopes'.[6]

Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work Within Ulandra Nature Reserve and Adjacent Areas, Near Bethungra, NSW—Aboriginal Cultural Heritage Report—Charles Dearling Archaeological and Cultural Heritage Consultants, 2007[7]

This assessment concluded works in and surrounding the Ulandra Nature Reserve undertaken by Charles Dearling Archaeological and Cultural Heritage Consultants between 2002 and 2007. The archaeological works were in response to essential repairs required on Transgrid transmission lines which passed through the Ulandra Nature Reserve.

The initial assessment of the study area in 2002 identified 28 Aboriginal sites, comprising 22 artefact scatters and six isolated finds, within the Ulandra Nature Reserve.[8] The scatters were generally small containing less than 10 artefacts each, although the largest scatter contained 48 artefacts comprising mainly debitage with cores and a small number of formalised tool types, all made from quartz, chert and siltstone.

Further survey in 2004 resulted in another seven artefact scatters and three isolated finds being recorded. A total of 146 artefacts were recorded from these sites, most of which were found along low-gradient spur crests.

Based on these surveys, Dearling hypothesised that the occupation of this area was largely characterised by low-gradient, well-drained locations in close association with water sources such as stream banks, terraces and foot slopes.

Of the sites found during the previous two surveys, 13 sites would be impacted by the Transgrid's proposed project works. Before works commenced, a s90 Consent with Salvage was issued to Transgrid and artefact collection was undertaken. Five of the larger sites contained a total of 1,495 artefacts. The assessment recommended further programs of collection under the s90 consent, as required by additional repair works.

This body of works indicates that artefact sites are common across the region and are strongly correlated with low-gradient slopes and terraces close to water, with less emphasis on ridge and crest

environments. There are a number of locations across the current study area that reflect these landform criteria.

Summary

Overall the previous archaeological studies in the local area all support a basically similar model of site distribution which focuses around water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

Artefact sites, including scatters and isolated finds, are the dominant findings. The majority of artefacts were made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.

All studies note that scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

Figure 2.1 The three AHIMS search areas. (Source: NSW LPI with GML additions, 2018)

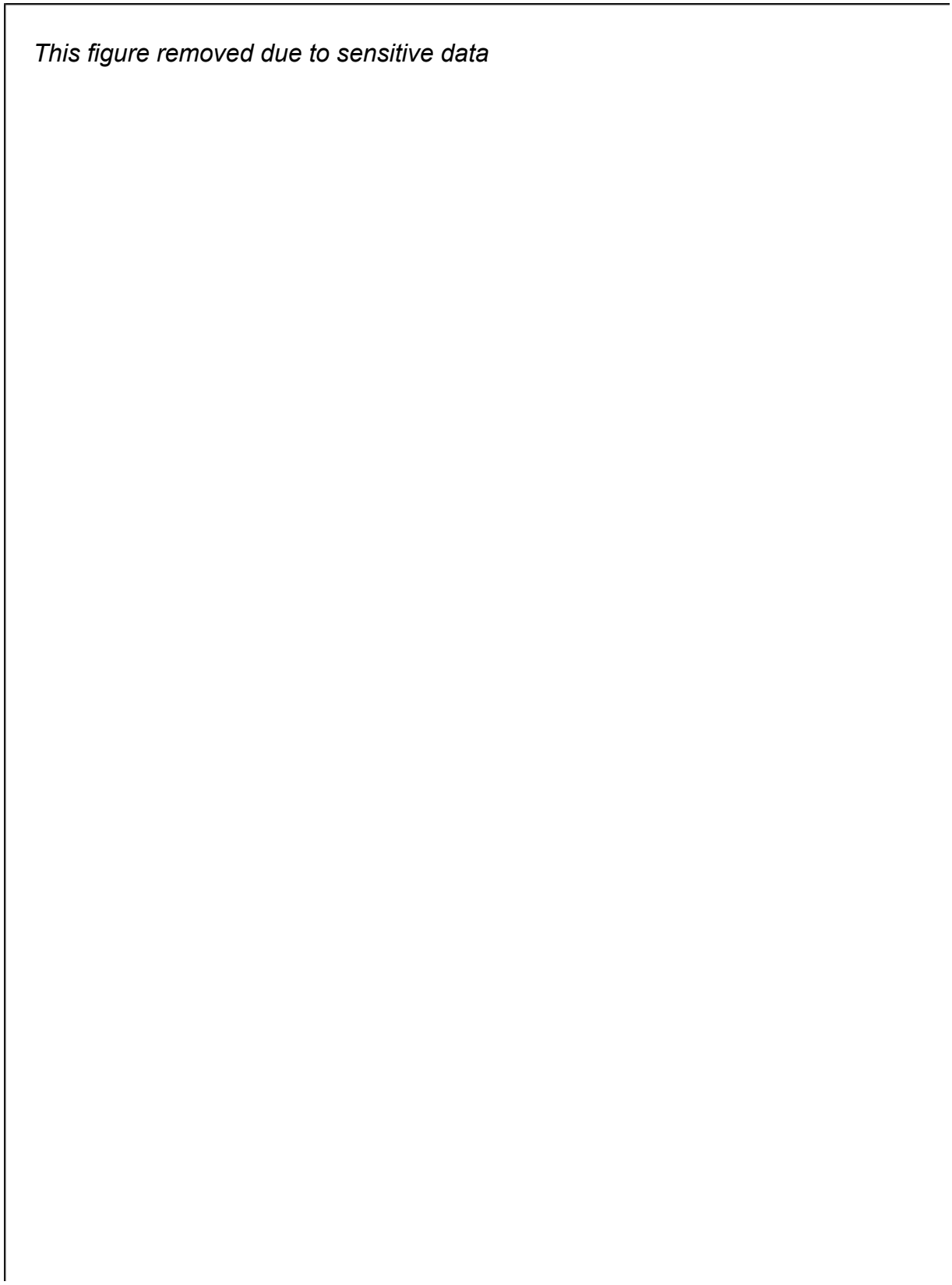


Figure 2.2 AHIMS search results. (Source: NSW LPI with GML additions, 2018)

Figure 2.3 Detailed AHIMS search results. (Source: NSW LPI, with GML additions, 2018)

2.2 Landscape Context

The purpose of this section is to provide environmental contextual information for use in developing a predictive model of Aboriginal site locations associated with the study area. Interactions between people and their surroundings are of integral importance in both the initial formation and the subsequent preservation of the archaeological record. The nature and availability of resources, including water, flora and fauna, and suitable raw materials for the manufacture of stone tools and other items, had (and continues to have) a significant influence on the way in which people utilise the landscape.

Alterations to the natural environment also impact upon the preservation and integrity of any cultural materials, whether Aboriginal or non-Aboriginal, whilst current vegetation and erosional regimes affect the visibility and detectability of sites and objects. For these reasons, it is essential to consider the environmental context as a component of any heritage assessment.

The study area passes through 12 soil landscapes and crosses six creeks. The length of the study area is always in close proximity to water. The farthest point from within the study area to water is 3.2km. The soils, landforms and landscape features of each landscape are summarised below and in Figure 2.4 to Figure 2.6.

2.2.1 Bethungra (bt) Erosional[9]

Landscape

Rolling to steep hills formed on Silurian volcanic rocks. Elevation 320–730m, local relief 70–260m, slopes from 10–32% up to 40% in some steeper terrain. Partially to extensively cleared eucalypt woodlands.

Soils

Very shallow (<25cm), moderately well-drained Paralithic Leptic Rudosols (Lithosols) on upper slopes, crests and along ridgelines. Moderately deep (<100cm), moderate to imperfectly drained Reticulate Dystrophic Red Kurosols (Red Podzolic Soils) and Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on mid to lower slopes. Moderately deep (<100cm), poorly drained Bleached-Mottled Mesotrophic Brown Chromosols (Yellow Podzolic Soils) on lower slopes. Deep (>100cm), poorly drained mottled Eutrophic Brown Sodosols (Solodic Soils) along creek lines and in depressions.

2.2.2 Comerford (cz) Erosional[10]

Landscape

Undulating low hills and rises formed on Devonian igneous and sedimentary rocks. Elevation 280–370m and <448m near Dirnaseer Road, local relief 20–80m, slopes 3–10% and <15% on steeper terrain. Extensively cleared, mid–high open eucalypt woodland.

Soils

Shallow (<50cm), well-drained Paralithic Leptic Rudosols (Lithosols) and Basic Paralithic Orthic Tenosols (Earthy Sands) on crests and ridgelines. Moderately deep (<100cm), imperfectly drained Mottled Magnesic Red Kurosols (Red Podzolic Soils; Solodic Soils) on mid to upper slopes. Mottled Eutrophic Red Chromosols (Red Podzolic Soils) on upper to lower slopes, and Mottled Eutrophic Brown Dermosols (Brown Podzolic Soils) on lower slopes.

2.2.3 Eurongilly (er) Transferral[11]

Landscape

Gentle to undulating rises and footslopes formed on Quaternary colluvium. Elevation 220–300m, local relief <30m, slopes <5%. Extensively cleared mid-high open eucalypt woodlands.

Soils

Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Non-calcic Brown Soils; Redbrown Earths) on mid to upper slopes. Deep (>100cm), imperfectly drained Haplic and Mottled Red and Brown Chromosols (Brown Podzolic Soils), imperfectly drained Haplic and Bleached Red Kurosols (Red Podzolic Soils), moderately well-drained Haplic Eutrophic Red and Brown Dermosols (Brown Podzolic Soils), and moderately well-drained Haplic Eutrophic Red Kandosols (Red Earths) on mid to lower slopes. Deep (>100cm), imperfectly and poorly drained Bleached-Mottled Mesotrophic Brown Chromosols and Sodosols (Yellow Podzolic Soils; Solodic Soils) on lower slopes to drainage lines.

2.2.4 Frampton (fr) Transferral[12]

Landscape

Gentle to undulating colluvial rises, foot slopes and plains formed on recent Quaternary colluvium derived from Silurian volcanics. Elevation 200–400m, local relief <30m, slopes <6%. Extensive to totally cleared mid–high open eucalypt woodlands.

Soils

Shallow (<50cm), moderately well-drained Palic Paralithic Tenosols (Earthy Sands) on upper slopes adjacent to Bethungra Range. Deep (>100cm), imperfectly drained Mottled Calcic and Eutrophic Red Chromosols (Red-brown Earths; Non-calcic Brown Soils) and Mottled and Mottled-Sodic Mesotrophic Red Dermosols (Non-calcic Brown Soils) on mid to upper slopes, along with deep (>100cm), moderately well drained Haplic Red Kandosols (Red Earths). Deep (>100cm), imperfectly drained Mottled Eutrophic Yellow and Brown Chromosols (Yellow and Brown Podzolic Soils) and Eutrophic Yellow Sodosols (Solodic Soils) on lower slopes. Deep (>100cm), poorly drained Bleached-Mottled Dystrophic Brown Chromosols (Brown Podzolic Soils) in drainage depressions.

2.2.5 Ironbong Creek (ig) Alluvial[13]

Landscape

Gently undulating alluvial plains formed on Quaternary alluvium. Elevation 220–340m, local relief <9m, slopes <2%. Extensively cleared eucalypt woodlands.

Soils

Moderately deep (>50cm), imperfectly drained Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on terraces. Moderately deep (>50cm), imperfectly drained Haplic Eutrophic Red Kandosols (Red Earths), and deep (>100cm) imperfectly drained Hypocalcic Mottled-Subnatric Brown Sodosols (Solodic Soils) on surrounding plains. Deep (>100cm), imperfectly drained Haplic Mesotrophic Brown Kandosols and Rudosols (Alluvial Soils) along creek lines.

2.2.6 Narraburra (nr) Stagnant Alluvial[14]

Landscape

Broad alluvial plains formed on Quaternary alluvium. Wind-blown sand deposits and prior stream formations occur throughout the plains. Elevation 227–280m, local relief <9m, slopes <9%. Extensively cleared mid–high open eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Rudosols (Alluvial Soils) and poorly drained Bleached Mesotrophic Sodosols (Solodic Soils; Soloths) along current creek floodplains and in drainage depressions. Deep (>100cm), well-drained Basic Stratic Rudosols (Earthy Sands) adjacent to some creek lines. Deep (>100cm), Bleached-Mottled Mesotrophic Red Chromosols and Haplic Magnesic Red Kurosols (Red Podzolic Soils) on adjacent levees and plains. Deep (>100cm), imperfectly drained Bleached Hypocalcic Red Chromosols and Mottled Calcic Brown Chromosols (Red-brown Earths) on surrounding plains. Brown Dermosols (intergrades of Brown Podzolic Soils to Non-calcic Brown Soils) are also present. Deep (>100cm), imperfectly drained Endocalcareous-Endohypersodic Crusty Red Vertosols (Red Clays) and imperfectly drained Endocalcareous Grey Vertosols (Grey Clays) also occur on back plains.

2.2.7 Oakville (oe) Transferral[15]

Landscape

Gently undulating foot slopes and plains formed on recent Quaternary colluvium. Elevation 260–360m, local relief <30m, slopes <5%. Extensively cleared eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Mottled Eutrophic Red Chromosols (Red Podzolic Soils) and Bleached-Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on upper to lower slopes. Deep (>100cm), moderately well-drained Eutrophic Subnatric Red Sodosols (Solodic Soils) on some midslopes. Deep (>100cm), poorly drained Mottled Eutrophic Brown Sodosols (Solodic Soils) in drainage depressions and along creek lines.

2.2.8 Reynolds (ry) Transferral[16]

Landscape

Gentle to undulating foot slopes and plains formed on recent Quaternary alluvium and colluvium derived from intermediate Ordovician volcanics. Elevation 275–320 m, local relief <20 m, slopes <4%. Extensive to totally cleared eucalypt woodlands.

Soils

Deep (>100 cm), well-drained Haplic Mesotrophic Red Dermosols and Chromosols (structured Red Earths; Brown and Red Podzolic Soils) on mid to upper slopes. Deep (>100 cm), imperfectly drained Mottled Mesotrophic Brown Chromosols (Brown Podzolic Soils) on lower slopes.

2.2.9 Stony Hill (sl) Erosional[17]

Landscape

Undulating low hills and rises formed on Silurian sedimentary rocks. Elevation 280–420m, local relief 9–40m, slopes from 3–10% up to 25% on some steeper terrain. Extensively cleared mid–high open eucalypt woodlands.

Soils

Soils are variable and complex. Shallow (<50cm), well-drained gravelly Paralithic Leptic Rudosols (Lithosols) on mid to upper slopes and crests. Moderately deep (>50cm), imperfectly drained Basic Paralithic Bleached-Leptic Tenosols (Earthy Sands) and shallow (<50cm), well-drained gravelly Acidic Red Kandosols (Red Earths) on some upper slopes. Shallow (<50cm), imperfectly drained Mottled Dystrophic Red Dermosols and Chromosols (Brown Podzolic Soils) and well-drained Haplic Mesotrophic Red Kandosols (Red Earths) on mid to lower slopes.

2.2.10 Temora (te) Erosional[18]

Landscape

Undulating low hills and rises formed on Ordovician volcanics. Elevation 260–336m, local relief 20–50m, slopes 3–10% and <25% on steeper slopes. Extensively to totally cleared mid-high open Eucalypt woodlands.

Soils

Shallow (<25cm) Acidic Paralithic Leptic Rudosol (Lithosol) and moderately deep to deep (50–150cm), well-drained Haplic Calcic Red Chromosols (Red-brown Earths) on upper slopes and crests. Deep (>100cm), well-drained Haplic Eutrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), well-drained Haplic and Sodic Calcic Eutrophic Red Chromosols and Dermosols (Non-calcic Brown Soils; Red-brown Earths; structured Red Earths) also on midslopes.

2.2.11 Twins Range (ti) Erosional[19]

Landscape

Undulating to rolling low hills, hills and plateau formed on Silurian volcanics. Elevation 360–530m, local relief 30–120m, slopes 3–11% and <20% on steeper terrain. Extensively cleared low to mid–high open eucalypt woodlands.

Soils

Shallow (<25cm), well-drained Acidic Paralithic Orthic Tenosols (Earthy Sands) and moderately deep (<100cm), imperfectly drained Mottled Mesotrophic Red and Brown Chromosols (Red Podzolic Soils) on hillcrests. Very deep (>1.5m), imperfectly drained Mottled to Mottled-Sodic Mesotrophic Red Chromosols (Red Podzolic Soils), moderately deep (<100cm), moderately well-drained Haplic Red Kandosols (Red Earths) and shallow (<50cm), imperfectly drained Haplic Eutrophic Grey Dermosols to moderately deep Haplic Calcic Red Dermosols and Chromosols (Red-brown Earths) on mid to upper slopes. Deep (>100cm), poorly drained Bleached-Mottled Eutrophic Brown and Yellow Chromosols (Yellow Podzolic Soils) and Haplic Hypocalcic Red Dermosols (Red-brown Earths) on mid to lower slopes. Moderately deep (<100cm) to deep (>100cm), poorly drained Bleached-Mottled Red and Brown Eutrophic Sodosols (Solodic Soils) and Orthic Tenosols (Earthy Sands) on lower slopes and flats.

2.2.12 Wattle Valley (wv) Erosional[20]

Landscape

Undulating valley consisting of low hills, rises, colluvial foot slopes and flats formed on Silurian volcanic and plutonic rocks. Elevation 320–540m, local relief 20–60m, slopes 3–15% and <20% on steeper terrain. Extensively to totally cleared mid–high open eucalypt woodlands.

Soils

Moderately deep (>50cm) Mottled Mesotrophic Red Kurosols (Red Podzolic Soils) on upper slopes and crests. Shallow to moderately deep (<70cm), moderately well-drained Haplic Mesotrophic Brown Kandosols (Red Earths) on upper slopes. Deep (>100cm), imperfectly drained Bleached-Mottled Mesotrophic Red Kurosols and Brown Chromosols (Red and Brown Podzolic Soils) and moderately deep (<100cm) Haplic Mesotrophic Red Chromosols (Red Podzolic Soils) on mid to lower slopes. Deep (>100cm), imperfectly drained Eutrophic Mottled-Subnatric Brown Sodosols (Solodic Soils) on alluvial flats and in drainage depressions.

2.2.13 Land Use History

The study area traverses multiple working farms. The land would have undergone significant changes over time. Vegetation clearance, construction of roads, tracks, dams, fences, ploughing, crops and grazing are some of the activities that have impacted on the landscape. These impacts create erosion and other disturbances which reduce the potential for Aboriginal archaeological sites across the study area.

2.2.14 Summary of Landscape Context

The AHIMS results indicate that the region surrounding the current study area contains multiple Aboriginal archaeological sites, the majority of which are stone artefacts and modified trees. Figure 2.7 combines the AHIMS search results with the Cootamundra soil landscape and creek lines. It shows that the AHIMS sites are in close proximity to creek lines and many are on the same soil landscapes as those that are crossed by the current study area.

As discussed above, the current study area crosses 12 soil landscapes. They fall into four soil groups: Erosional, Transferral, Alluvial and Stagnant Alluvial. Erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Alluvial and Stagnant Alluvial soil landscapes vary between moderately deep and deep across all landforms.

Prior to European occupation, the study area would have been covered in open eucalypt woodlands which would have minimised erosion and artefact movement. Modified trees may be found in any soil landscape, in areas with mature vegetation. During and post land clearing, modified trees may have been destroyed and stone artefacts in erosional landscapes may have been displaced from their original discard point. Artefact movement down slopes is common in these situations. Soil landscapes with deep soil profiles are generally more stable and artefacts in these areas often undergo less displacement. Therefore, it can be predicted that artefacts may be found in the majority of the Transferral, Alluvial and Stagnant Alluvial landscapes and in the mid to lower slopes of Erosional landscapes.

As such, in terms of comparability with surrounding areas, if no impacts have occurred within the study area it could contain intact stone based archaeological deposits. An analysis of the study area's more

recent history shows that it has not been subject to a substantial quantity of impact associated with pastoral land use. Furthermore, mature trees across the study area may have been modified by Aboriginal people in the past.

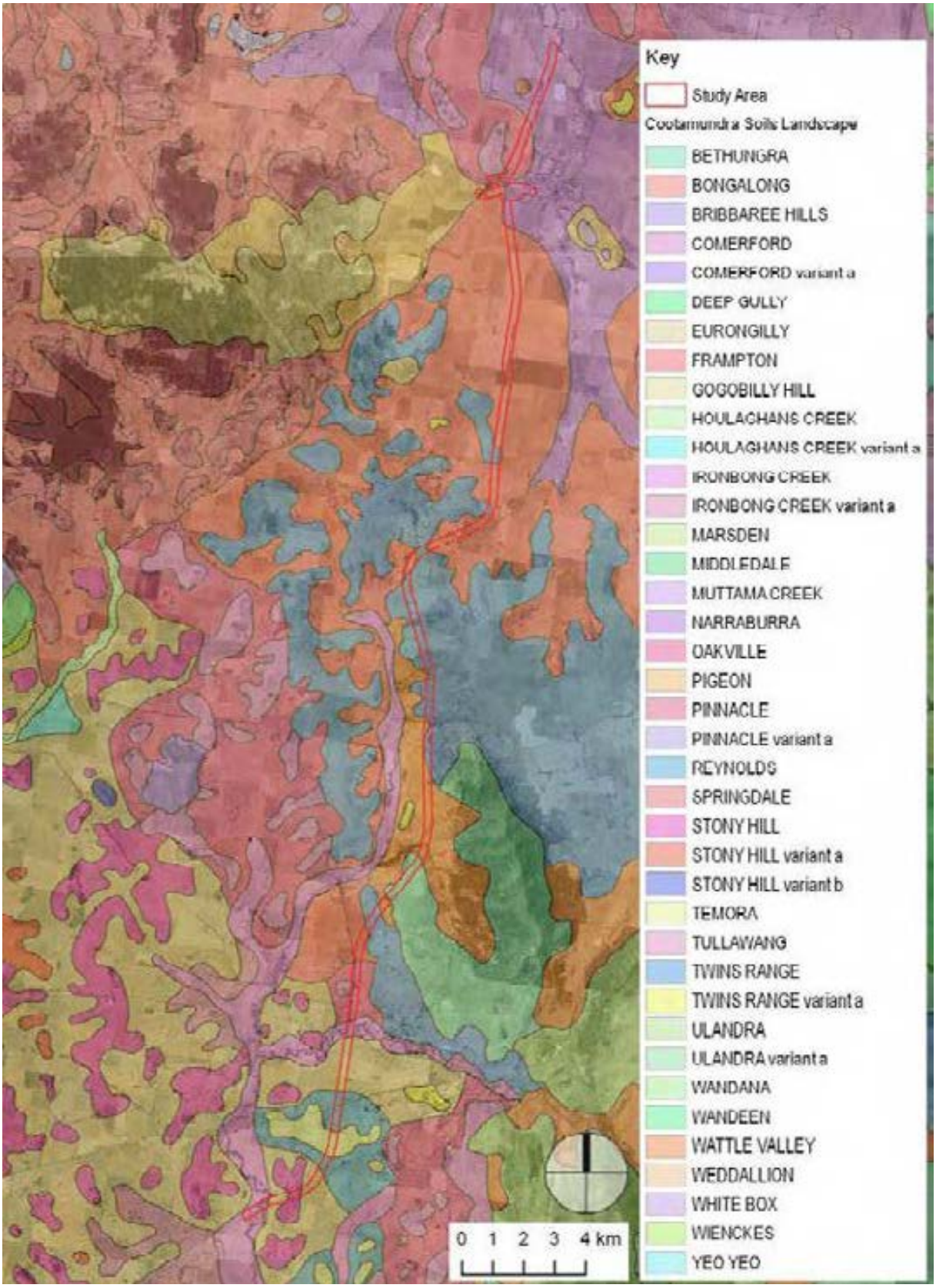


Figure 2.4 Soil landscapes of the study area. (Source: NSW LPI with GML additions, 2018)

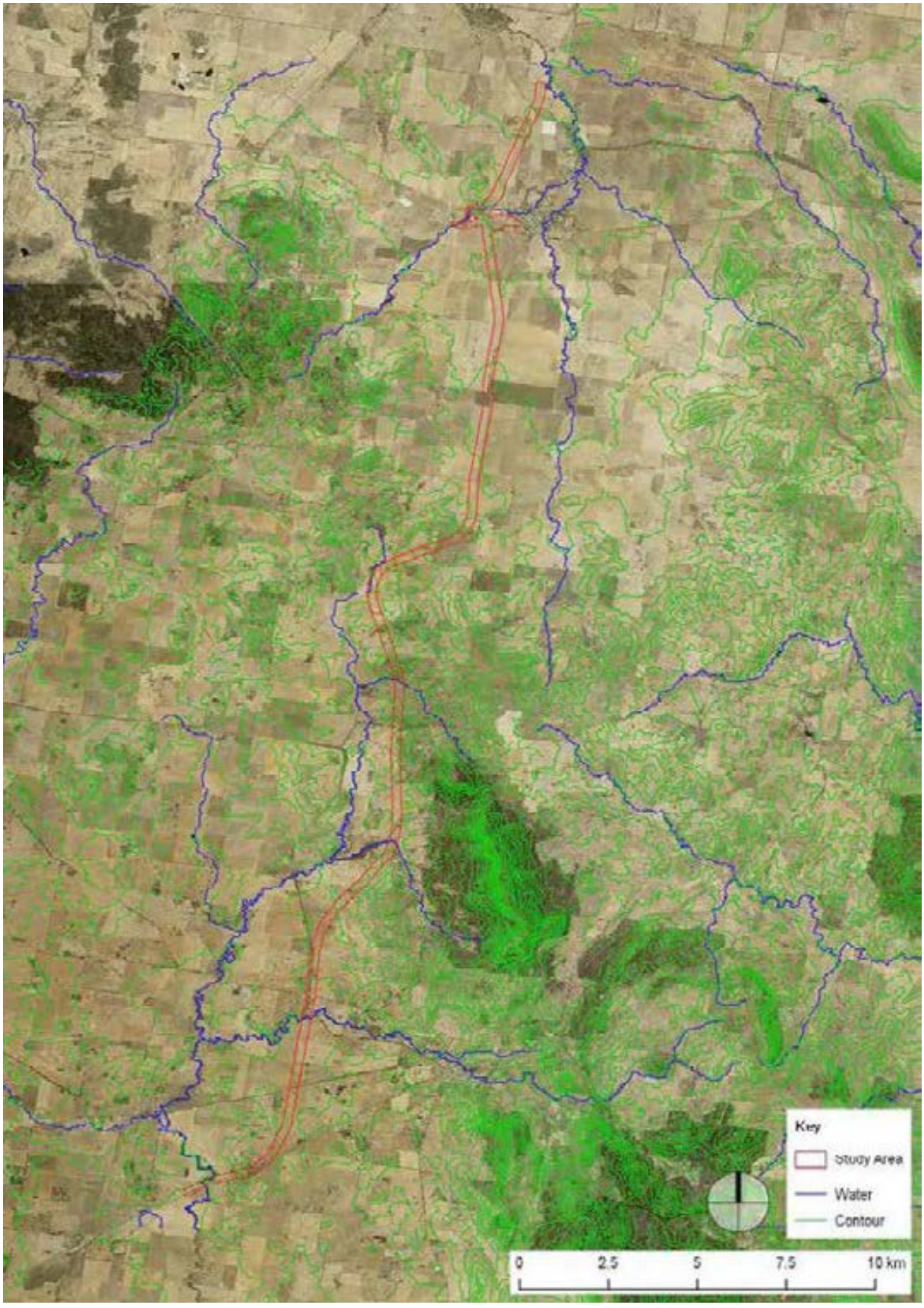


Figure 2.5 Hydrology and contour lines across the study area. (Source: NSW LPI with GML additions, 2018)

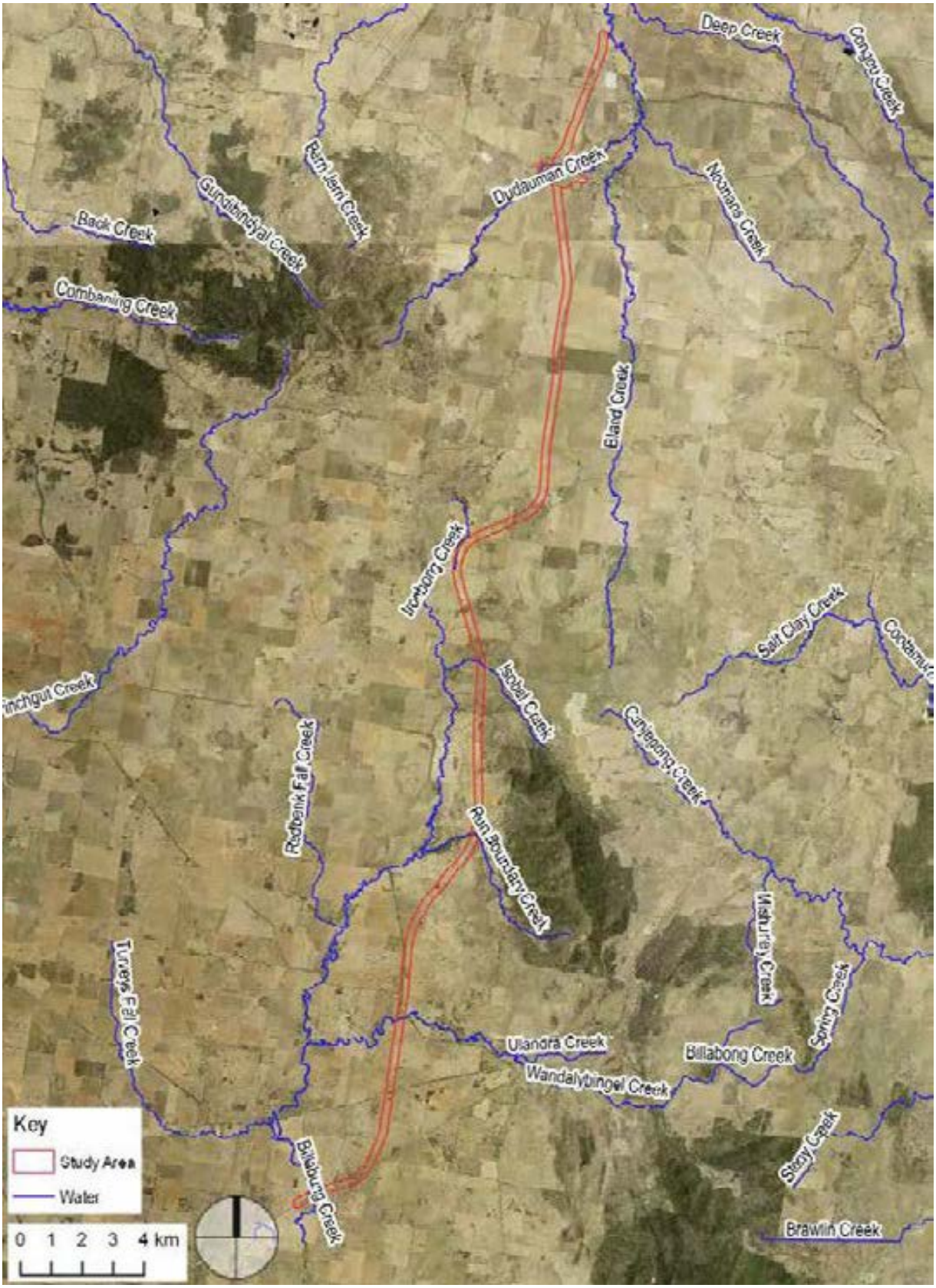


Figure 2.6 Water sources across the study area. (Source: NSW LPI with GML additions, 2018)

2.3 Summary of Predicted Aboriginal Archaeological Potential

Findings from other archaeological reports in the local area include general predictive modelling statements for the distribution of Aboriginal archaeological sites in the area based on background data and ground survey.

These include the notion that Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

These predictions can also be related to the current study area due to the similarity of the landforms and environment. The study area is mainly low-relief undulating plains with variations in elevation from approximately 260m above sea level (a.s.l). grading up to approximately 400m a.s.l. Key changes in topography occur to the southeast of the alignment where the alignment touches on the lower toe-slopes of a 700m-high range which is linked to the Ulandra Nature Reserve to the south. The section of the study area starting approximately 10km north of Illabo and extending for approximately 15km shadows the western side of this range, crosses two semi-permanent creek lines (Run Boundary Creek and Isabel Creek) and runs parallel to the permanent watercourse, Ironbong Creek. It also covers the most undulating part of the landscape, crossing a range of low-gradient toe-slopes and moderately elevated terraces within the vicinity of the watercourses and near a range of ephemeral watercourses in between.

This stretch of the study area is the most likely to contain Aboriginal archaeological sites due to its high correlation with landforms and watercourses as outlined in the predictive modelling.

This overall view supports the preliminary modelling noted in the 2016 Desktop Assessment,[21] which concluded with the identification of a range of sensitive areas within 200m of watercourses. This general statement can be refined further with reference to the specifics of the landforms within the study area.

Key predictive modelling statements include:

- Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—although sites may also occur in close proximity to Ironbong Creek, Run Boundary Creek, Isabel Creek and Ulandra Creek.
- Aboriginal occupation sites are most likely to occur on low-gradient, well-drained landforms in close proximity to those water sources. This therefore indicates that the highest area of alignment with the potential for sites to occur is the 15km stretch starting 10km north of Illabo.
- Artefact sites, including scatters and isolated finds, are the dominant findings with the majority of artefacts being made from quartz, with lesser reliance on silcrete and volcanics, although none of the previous studies note the presence of key raw material outcrops in the local area.
- Scarred trees are unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances. However, it is of note that some scarred trees have already been recorded around the general study area where stands of older trees remain.

These predictive statements were used to inform the survey strategy.

2.4 Site Survey

Pedestrian survey of the study area was undertaken from 26–30 November 2019 by GML in conjunction with members of the local Aboriginal community, as represented by the RAPs. The survey was conducted as per the methodology outlined in the October 2018 Survey AARD. Participants in the survey are noted in Section 3 of this AARD.

A total of 11 distinct areas, covering a total of 16.6km, were nominated as having the potential for archaeological or cultural sensitivity, although due to access restrictions, only seven of those areas, covering 7.54km, were available for pedestrian survey. Figure 2.7 shows the total number of areas of predicted sensitivity and those areas accessible for survey. These survey areas were based on the predictive modelling and focused on low-gradient, well-drained landforms in close proximity to water sources including Ironbong Creek, Run Boundary Creek, Isabel Creek and Ulandra Creek. Figures 2.12 and 2.13 show the survey area relative to the landforms and the soil landscape respectively.

The survey found a number of artefact scatters and isolated artefacts. Eighteen separate recorded locations were noted, two of which were scarred trees, the remainder being artefact sites. The survey also inspected the recorded AHIMS sites: scarred trees 50-5-0117, 50-5-0120 and 50-5-0121.

Table 2.1 Survey Zones and New Site Data Drawn from the Survey (as shown in Figure 2.7).

Zone	Owner	New Site Recording	Site Type	Survey Zone Length
1	Curran/McInerny property and Thomson property	ARTC1 – ARTC4	Low density artefact scatter / isolated artefacts	820m
		ARTC 5	Grindstone and Zone of archaeological potential	
2	Lloyd-Jones	ARTC6	Scarred tree	650m
			Zone of archaeological potential	
3	Road Corridor	AHIMS 50-5-0117	Scarred tree	50m
		AHIMS 50-5-0120	Scarred tree	
		AHIMS 50-5-0121	Scarred tree	
		ARTC18	Scarred tree	
4	Hermes	ARTC7	Isolated artefact	2100m
		ARTC8	Artefact scatter and zone of archaeological potential	
		ARTC9	Isolated artefact	
5	McKenzie	–	–	4200m Not surveyed
6	Friend	–	–	2450m Not surveyed
7	Ryalls	ARTC12 – 17	Isolated artefacts	2330m
8	Ryalls / Emery	–	–	1240m
9	Berryman	–	–	1200 Not surveyed
10	Berryman	–	–	500m Not surveyed
11	Draper / Morton Properties	ARTC10 and 11	Isolated artefacts	400m
			Zone of archaeological potential	

2.5 Discussion of Results

The following results are outlined for context to support the discussion for the test excavation methodology. Further detailed reporting on the survey results, ground visibility and landform coverage will be presented in the ACHAR.

2.5.1 Zone 1

This zone was situated either side of Billabung Creek adjacent to the rail corridor along Olympic Highway to the southwest of Bethunga (Figure 2.8). The land in this zone comprised flat terraces at the top of the creek banks within 125m of the watercourse. The terrace banks were approximately 3m above the creek level and had been subject to ploughing and cropping up to within 20m of the top of the bank. The southwestern end of the zone was under crop.

A number of artefacts were noted on the southwestern side of the bank, with another two artefacts noted towards the eastern end of the zone.

- ARTC1 comprised two small, pink silcrete flaked pieces exposed on a track in the paddock approximately 70m from the creek.
- ARTC2 comprised a single dark grey silcrete flake located adjacent to a large tree near the break of the slope at the top of the creek bank, along with a large dark grey chert core approximately 30m farther south along the creek bank top. A number of some scattered quartz fragments and pieces of pink silcrete cobble were also nearby, although they did not contain any clear evidence of flaking but may represent transported raw material.
- ARTC3 was a single, grey chert flake. It was located marginally outside the study corridor to the north but is indicative of the artefactual material in the area.
- ARTC4 was a small quartz flaked piece on the top edge of the creek bank, exposed by track erosion toward the eastern end of the survey zone.
- ARTC5, a possible grindstone fragment, was also found in the middle of the paddock towards the eastern end of the survey zone. The grindstone fragment was approximately 150mm x 180mm x 50mm thick and dished in the centre.

The distribution of these artefacts was within a zone of up to 125m from the top of the creek bank. They demonstrate some remnants of the use of the area by Aboriginal people and were mainly exposed by erosion and ploughing. The landform across this zone was consistently level, with some minor slope towards the creekline. It was also largely undisturbed except for the ploughing of the paddocks which typically results in disturbance to sites to approximately 200mm below the ground surface. This zone is considered to have some potential for subsurface archaeological deposits to be present.

2.5.2 Zone 2

The property at Zone 2, located just to the south of the bend in Ironbong Road, has Ulandra Creek running through it (Figure 2.8). Like Billabung Creek, Ulandra Creek is one of the more substantial watercourses along the study corridor—despite both being dry at present—and each has a defined and deep central channel with oxbows and branches remaining from earlier meanders. These creeks are both ephemeral upper tributaries of the Murrumbidgee River system.

The survey did not find any surface artefacts in this area, although most of the land was under crop and therefore during the survey work walking through the centre of the paddocks was avoided. A possible scarred tree (ARTC 6) was recorded here towards the western side of the study area on the top of the creek bank. This scar was approximately 1200mm in height and 600mm wide, located approximately 2.6m from the ground.

Exposure of soil in the river bed demonstrated the depth of the soil profile in these paddocks. Over 1m of brown silty A_1 horizon was noted at these exposures, indicating the depositional nature of the area and therefore the high probability for archaeological sites to remain undisturbed by erosion. Despite this, the land approximately 25m away from the creek has been disturbed by ploughing.

This zone is very similar to Zone 1 in that it comprises the same landform and stream size but has been subject to less bank erosion. The scar tree also attests to the prior presence of Aboriginal people using this landscape. Zone 2 is considered to have some potential for subsurface archaeological deposits to exist.

2.5.3 Zone 3

Zone 3 covers a road corridor leading to the east from Ironbong Road. It contains the three previously recorded scarred trees: AHIMS 50-5-0117, 50-5-0120 and 50-5-0121 (Figure 2.9).

Survey along this road corridor resulted in the re-identification of the tree recorded as 50-5-0117, which is located within the study corridor. The characteristics of this tree were reviewed, and it was determined that the scar previously recorded as a ‘fire scar’ was most likely to be of natural rather than cultural original.

Another scarred tree was also newly identified and recorded along this zone; ARTC18 was a large tree at the eastern end of the alignment with a scar located approximately 2.5m from the ground. The scar was oval shaped measuring 1000mm high x 500mm wide. A second possible scarred tree was located near the western end of this road corridor, albeit well outside of the current study corridor.

None of the other scarred trees were re-identified.

2.5.4 Zone 4

This zone covers a 2km length of the study area located to the south of Run Boundary Creek and to the southwest of the Bethungra Range. (Figure 2.9)

A single dark blue/grey chert flaked piece (ARTC7) was found to the southern end of this zone on the erosional bank of small drainage depression. The surrounding area appeared to have been disturbed by cattle and some minor earthworks for water diversion. It was generally considered to have little further archaeological potential.

Further to the north, a larger artefact scatter (ARTC8) was noted on the lower western toe slope of a rocky shale ridge approximately 1.5km west of the base of Bethungra Range. The site covered an area of approximately 20m x 30m and included nine mid-grey to black chert flaked pieces and fragments. The site extended to the north of a large paddock tree and also to the north of a modified drainage swale. Sheet erosion had affected the area around the tree and the artefacts.

At the northern end of this zone another isolated artefact (ARTC9) was identified exposed on a northerly facing lower slope approximately 100m from Run Boundary Creek.

2.5.5 Zones 5 and 6

Both Zones 5 and 6 were unable to be surveyed due to access restrictions. These zones cross Run Boundary Creek and Isobel Creek, with the study corridor passing halfway between Ironbong Creek to the west and the Bethungra Range to the east. (Figure 2.9 and Figure 2.10)

The landforms in Zone 5 are mainly lower toe slopes and plains, while Zone 6 has two small ridges either side of Isobel Creek. (Figure 2.12)

2.5.6 Zone 7

Zone 7 is a 2km section of the study area which is largely defined by mildly undulating plains along the eastern side of Ironbong Creek (Figure 2.10). Notable in the centre of this area is the dispersion of the creek into a wetland zone up to 100m in width. A range of artefacts were noted across this zone:

- ARTC12 was a single isolated dark blue-grey chert flake exposed on the track on the edge of a paddock.
- ARTC13 was a single quartz flake fragment located on lower slope and flats adjacent to wetland. It was in ploughed and disturbed land approximately 70m from the edge of the wetland.
- ARTC14 was a dark blue chert flaked piece. It was also located on the access track along the western side of a ploughed level paddock adjacent to the wetland.
- ARTC15 was a small site comprising three artefacts on the edge of wetland. The artefacts were within 5m of each other and had been exposed by sheet erosion and plough disturbance. They were two small black chert flaked pieces and one small quartz flake. This area in general had been subject to some surface disturbance through the creation of a small dam on the edge of the wetland.
- ARTC16 was an isolated black chert flake. It had been broken and had a negative blade scar on dorsal face and an errailure on ventral surface. This was the most formed artefact found during the survey work. It was located on the flat flood zone near the wetland, approximately 120m from ARTC15.
- ARTC17, an isolated, single black chert flake, was identified exposed on a track in a paddock at the southern end of this zone. The surrounding area was a generally low-lying flood plain with no defining landforms.

On the whole the landforms across Zone 7 were mainly lower shallow slopes and low-lying flats. The presence of artefacts is consistent with the predictive modelling that sites would be in close proximity to water, but was seemingly inconsistent with the prediction that artefacts and sites would mainly be present on well-drained landforms.

2.5.7 Zone 8

In Zone 8, the study corridor crosses the lower slopes of a low spurline of a ridge located to the west of the study area (Figure 2.10). The spurline is oriented east–west and the study area crosses the end of it as it slopes gently down towards a wide drainage depression. This area had low visibility due to grass cover providing only patchy exposures of the ground surface.

No artefacts were found in this zone. Overall the southern end of this zone was considered to have no archaeological potential. Towards the northern end of this zone, the spurline landform would seem to be a likely location for archaeological sites; however, the drainage depression would seem to be an unlikely and inconsistent water source. The northern end was therefore also considered to have low archaeological potential.

2.5.8 Zones 9 and 10

Zones 9 and 10 cross the flat plains to the south of Stockinbingal (Figure 2.11). Both zones are bisected by minor tributaries of Bland Creek, and both are ephemeral watercourses. While neither of these zones was able to be surveyed due to access restrictions, the nature of the landforms and watercourses have been reviewed from aerial photography including oblique-angle flyover footage. The level, unremarkable nature of the landforms in these zones along with the inconsistent nature of the watercourses suggests that neither of these zones will have any archaeological potential.

2.5.9 Zone 11

This zone was located at the western end of Stockingbingal, either side of Dudauman Creek (Figure 2.11). This zone is relatively level along the banks of the creek which has a defined channel and steep sides. On the northern side of the creek, this zone includes the lower slope from a small hill to the northwest. The hill is approximately 30m high and slopes steeply down towards the creek, abruptly levelling out approximately 70m from the creek edge. No artefacts were found on this side of the creek. The flat creek bank terrace was relatively undisturbed, with the only obvious impact being an access track. This flat area to the north of Dudauman Creek was considered to have some archaeological potential.

To the south of Dudauman Creek, the relatively flat creek bank had been partially disturbed by the construction of a former rail embankment. Two artefacts were noted in this area, ARTC10 and ARTC11. ARTC10 was a large, mid-brown coloured chert core, while ARTC11 was an isolated quartz flake on the edge of the rail embankment; its original context had been disturbed by part of that construction. The two artefacts were approximately 140m apart.

2.5.10 Summary of Results

Much of the alignment is flat and or mildly undulating plains with some areas of mild relief in association with the lower slopes of the Bethungra Ranges, mainly around Zones 4–8.

The survey found a number of artefact scatters and isolated artefacts. Eighteen separate recorded locations were noted, two of which were scarred trees, the remainder being artefact sites.

The flat terrace landforms on the edges of Billabung and Dudauman Creeks were found to have a clear presence of artefacts. These locations were consistent with the predictive modelling based on their proximity to water, and also their well-drained nature. Based on this correlation, it would be expected that Zone 2 along Ulandra Creek would also have a similar level of archaeological potential due to the similarity of hydrology and landform conditions. It is likely that ground surface visibility played a role in the absence of detecting surface artefacts.

The notable site ARTC8 is an outlier in relation to the predictive modelling. While it partly correlates to the lower-slope landform predictions, it is approximately 700m from the nearest reliable water source—Run Boundary Creek—a distance which is generally considered to be beyond the typical range for sites in this area. Other nearby water courses would be ephemeral drainage lines from the ranges. This

suggests that perhaps ARTC8 is representative of a short-term event rather than a more substantial occupation area.

The presence of a number of randomly located isolated artefacts such as ARTC7, ARTC9 and ARTC 12–17 suggest a general low-density background scatter of artefacts is present across parts of the landscape in general. While the locations of ARTC7 and 9 do not conform to any of the predictive modelling criteria, the ARTC12–17 group of isolated artefacts show some correlation with proximity to water, but are not in well-drained landforms. Therefore, they only partly meet the predictive modelling criteria and suggest the presence of a relatively ubiquitous but low-density background scatter of archaeological material in this landscape.

The absence of artefacts on the low spurline at the northern end of Zone 8 suggests that the correlation with water is a greater identifier of site location than a correlation with specific lower slope landforms.

The overall results also indicate that Zones 9 and 10 are unlikely to contain sites or artefacts, while Zones 5 and 6 still have potential archaeological sensitivity in correlation with water sources, well-drained landforms and, to a lesser degree, lower slope landforms in their own right.

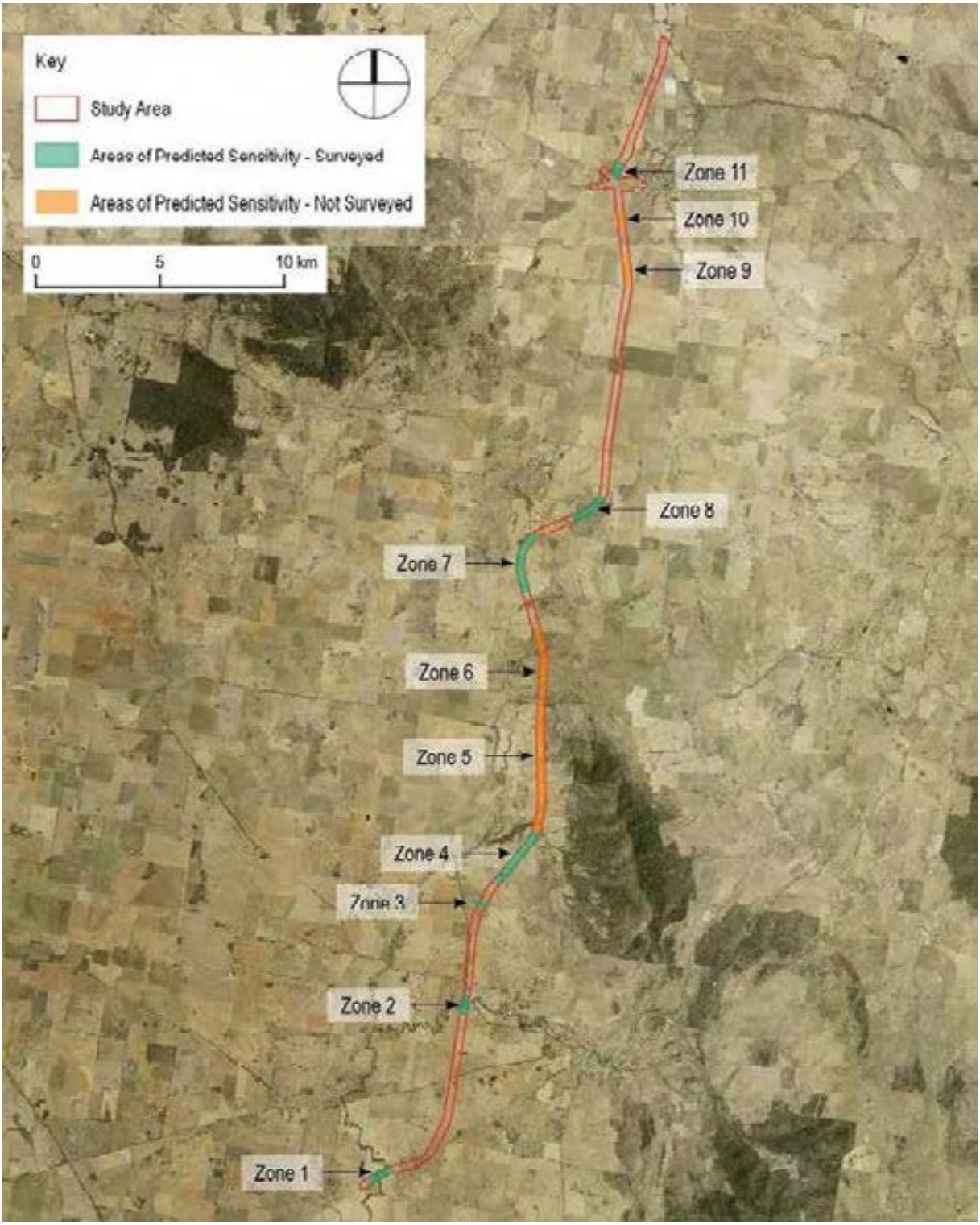


Figure 2.7 The study corridor showing Areas of Predicted Sensitivity and survey zones. (Source: NSW LPI with GML additions, 2018)

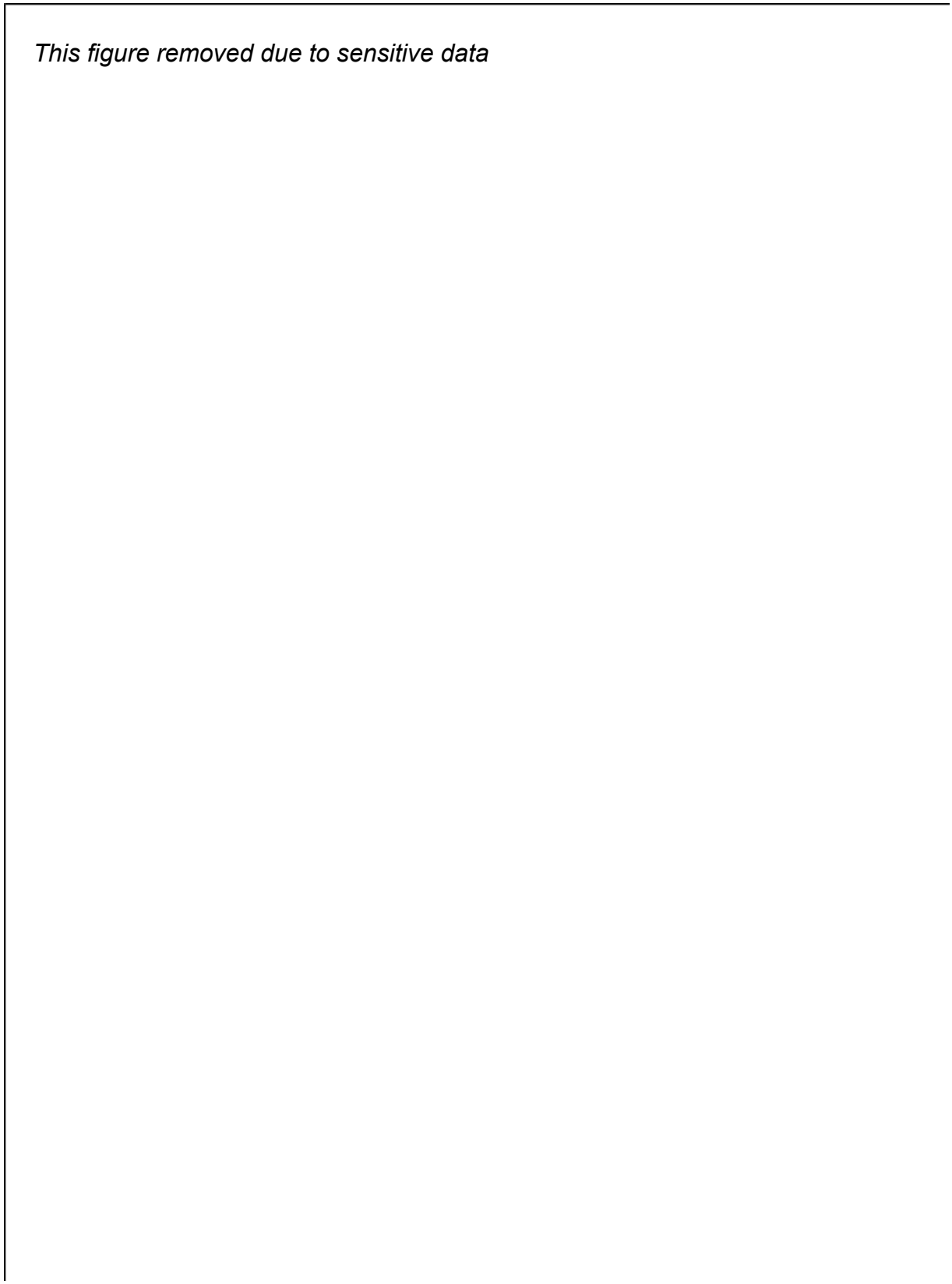


Figure 2.8 Survey Zones 1 and 2 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2018)

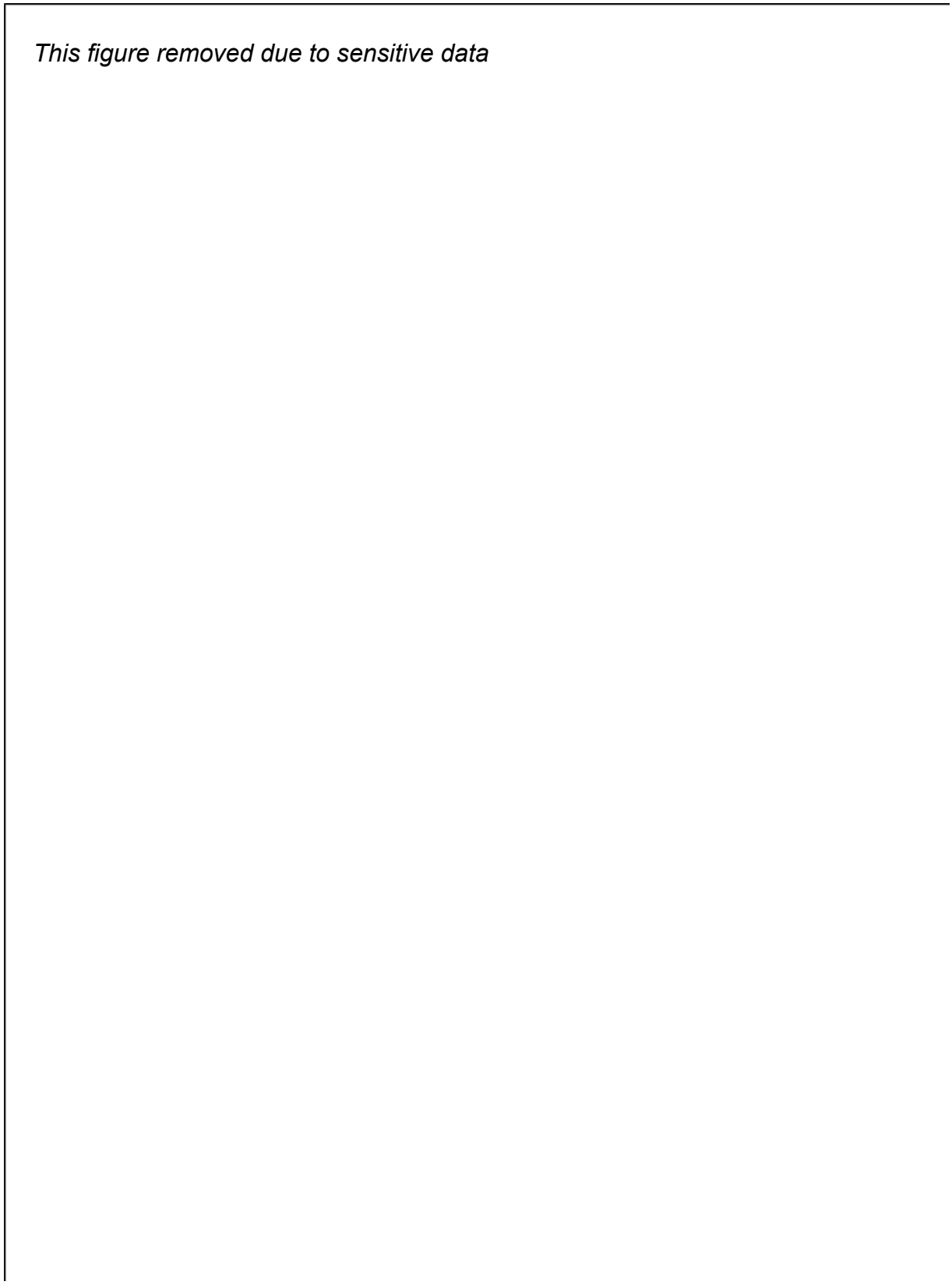


Figure 2.9 Survey Zones 2, 3, 4 and 5 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2018)

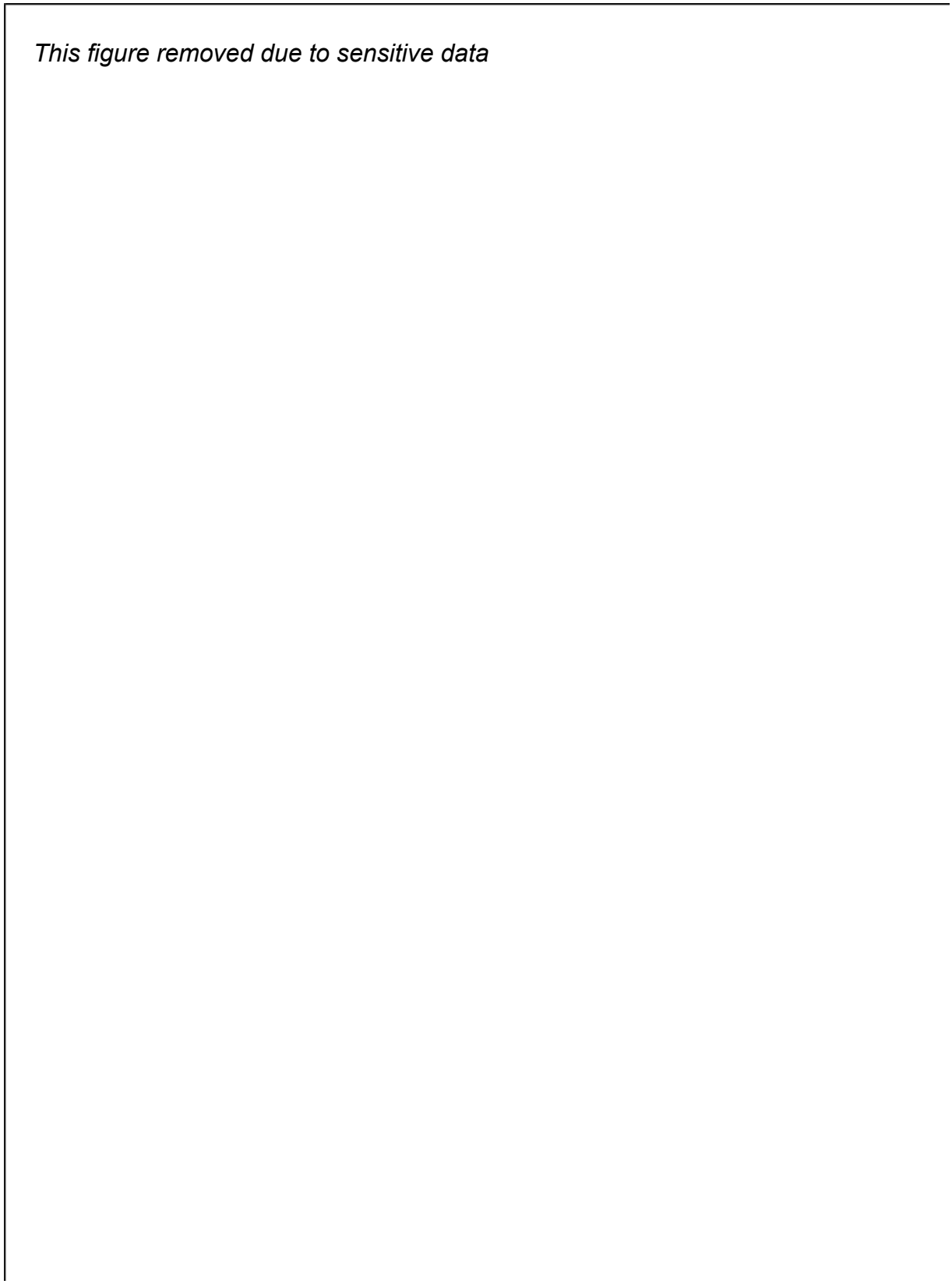


Figure 2.10 Survey Zones 6, 7 and 8 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2018)

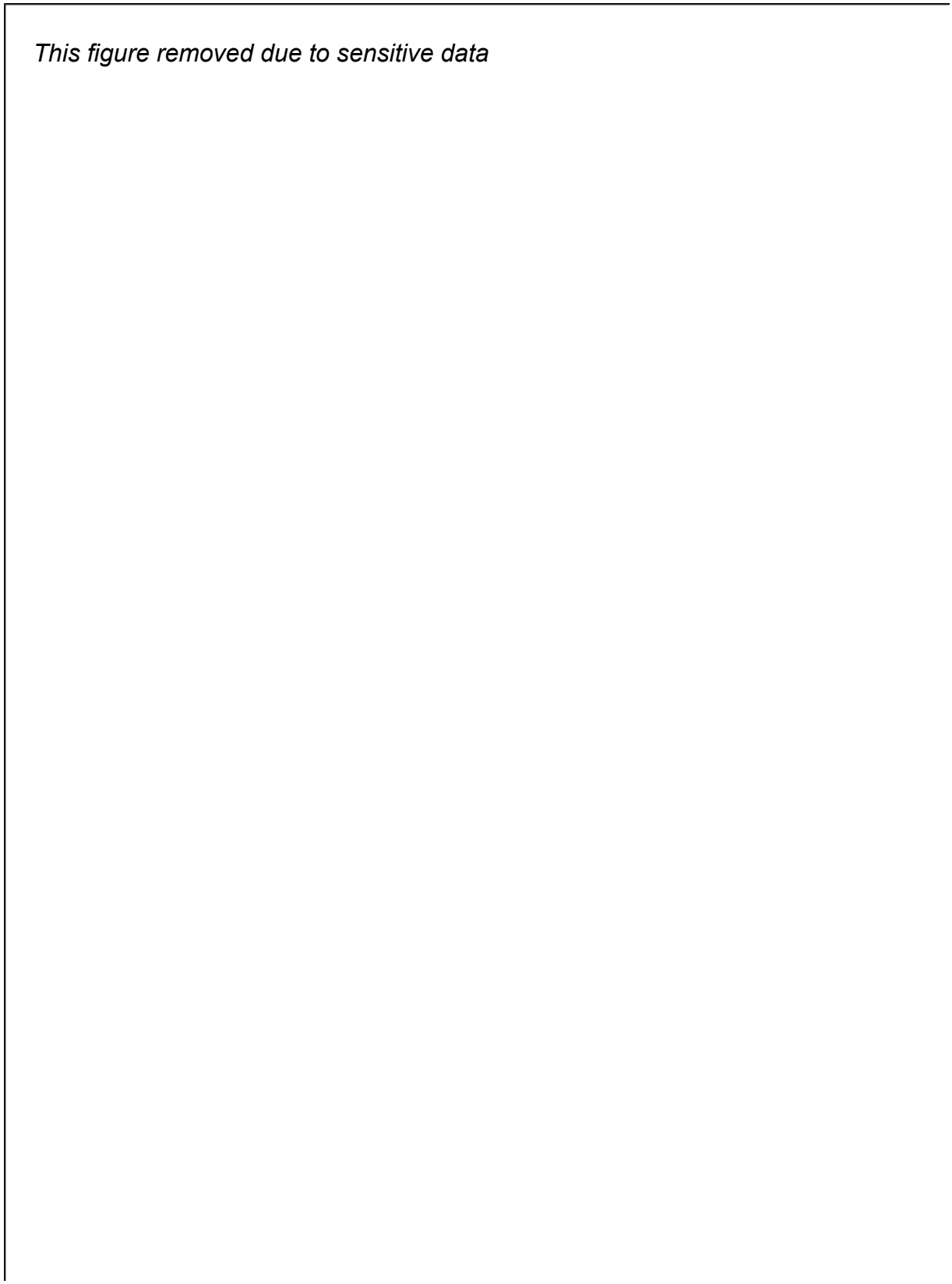


Figure 2.11 Survey Zones 9, 10 and 11 of the study corridor showing areas of predicted sensitivity and new sites identified during the survey. (Source: NSW LPI with GML additions, 2018)

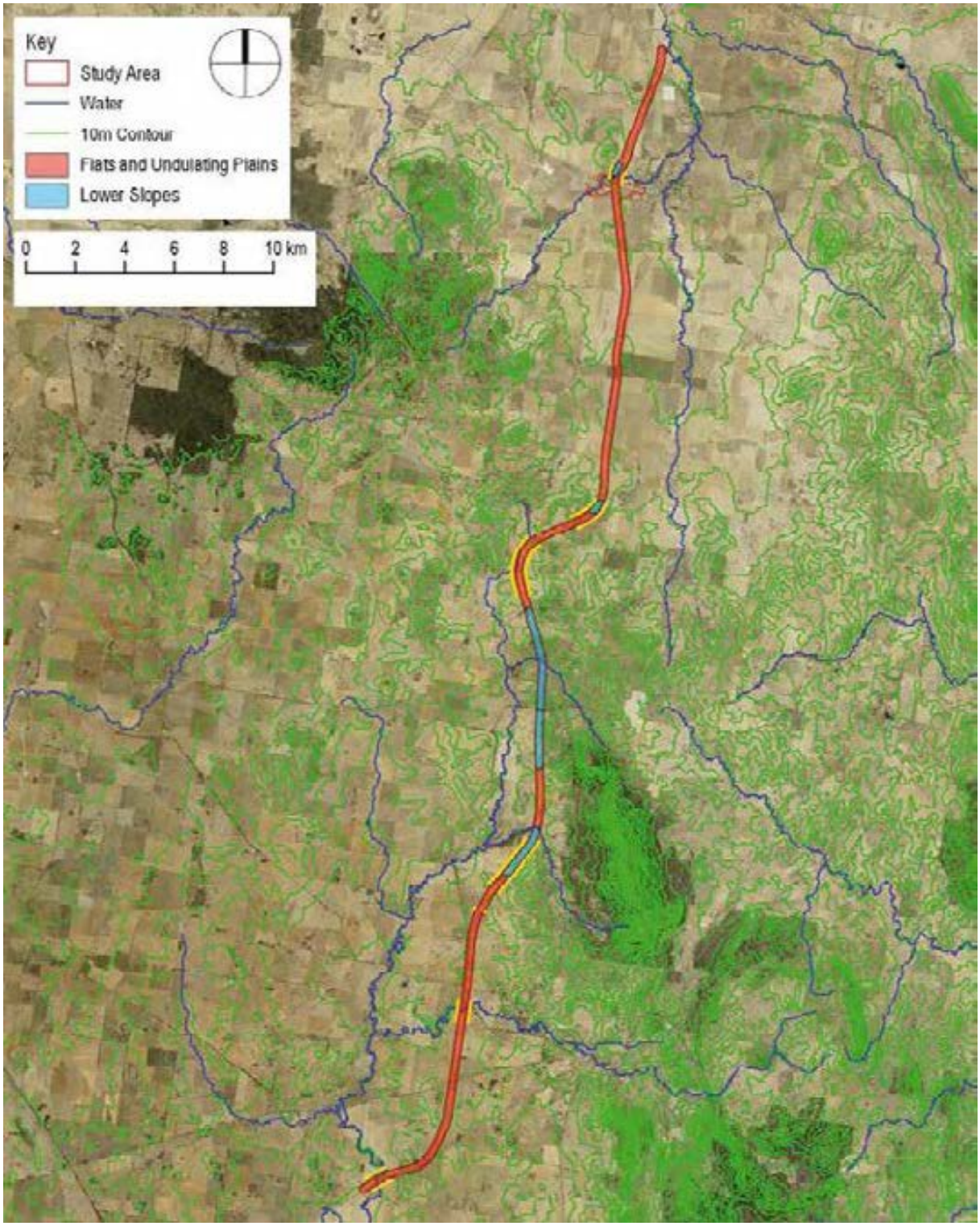


Figure 2.12 The study corridor showing landform types, contours, hydrology and the areas surveyed (edged in yellow). (Source: NSW LPI with GML additions, 2018)

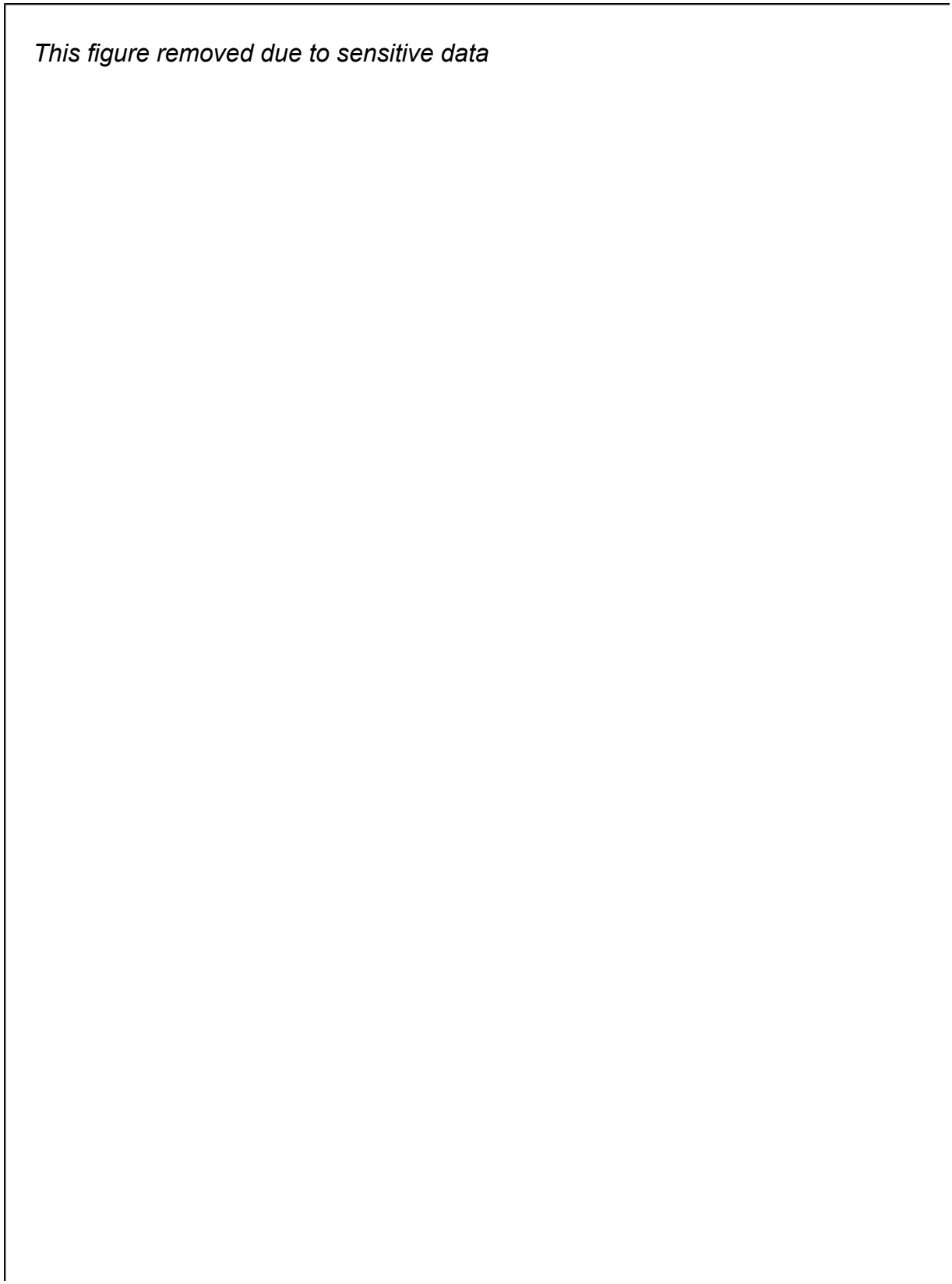


Figure 2.13 The study corridor showing soil types, hydrology, AHIMS sites and new sites identified during the survey. (Source: NSW LPI with GML additions, 2018)

2.6 Endnotes

1 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.
2 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010.
3 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010. p50.
4 Witter, D 1980, An Archaeological Pipeline Survey between Wagga Wagga and Young, report prepared for the National Parks and Wildlife Service, Sydney.
5 Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011.
6 Knight, T, Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales, Due Diligence Assessment, report prepared for Transgrid, Yass, September 2011, p 5.
7 Dearling, C, Aboriginal Cultural Heritage Report: Results of s90 Consent to Destroy and s87 Collection Permit, Power Line Maintenance Work, within Ulandra Nature Reserve and Adjacent Areas, near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, December 2007.
8 Dearling, C, Aboriginal Cultural Heritage Study, Access Track Upgrades: Transgrid Power Line, Ulandra Nature Reserve and Environs, Near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, February 2004.
9 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 87.
10 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 108.
11 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 326.
12 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 311.
13 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 458.
14 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 503.
15 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 369.
16 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 385.
17 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 246.
18 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 251.
19 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 261.
20 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 283.
21 Niche Environment and Heritage, Inland Rail – Illabo to Stockinbingal. Aboriginal Objects Due Diligence Desktop Assessment, report prepared for Parsons Brinckerhoff, June 2016.

3.0 Aboriginal Community Consultation

3.1 Aboriginal Community Consultation to Date

3.1.1 Stage 1.1 and 1.2

Aboriginal community consultation was initiated in accordance with the DECCW *Aboriginal cultural heritage consultation requirements for proponents*.[1] Stage 1.1 letters to statutory bodies were sent on 5 April 2018, requesting contact details for Aboriginal people who may have an interest in the study area. These statutory bodies included the:

- OEH;
- Young Local Aboriginal Land Council;
- Wagga Wagga Local Aboriginal Land Council;
- Office of The Registrar, Aboriginal Lands Right Act 1983;
- National Native Title Tribunal;
- Native Titles Service Corporation;
- Junee Council;
- Cootamundra Gundagai Council;
- City of Wagga Wagga Council; and
- Greater Sydney Catchment Management Authority.

Following the receipt of responses from Stage 1.1, a number of potential Aboriginal stakeholders were identified. Stage 1.2 letters were sent to the identified Aboriginal people on 9 October 2018, and an advertisement was placed in *The Riverina Leader* on 26 September 2018. Both the Stage 1.2 letters and the advertisement invited Aboriginal people with an interest in the study area to register as a stakeholder to be involved in consultations. Registrations were accepted until 24 October 2018.

3.1.2 Registered Aboriginal Parties

Eleven Aboriginal parties registered an interest in the project. The following list of stakeholders are the Registered Aboriginal Parties (RAPs) for the project:

This table removed due to sensitive data

This table removed due to sensitive data

All registrations of interest were acknowledged via phone or email.

3.1.3 Survey Participation

Discussions about the cultural heritage values of the study corridor were undertaken during the survey of the route conducted between 26 and 30 November 2018.

Survey and discussion participants included:

This table removed due to sensitive data

Ongoing discussions will be conducted with RAPs during further stages in the project including review of this methodology, test excavation and review of the ACHAR and ATR reports.

3.2 Cultural Heritage Assessment Program

The Office of Environment and Heritage (OEH) has defined a number of stages during the Aboriginal consultation process.[2] The following table provides a synopsis of the process to date.

Stage	Status
Write to statutory bodies to obtain contact details for Aboriginal people who may have an interest in the project.	Complete
Write to identified Aboriginal people, inviting them to register an interest in the project.	Complete
Place an advertisement in local print media, inviting Aboriginal people with cultural knowledge of the area to register an interest in the project.	Complete
Record names of Aboriginal people who have registered an interest in the project.	Complete
Advise the Local Aboriginal Land Councils (LALCs) and OEH of RAPs' details (subject to privacy requests).	Complete
Present information regarding proposed project to RAPs.	Complete
Provide methodology for the cultural heritage and archaeological assessment to RAPs – Stage 1 – Survey	Complete

Stage	Status
Invite RAPs to provide input for the assessment methodology.	Complete
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Complete during field survey
Provide methodology for the cultural heritage and archaeological assessment to RAPs – Stage 1 – Test Excavation	This document
Invite RAPs to provide input for the assessment methodology.	Pending
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Forthcoming
Invite RAPs to comment on potential management outcomes.	Forthcoming
Prepare draft ACHAR and provide to RAPs for comment.	Forthcoming
Incorporate RAPs' comments into final ACHAR.	Forthcoming
Provide final ACHAR (and AHIP application) to the RAPs, LALC and OEH.	Forthcoming

3.3 Roles and Expectations

The DECCW[3] Consultation Requirements list a number of responsibilities and expectations for both the Aboriginal community and the proponent regarding the assessment of the study area's cultural heritage.

The Aboriginal community is responsible for determining who is authorised to speak for Country and its associated cultural heritage. If there is a dispute regarding who has the right to speak for Country, it is up to the Aboriginal community, not the proponent or OEH, to resolve the dispute in a timely manner.[4]

RAPs are also responsible for providing information relating to Aboriginal cultural heritage relevant to the study area to assist in managing its cultural significance in an appropriate manner.[5]

It is expected that:

- Aboriginal people providing knowledge regarding the cultural heritage of the study area are trusted and allowed by the rest of the Aboriginal community to speak for Country;[6]
- people speaking for Country hold knowledge about the cultural significance of their heritage and are able to provide input into appropriate management strategies;[7]
- RAPs have an understanding of the commercial environment in which the proponent is operating and the constraints associated with this environment;[8] and
- RAPs understand that the Secretary of the Department of Planning and Environment in consultation with the Chief Executive of the OEH is the final decision maker relating to the approval of works relating to the SSI project and that these decisions may not be consistent with the views of the RAPs.[9]

The proponent is responsible for consulting with the Aboriginal community and managing the consultation process in accordance with the Consultation Requirements.[10]

It is expected that:

- the proponent would develop and implement appropriate consultation methods, in accordance with the Consultation Requirements;[11]
- Aboriginal views are considered and appropriately incorporated into the assessment process;[12] and
- the consultation process is accurately documented, including both the consultation undertaken and the input from the RAPs.[13]

3.4 Endnotes

1 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
2 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
3 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).
4 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 36.
5 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.
6 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.
7 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.
8 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.
9 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.
10 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.
11 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 6.
12 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.
13 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

4.0 Assessment Methodology

4.1 Approach to Further Assessment

The overall project objectives are outlined in Section 1.0 and include assessing the archaeological sensitivity of the project corridor, avoiding impacts through design measures and mitigating impacts that are unavoidable.

The key objective of this stage of the assessment project is to refine and further our understanding of the nature of the Aboriginal archaeological environment along the study corridor to inform the design process so that where possible, design solutions can be used for managing environmental impacts.

To achieve this objective, a staged approach was noted in the October 2018 ARD for the site survey of the project corridor.

The first stage was to test the predictive modelling assumptions through site survey. This stage was undertaken in November 2018.

The second stage is the refinement of the results of the survey through test excavations targeted to newly identified sites, areas of Potential Archaeological Deposit (PAD) and areas of specific landforms as necessary to formulate a valid sampling strategy.

The proposed methodology for the test excavations is outlined below.

4.2 Refining the Alignment

Since the survey was undertaken, refinements have been made to the preferred rail corridor in relation to the proposed study area.

The proposed alignment comprises a 40m wide corridor with a 50m buffer zone either side, and with the exception of part of Zone 2 and Zone 11, the recently updated revision of that alignment has been subject to the existing survey work outlined in Section 2 of this ARD. The comparison between the two alignments is shown in Figure 4.1.

The further assessment methodology outlined below is designed around the updated alignment. On that basis, where the alignment deviates from the currently surveyed areas, those areas will be subject to survey assessment as well as test excavation. This applies to the eastern side of Zone 2 and all of Zone 11.

4.3 Archaeological Test Excavation Methodology

4.3.1 Mechanism for Test Excavations

The test excavation program will be undertaken in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code of Practice).[1]

Archaeological test excavation is permitted under the Code of Practice without the need to obtain a permit under Section 90 of the NPW Act. That is, it is excluded from the definition of 'harm' under the NPW Act provided that the subsurface investigations are not carried out in the following areas:

- in or within 50m of an area where burial sites are known or are likely to exist;
- in or within 50m of a declared Aboriginal place;

- in or within 50m of a rock shelter, shell midden or earth mound; and/or
- in areas known or suspected to be Aboriginal missions or previous Aboriginal reserves or institutes.

As described by the OEH, the purpose of test excavation is to:

> *… collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample derived from sub-surface investigations. Test excavations contribute to the understanding of site characteristics and local and regional prehistory and they can be used to inform conservation goals and harm mitigation measures for the proposed activity.*[2]

This section provides details of the proposed archaeological test excavation in accordance with Requirements 14–17 of the Code of Practice. It includes both the test excavation sampling strategy and the method for test excavation. It has been designed to meet the specific sampling and systematic grid requirements, test excavation unit size and excavation processes outlined under Requirement 16a.

Aboriginal community consultation has been undertaken in accordance with NPW Regulation subclause 80C(6) prior to this proposed methodology being prepared and will continue throughout the project.

4.3.2 Sampling Strategy

The Code of Practice specifies that a sampling strategy meet the following requirements:[3]

- Provide a framework for sampling all PADs that are at risk of harm within the subject area.
- Describe the differentiation of the PAD to be test-excavated from the surrounding archaeological landscape.
- Test those areas of PAD that have no archaeological exposure or visibility.
- Test the boundaries of known sites (where appropriate).
- Confirm areas of low potential (where relevant).
- Describe how the sampling area relates to the area that is proposed to be impacted by the proposed activity.

The proposed approach to test excavation sampling strategy is based on the results of the site survey and assessments of areas of predicted sensitivity.

PAD Sampling and Differentiation

Four key areas of PAD were identified during the survey. These were located at Zones 1, 2, 4 and 11. Three of the four PADs are directly related to water courses (PADs in Zones 1, 2 and 11), while one of the PADs is associated with the site ARTC8 (in Zone 4). The test excavation program will test these PAD areas to understand the nature, extent and significance of the archaeological resources.

The PADs at Zones 1, 2 and 11 are predicted as having archaeological sensitivity based on their proximity to Billabung Creek, Ulandra Creek and Dudauman Creek respectively. Each of these zones comprises level creek bank terraces, and two of the three zones have artefacts present. The PAD zones outlined in Figures 4.2, 4.3 and 4.7 are nominal distances from the creek bank top based on minor variations in each landform and may in fact not be indicative of the full extent of any of these PADs. The test excavation sampling regime is intended to establish the nature and extent of these areas. At each PAD location, both sides of the creek are nominated for testing.

The PAD at Zone 11 also includes the slopes and crests of the hill to the north of Dudauman Creek. This area would be considered to have archaeological potential based on the criteria of the predictive modelling.

The PAD at Zone 2 is the only PAD with no surface expression of artefacts, although each of the PADs has a moderately low level of exposure and visibility. The test excavation sampling regime is also intended to ensure that PAD areas with low or no surface exposure or surface expression of artefacts are tested. The following number of test unit (TUs) have been proposed for each PAD to meet these sampling requirements. The arrangement of these TUs is shown in Figures 4.2, 4.3 and 4.7.

Table 4.1 Relevant Testing Zones, New Site Recordings and Proposed Number of Test Units.

Zone	Owner	New Site Recording	Site Type	Proposed No. of Test Units
1	Curran/McInerny property and Thomson property	ARTC1–ARTC3	Low density artefact scatter / isolated artefacts and zone of archaeological potential	3
		ARTC4, ARTC5	Isolated artefacts, grindstone, zone of archaeological potential	57
2	Lloyd-Jones	ARTC6	Scarred tree, zone of archaeological potential	25
11	Draper/Morton properties	ARTC10, ARTC11	Isolated artefacts, zone of archaeological potential	41

Testing around Known Sites

Only one site was recorded during the survey—ARTC8 (located in Zone 4). This site comprised nine mid-grey to black chert flaked pieces and fragments scattered over an area of 20m x 30m. The definition of this site's area warrants further investigation to determine its boundaries and also to determine its nature and significance; therefore the surrounding area is a considered to be a PAD.

It is proposed that initial testing of this site area will include 26–30 TUs set at 10m and 20m spacings across a wider area in order to determine the boundaries of this site area. (Figure 4.4)

Table 4.2 Relevant Testing Zones, New Site Recordings and Proposed Number of Test Units.

Zone	Owner	New Site Recording	Site Type	Proposed No. of Test Units
4	Hermes	ARTC8	Artefact scatter	25

Testing Areas of Predicted Low Sensitivity

Two zones of low sensitivity have been nominated for further investigation: Zones 7 and 8.

Zone 7 contains six newly identified isolated artefacts (ARTC12–17) over a distance of 1183m of the study corridor. They are located between 135m and 565m apart on a low-lying flat plain adjacent to a wetland. Based on the landform type, this zone was considered to have limited archaeological potential due to its poorly drained aspect. Therefore, the artefacts are considered to represent casual use of the wetland area for immediate food and water needs rather than a concerted occupation phase.

However, given the presence of artefacts, testing will be undertaken in this zone to test the hypothesis that the low-lying, poorly drained landforms do not give rise to the formation of occupation sites.

The northern end of Zone 8 crosses lower slopes of the spurline of a ridge sloping gently down to a drainage depression. This landform represents well-drained ground; however, its proximity to a reliable water course is doubtful given that the nearest water source is an ephemeral drainage depression to the east.

No artefacts were found in this zone. It was assessed as having a low potential for archaeological deposits. Based on the landform type, but with a poor correlation with water resources, this zone is suitable for testing aspects of the predictive modelling relating to the importance of landform in archaeological site location.

The following number of TUs have been proposed for these areas to meet the sampling requirements for predicted low-sensitivity zones (Figure 4.5 and 4.6).

Table 4.3 Relevant Testing Zones, New Site Recordings and Proposed Number of Test Units.

Zone	Owner	New Site Recording	Site Type	Proposed No. of Test Units
7	Ryalls	ARTC12	Isolated artefacts and zone of low archaeological potential	6
		ARTC15–16	Isolated artefacts	20
		ARTC13, 14,17	Isolated artefacts	–
8	Ryalls/Emery	–	Low sensitivity testing zone 1	19
		–	Low sensitivity testing zone 2	16

Landform Testing

The TUs set out above also provide an additional layer of testing data relating to landforms. The landforms comprising the study corridor are dominated by flat or mildly undulating plains and lower slopes from the nearby ranges.

Six key testing areas have been outlined above, of which three target the flat or mildly undulating plains (Zones 1, 2 and 7), while two zones target the lower slopes (Zones 4 and 8) and one zone (Zone 11) covers elements of both landforms by being on the level terraces of Dudauman Creek, but right at the base of lower slopes of an adjacent hill. Therefore, all of the dominant landforms along the study corridor are covered by the testing regime.

Responding to On-site Results and Variation

As outlined below, TUs will be set out within the testing zone in transects with nominal 10m or 20m spacing.

During the test excavation, Aboriginal representatives and field archaeologists will be able to respond to the initial results of excavation and determine whether further TUs should be sampled in any particular testing area.

Should a sample transect yield no cultural evidence, then excavation on that transect may be terminated prior to the completion of all TUs on that transect (or TUs ‘skipped’ to a location that may yield results) provided both archaeologists and Aboriginal representatives agree on this course of action. Should a sample transect identify that significant earthworks have occurred, thus removing the artefact bearing portion of the soil horizon, then that test unit may be abandoned once disturbance is identified.

Limitations

Limitations of the sampling strategy derive from the availability of access to the properties within Zones 5 and 6 and the absence of survey in these zones. Predictive modelling indicates that these zones would contain areas of archaeological sensitivity due to the correlation of low slope landforms and substantial water courses.

Currently, the only approach to providing an assessment of these areas will be to test the predictive model through the test excavation program and extrapolate the results to Zones 5 and 6.

4.3.3 Method

Manual Excavation

Based on the requirements of the Code of Practice, the test excavations would comprise a series of hand-excavated TUs set out on systematic grids and based at 20m intervals. The expansion of individual TUs would occur based on the excavation results where higher artefact densities are recovered.

TUs will be excavated in 500mm x 500mm units using hand tools only. Vertical control will be maintained through 50mm or 100mm excavation levels ('spits') as appropriate to the soil landscape and stratigraphy. All material excavated from the test excavation units will be wet-sieved using nested 3mm and 5mm aperture wire-mesh sieves.

TUs will be excavated to at least the base of the identified Aboriginal object-bearing units and must continue to confirm that the soils below are culturally sterile.

Data to be Collected

Data will be collected for each TU during the test excavation on a specific TU context sheet. Data collected will include:

- TU number;
- TU location;
- TU landform;
- TU aspect;
- depth of each spit as excavated;
- number of stone objects (or other feature/s) per spit;
- total number of objects;
- any features or inclusions (such as carbon);
- taphonomic factors (disturbance, bioturbation etc); and
- soil characteristics.

Section and plan diagrams (especially where features are present) will be created where appropriate, and recommendations made as to whether the TU should be expanded (in accordance with OEH guidelines) or if further TUs should be located surrounding the one excavated in order to better understand the extent of an archaeological deposit.

The excavation director will supervise all TU recording and determine whether further TUs should be opened (in addition to those defined by the sample grid), or whether a TU should be expanded.

A running total of features and Aboriginal objects will be kept to determine an in-the-field comparison between sample areas.

Degree of Precision Required

All TU locations would be set out by a surveyor, based upon the sample pattern developed in ArcGIS (with minor variation only where physical features on the ground necessitate this). Additional TUs will be set out in the field by hand using standard surveying techniques when and if required. Excavation of each spit will be determined by an archaeologist using a hand tape.

Spatial control of TU locations and vertical excavation will be sufficiently precise to define the location of Aboriginal deposits across the study area and to allow the research questions to be addressed.

4.4 Research Questions

The objective of the archaeological test excavation is to gather sufficient information about the archaeological resources of the study corridor to allow an assessment of the nature, extent and significance of the cultural material to be made within a local and regional context.

In order to achieve this objective, a range of research questions are outlined to guide the archaeological process and provide the basis for questioning the data collected. Relevant research questions include:

1. What are the characteristics of soil horizons across the study area?
    a. How has the land use history impacted the study area and survival of soils and thus archaeological material?
    b. At each location, is the deposit consistent? Or does it possess characteristics that tell of different depositional or formation events?
2. Are there archaeological deposits present?
    a. Are the deposits stratified?
    b. Is there archaeological evidence which can be dated (both through scientific methods, carbon dating, OSL and/or relative dating)?
    c. Do the deposits have different degrees of archaeological potential with depth?
    d. What evidence—if any—other than stone artefacts is present for Aboriginal occupation and/or use of the study area?
    e. How do the archaeological deposits relate to the predictive modelling?
    f. Is there variation in the nature of the archaeological deposits across different areas of the study corridor?
3. What is the general nature of stone artefacts recovered from the study area? How can the stone artefact assemblage be characterised?
    a. What raw materials are represented in the stone artefact assemblage?

b. Can any information be ascertained from the stone artefact assemblage regarding the intensity of stone artefact reduction and discard?

c. Can a difference between stone artefact deposits be identified by different strata in the assemblage over time? If so, what is the nature of that difference?

d. Can a difference between stone artefact deposits be identified across different areas of the study corridor?

4. How can the deposit be interpreted?

   a. Is there any evidence for variation in landscape use and selection strategies?

   b. Can deposits or features be dated? What is the antiquity of the evidence?

   c. Does the archaeological deposit vary spatially within one location/site? How?

   d. What does the archaeological deposit tell us about Aboriginal use of this landscape?

5. Can the archaeology be interpreted in a regional context?

   a. What is the source of the artefactual stone? How does this correlate with current regional research and knowledge of stone resources?

      i. Is raw stone material for artefact manufacture readily present within or near the study corridor?

      ii. Has stone been brought into the study corridor? From how far away has the stone been brought?

      iii. What is the main discard and reduction strategy pattern that can be observed for different raw materials across the study corridor?

   b. Do the archaeological deposits within this study corridor conform to the distance from water regional predictive model and theories or not?

6. Is the archaeological deposit culturally significant?

   a. What is the heritage value of the deposit, both scientifically and culturally?

   b. How does the Aboriginal community view and value the deposit identified?

7. Is there a deposit worthy of conservation or of future research?

   a. Where and what deposits should be conserved for future generations?

   b. Which deposits should be subject to more extensive investigations?

4.5 Significance Assessment

Management of Aboriginal cultural heritage within the study area is largely based on an assessment of its significance.[4] Generally, an assessment of the significance of Aboriginal cultural heritage considers two factors—archaeological (or scientific) values, and the cultural values identified by the RAPs.

Consideration of these two values would allow an assessment of the significance of cultural heritage within the study area. An assessment of the cultural significance of any objects or places identified within the study area will be sought from the RAPs prior to the finalisation of the ACHAR. Should any restrictions

apply to the cultural knowledge supplied (for example, male-only information), these will be strictly adhered to by the proponent.

The archaeological significance of any Aboriginal objects or places identified within the study area would be assessed in accordance with *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* (the Burra Charter).[5]

Any archaeological potential would be mapped and zoned as high, moderate or low, based on consideration of the predictive model for the study area and the assessed archaeological significance criteria.

4.6 Analysis and Reporting

Following test excavation, all recovered Aboriginal stone objects (artefacts) will be subject to analysis by one of GML's stone artefact specialists.

Recording of all relevant attributes will be undertaken in accordance with Requirement 19 of the Code of Practice and widely used Australian stone object analysis techniques.[6] A technical report will be prepared that addresses the research questions presented above.

Following test excavation, a discussion will be held with the Aboriginal community to assess the excavation results and to determine the mechanism for ongoing management of the recovered artefacts.

Should human skeletal material be identified during the test excavation, work will cease in the immediate area and OEH and the New South Wales Police Department will be notified.

If recovered, carbon samples associated with cultural features would be submitted for carbon dating.

Landscape analysis and all other reporting will be undertaken by GML, assisted by the field archaeologists present during the test excavation. All results will be analysed with the assistance of ArcGIS, and mapping of sites, place, landscapes and heritage values will be GIS based.

The information derived from test excavation will be used to expand the heritage values assessment of the study area. The heritage value assessment will be written up in an ACHAR which will provide direction for conservation of Aboriginal heritage and an impact analysis for all known objects, sites, places and values within the study area. The report will detail any sites and places that require further study and excavation (if they cannot be conserved during the development process).

The report will also compare and contrast the study area within the wider region and provide direction for future studies and predictive models.

All Aboriginal objects and sites identified during the survey will be reported to OEH for inclusion on the AHIMS.

4.7 Community Input

This methodology has been provided to all RAPs for their review and comment. Any input from the RAPs will be considered in the final methodology for the project.

As part of the ongoing RAP consultation process, the test excavation program would include the RAPs to assist in the work. The field team will include four archaeologists along with a select number of RAPs to be determined in conjunction with ARTC. Modification of the proposed program will only be in consultation with the RAPs.

GML is currently planning the archaeological test excavation component of this project. The archaeological survey will occur following the 28-day review period for this methodology. In accordance with OEH guidelines, please provide written and/or oral comments by **25 March 2019.**

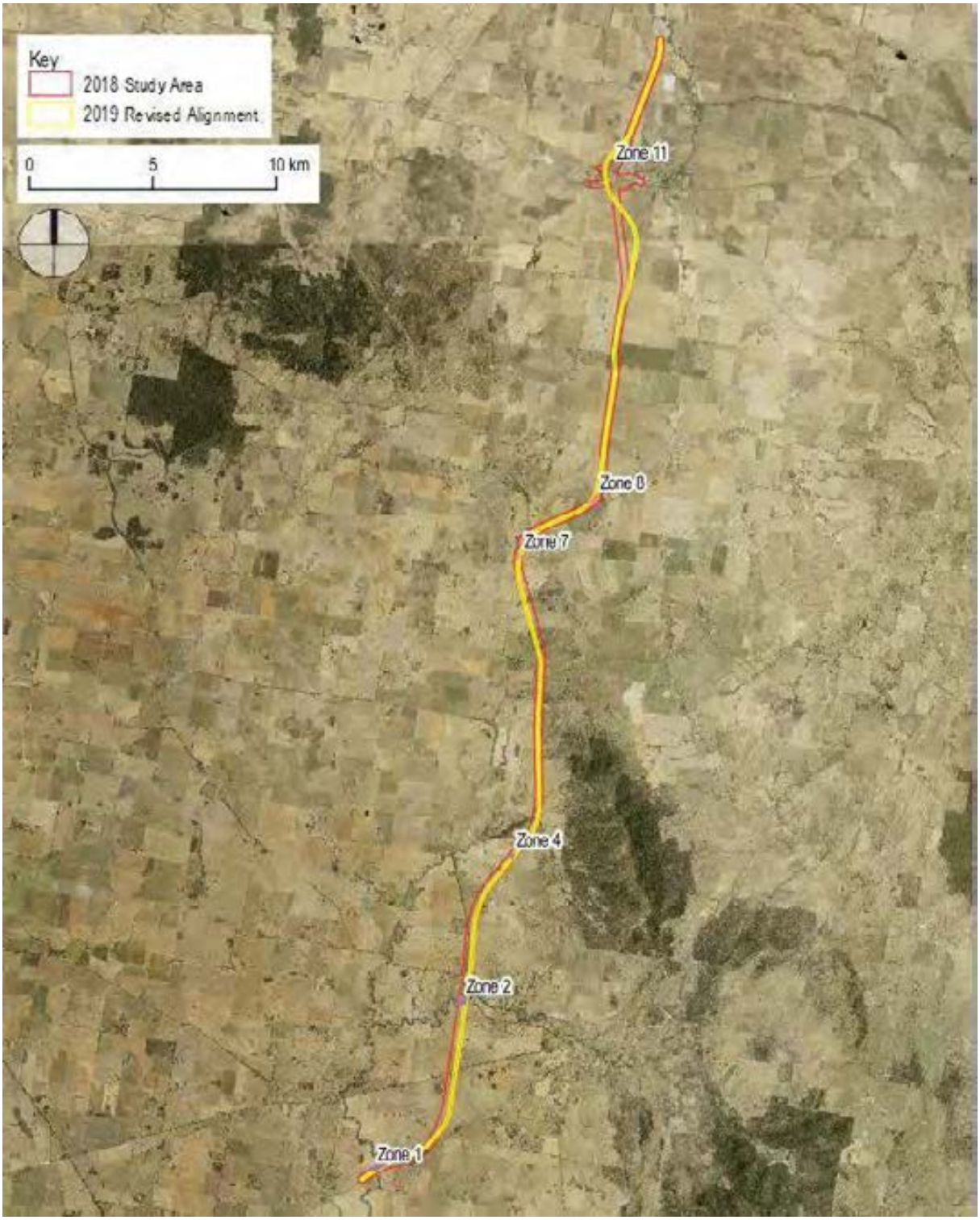


Figure 4.1 Proposed test excavation locations for Aboriginal archaeology. (Source: NSW LPI with GML additions, 2018)

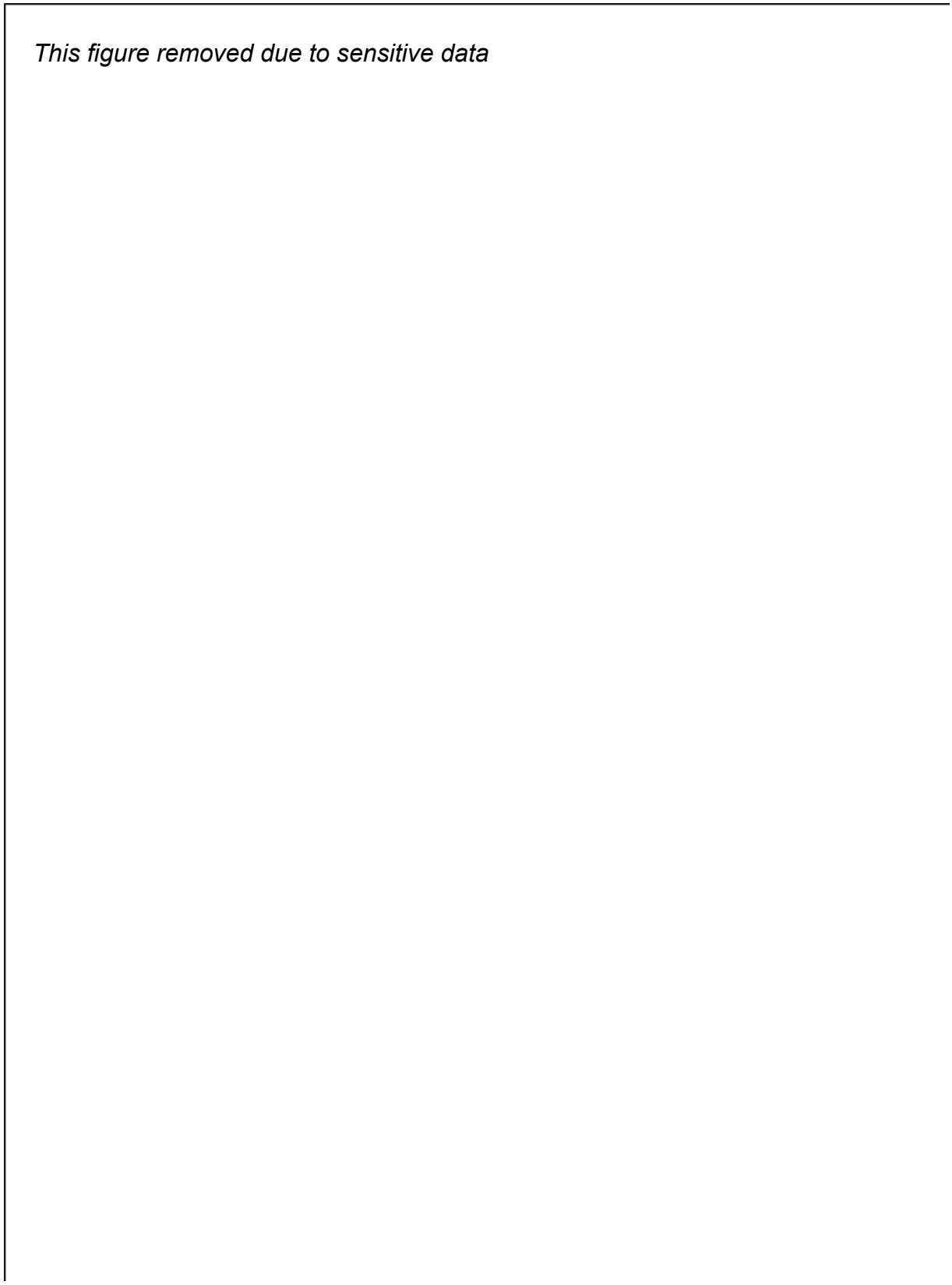


Figure 4.2 Proposed test excavation locations in Zone 1. (Source: NSW LPI with GML additions, 2018)

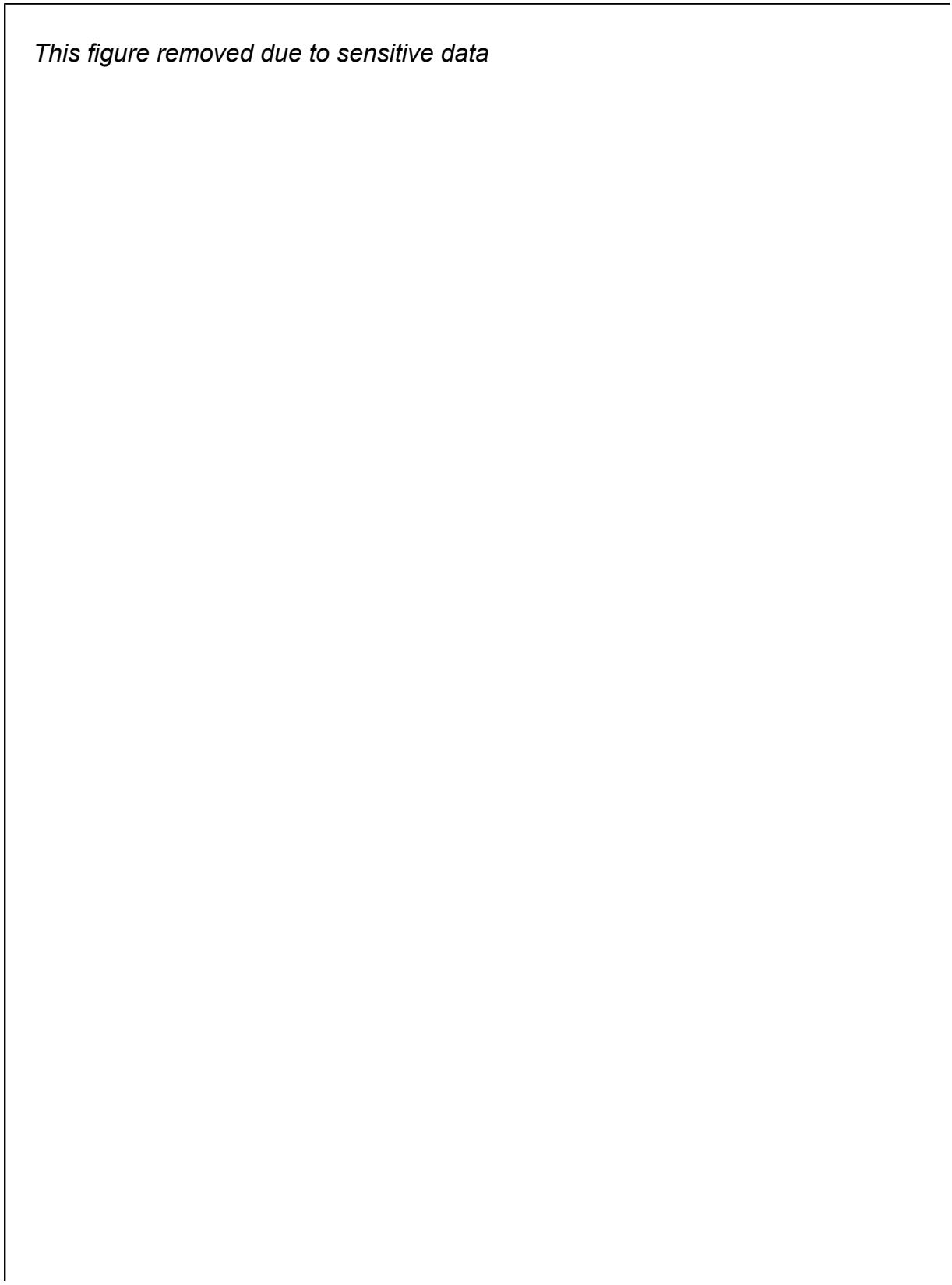


Figure 4.3 Proposed test excavation locations in Zone 2. (Source: NSW LPI with GML additions, 2018)

Figure 4.4 Proposed test excavation locations in Zone 4. (Source: NSW LPI with GML additions, 2018)

Figure 4.5 Proposed test excavation locations in Zone 7. (Source: NSW LPI with GML additions, 2018)

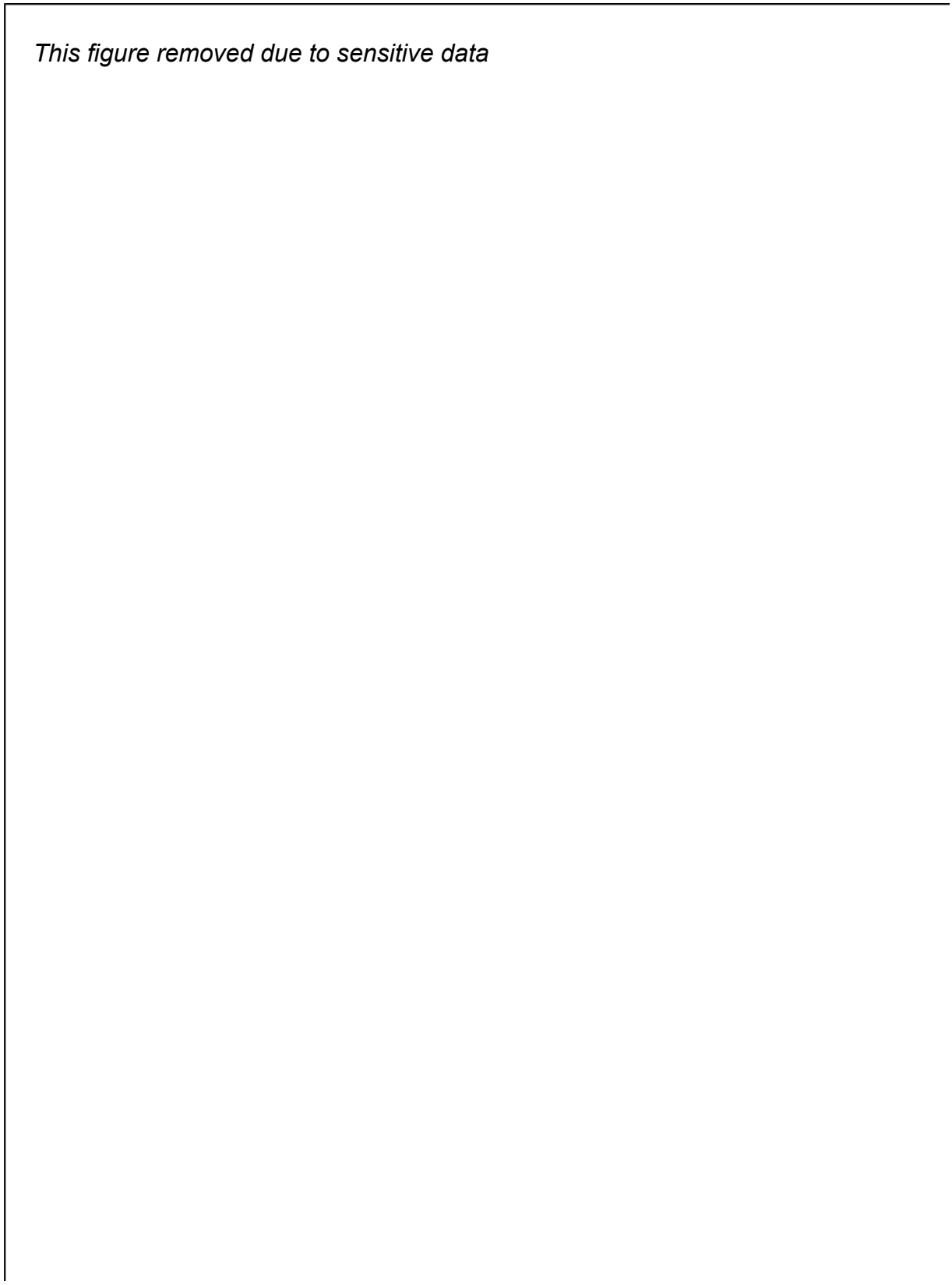


Figure 4.6 Proposed test excavation locations in Zone 8. (Source: NSW LPI with GML additions, 2018)

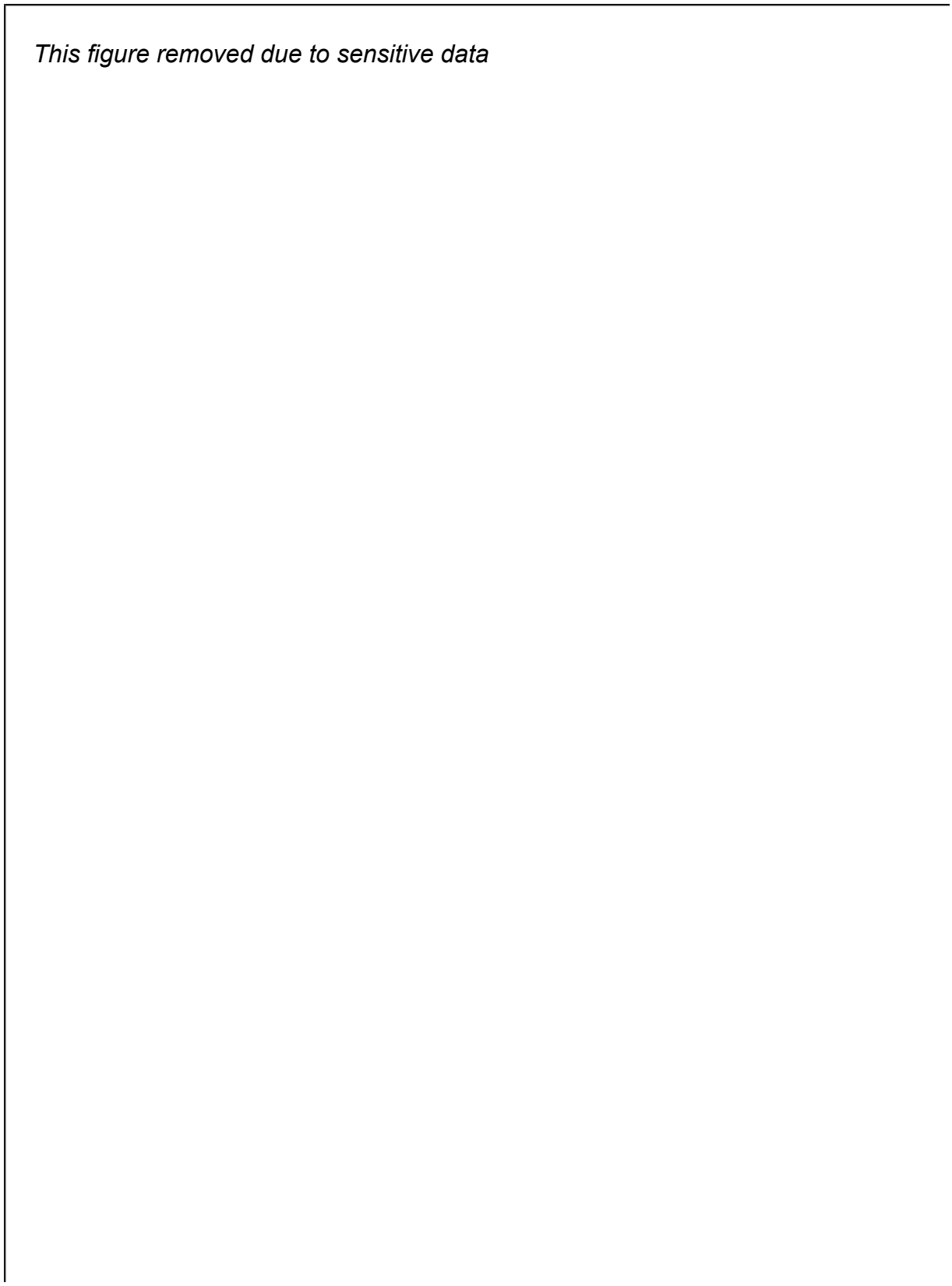


Figure 4.7 Proposed test excavation locations in Zone 11. (Source: NSW LPI with GML additions, 2018)

4.8 Endnotes

1 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* pp 24–28.

2 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 24.

3 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 25.

4 Department of Environment, Climate Change and Water 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

5 Marquis-Kyle, P and Walker, M 2004, *The Illustrated Burra Charter*, third revision, Australia ICOMOS.

6 Holdaway, S and Stern, N 2004, *A Record in Stone: The Study of Australia's Flaked Stone Artefacts,* Museum of Victoria and Aboriginal Studies Press, Melbourne.

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix G Revised alignment Aboriginal archaeological research design

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix G

GML Heritage Pty Ltd, ARTC Inland Rail, I2S Revised Alignment—Archaeological Research Design, Aboriginal Cultural Heritage, prepared for WSP and ARTC, December 2020

ARTC Inland Rail, I2S Revised Alignment

Archaeological Research Design—Aboriginal Cultural Heritage

Report prepared for WSP and ARTC

December 2020

Sydney Office Level 6, 372 Elizabeth Street Surry Hills NSW Australia 2010 T +61 2 9319 4811
Canberra Office 2A Mugga Way Red Hill ACT Australia 2603 T +61 2 6273 7540
GML Heritage Pty Ltd **ABN 60 001 179 362**

www.gml.com.au

Report Register

The following report register documents the development and issue of the report entitled ARTC Inland Rail, I2S Revised Alignment—Archaeological Research Design—Aboriginal Cultural Heritage, undertaken by GML Heritage Pty Ltd in accordance with its quality management system.

Job No.	Issue No.	Notes/Description	Issue Date
17-0169B	1	Draft Report for RAP review	6 November 2020
17-0169B	2	Final Report	4 December 2020

Quality Assurance

GML Heritage Pty Ltd operates under a quality management system which has been certified as complying with the Australian/New Zealand Standard for quality management systems AS/NZS ISO 9001:2008.

The report has been reviewed and approved for issue in accordance with the GML quality assurance policy and procedures.

Contents Page

1.0 Introduction

The Australian Rail Track Corporation Ltd (ARTC) is working to build a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central west New South Wales (NSW) and Toowoomba in Queensland. Known as the Inland Rail Programme, the route has been split into 13 projects, totalling approximately 1,700km in length.

GML Heritage Pty Ltd (GML) has been engaged by WSP to prepare an Aboriginal cultural heritage assessment report (ACHAR) to address the Environmental Assessment Requirements set out by the Secretary of the Department of Planning and Environment for the approval path for the Illabo to Stockinbingal project, the alignment of which is shown in Figure 1.1.

As part of the ACHAR, archaeological survey was undertaken across 11 zones of predicted archaeological sensitivity, and six of those 11 zones were subject to test excavation. These investigations were undertaken in November 2018, May 2019 and September 2019, and were guided by Aboriginal Archaeological Research Designs (AARDs) prepared in October 2018 and February 2019. A draft ACHAR was prepared in October 2019 detailing the results and analysis of those investigations.

Since those investigations, ARTC has made some revisions to the proposal alignment. Those revisions fall mainly within existing Aboriginal Cultural Heritage investigation areas, with the exception of a length near Stockinbingal, near investigation Zone 11. This section of the revised proposal alignment occurs to the east of the existing Zone 11 investigation area and warrants further investigation through test excavation as it falls within a zone of previously identified archaeological sensitivity.

This document provides the methodology and research parameters for the additional test excavation investigations.

This Test Excavation AARD has been prepared in accordance with NSW state Aboriginal heritage processes for best practice after the stipulated requirements in the Secretary's Environmental Assessment Requirements (SEARs). This methodology continues the requirements of Stages 2 and 3 of the Department of Environment, Climate Change and Water (DECCW) *Aboriginal cultural heritage consultation requirements for proponents* (the Consultation Requirements).[1] The current methodology aims to:

- identify Aboriginal cultural heritage within the study area through detailed investigation of areas of predicted archaeological sensitivity;
- ensure Aboriginal cultural and archaeological constraints and opportunities are adequately identified and appropriately managed throughout the life of the project;
- consult with the Aboriginal community regarding the cultural significance of the study area; and
- ensure that any risks to Aboriginal heritage values (both intangible and tangible) are appropriately identified and mitigated.

1.1 The Study Area

The study area for the additional test excavations occurs between chainage 37550 and 37950 of the revised alignment (Figure 1.2 and 1.3) and is located approximately 250m to the east of assessment Zone 11. On that basis, the current study area is being referred to as Zone 11 East. Zone 11 East is approximately 1.4km west of the township of Stockinbingal, on the western side of the existing rail

alignment. It comprises an area covering approximately 200m either side of Dudauman Creek, and is situated on the following allotments in the Cootamundra-Gundagai Regional LGA:

- Lot 1 DP1093937
- Lot 1 DP537977

1.2 Statutory Context

The following statutory controls are relevant to the study area and therefore, this report:

- *Environmental Planning and Assessment Act 1979* (NSW) (EPA Act);
- *National Parks and Wildlife Act 1974* (NSW) (NPW Act);
- *Junee Local Environmental Plan 2012*; and
- *Cootamundra Local Environmental Plan, 2013*.

Under Section 90 of the NPW Act, the Proponent would require an Aboriginal Heritage Impact Permit (AHIP) should the development activities harm any Aboriginal object or Aboriginal place. Heritage NSW requires the appropriate management of other Aboriginal heritage social values if connected with a study area.

However, as the approval process for this project is determined under the EPA Act as a State Significant Infrastructure (SSI) project, the Aboriginal heritage approval process will need to address the SEARs. The Aboriginal heritage assessment process to satisfy the SEARs mirrors the NSW Aboriginal heritage requirements; however, an AHIP will not be necessary.

This project aims to determine if harm can be avoided to any Aboriginal sites across the study area.

1.3 Objectives of this Aboriginal Archaeological Research Design

To understand, assess and provide management guidance for Aboriginal heritage, an ACHAR is being prepared. Development of the ACHAR requires a series of stages, including a program of Aboriginal community consultation, an archaeological survey, and archaeological test excavation. This ARD provides the framework for an additional program of archaeological test excavation in Zone 11 East and draws directly from the background information and findings of the previous test excavations and survey.

The previous assessment work was undertaken in collaboration and consultation with the project's Registered Aboriginal Parties (RAPs) who have been asked to review and comment on the methodology outlined in this ARD for the additional investigation.

The objectives of the assessment are to:

- understand the nature, extent and significance of the Aboriginal cultural heritage values in the additional investigation area;
- determine whether the identified Aboriginal sites and places are a component of a wider Aboriginal cultural landscape;
- understand how the physical Aboriginal sites relate to Aboriginal tradition within the wider area;

- prepare a cultural values assessment for all identified aspects of Aboriginal cultural heritage identified within the entire proposal study area, including those identified in the additional investigation area;
- determine how the proposed project may impact the identified Aboriginal cultural heritage;
- minimise impacts to Aboriginal cultural heritage through prudent, feasible and pragmatic design solutions;
- determine where impacts are unavoidable and develop a series of impact mitigation strategies;
- provide clear recommendations for the conservation of archaeological values and mitigation of impacts to these values.

Figure 1.1 The general study area between Illabo and Stockinbingal. (Source: NSW LPI with GML additions, 2018)

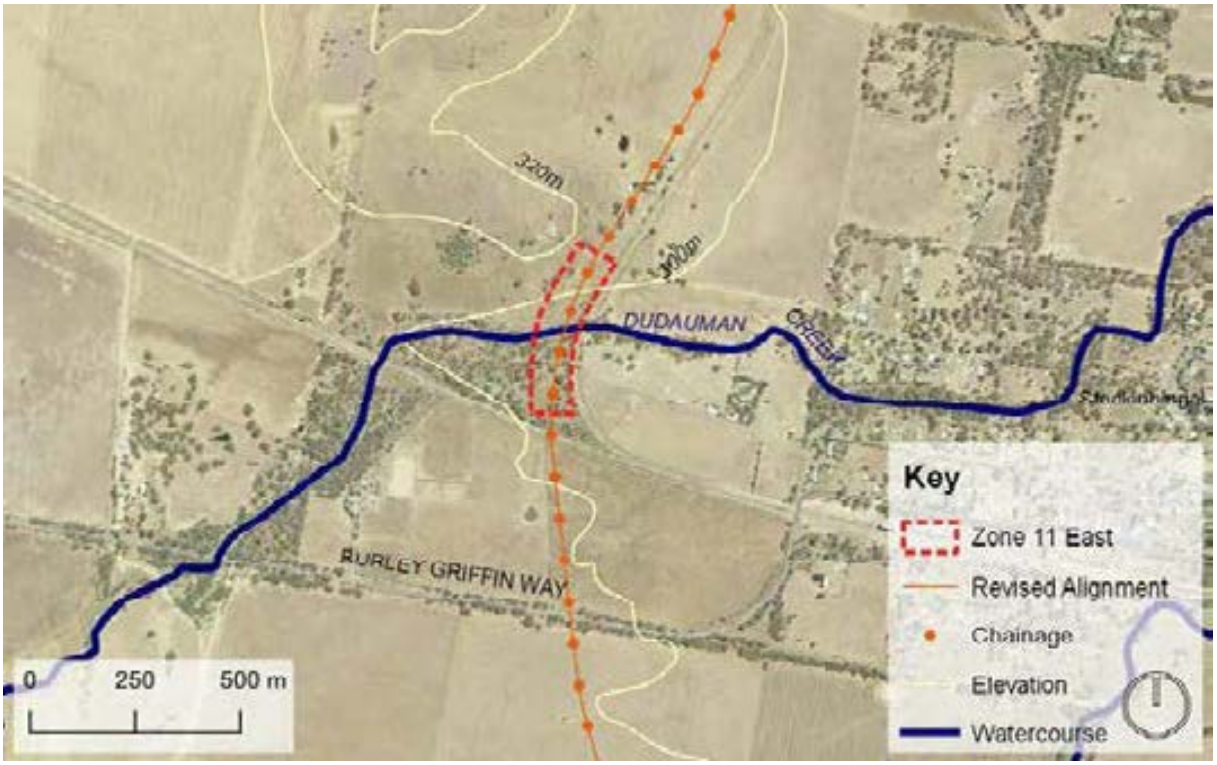


Figure 1.2 Zone 11 East study area (Source: SIX Maps aerial with GML additions)

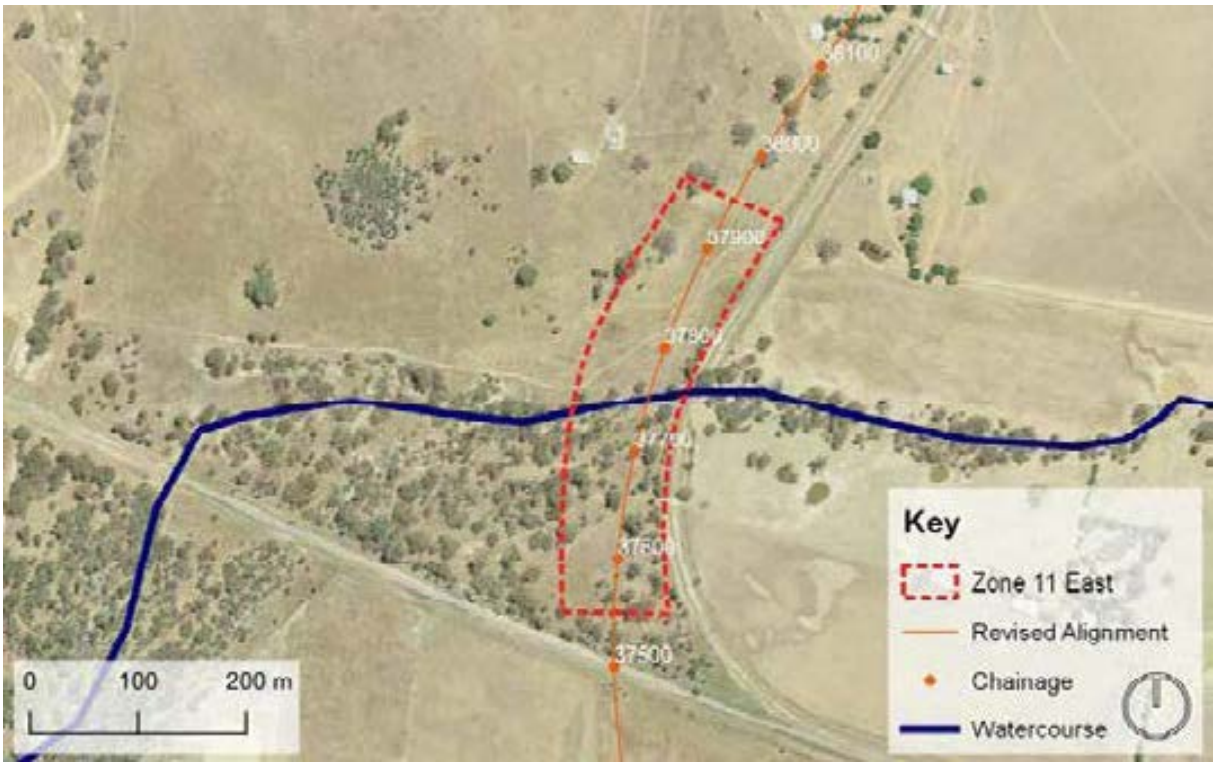


Figure 1.3 Zone 11 East study area, details. (Source: SIX Maps aerial with GML additions)

1.4 Endnotes

[1] Department of Environment, Climate Change and Water, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

2.0 Archaeological and Environmental Context

2.1 Local Archaeological Context

As part of the previous investigations, information was drawn together from three AHIMS searches, the synthesis of background information from other reports and investigations to prepare a predictive model and identify zones of potential archaeological sensitivity.

The subsequent survey and test excavation work along the proposal alignment, sought to investigate those zones of sensitivity further to test the veracity of the predictive model and to determine the likelihood of Aboriginal sites and objects being present within the proposal alignment.

The current study area, Zone 11 East, is situated on either side of Dudauman Creek. The flat terrace landforms flanking Dudauman Creek were previously predicted to have archaeological potential based on their proximity to water, and also their well-drained nature, with access to higher ground within a few hundred metres to the north.

Zone 11 East is relatively level along the banks of the creek which has a defined channel and steep sides. On the northern side of the creek, this zone includes the tail end of the lower slope from a small hill to the northwest. The hill is approximately 30m high and slopes steeply down towards the creek, abruptly levelling out approximately 70m from the creek edge. Landforms within this area are a combination of river flats and lower slopes.

During the previous archaeological survey, no artefacts were found on the northern side of the creek. The flat creek bank terrace was relatively undisturbed, with the only obvious impact being an access track. This flat area to the north of Dudauman Creek was considered to have some archaeological potential.

To the south of Dudauman Creek, the relatively flat creek bank had been partially disturbed by the construction of a former rail embankment. Two artefacts were noted in this area, ARTC10 and ARTC11. ARTC10 was a large, mid-brown coloured chert core, while ARTC11 was an isolated quartz flake on the edge of the rail embankment; its original context had been disturbed by part of that construction. The two artefacts were approximately 140m apart.

During the previous test excavation program, the proposal alignment had been revised and shifted approximately 250m further to the west. Therefore, the test excavation zone was also moved to the west to match the new proposal alignment.

As the course of Dudauman Creek meandered towards the south, the repositioning of the test excavation zone meant that the test excavation would occur entirely on the northern side of the creek. The test excavation program included 41 test units of which 25 were within 150m of Dudauman Creek. The excavation yielded 9 artefacts from three of those 25 test units, with artefacts begin found up to 600mm below the ground surface. Artefact size varies from 12mm to 28mm with an average of 20mm, and a significant proportion of this small assemblage was made from quartz with only one artefact made from any other materials – indurated mudstone. It was concluded that the artefact yields indicated a low-intensity use of the landscape by Aboriginal people in the past.

The revision of the proposal alignment brings it further to east into the zone originally surveyed, and where two surface artefacts were found. Figure 2.1 shows the relationship between the previous assessment area for Zone 11 and the new Zone 11 East assessment area.

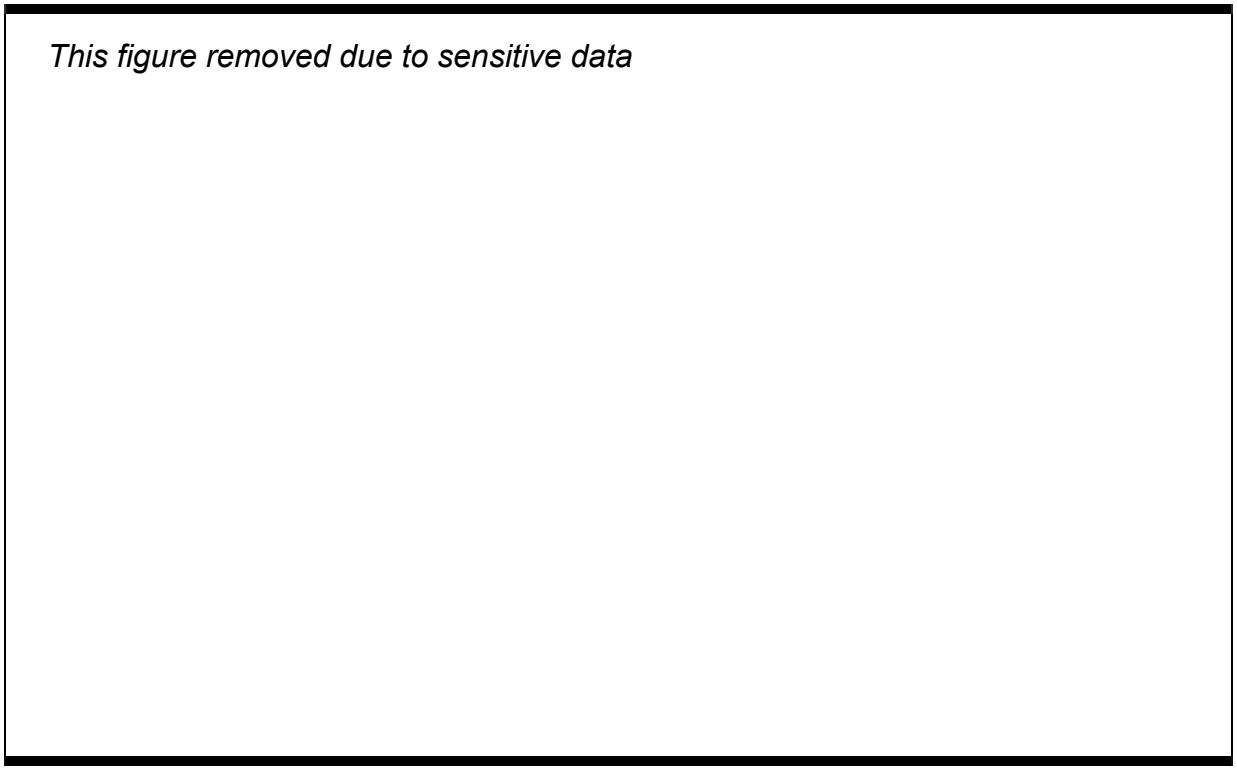


Figure 2.1: Zone 11 East study area and the previous assessment area for Zone 11. (Source SIX Maps aerial with GML additions)

2.2 Summary of Previous Background Research

To put the current Zone 11 East investigation into a wider context, the results of the previous AHIMS searches, predictive modelling and discussions are outlined briefly below.

2.2.1 Aboriginal Heritage Information Management System Search

On 17 July 2018, GML undertook a search of the Heritage NSW Aboriginal Heritage Information Management System (AHIMS) database covering a rectangular area of approximately 30km north–south and 16.5km east–west centred on the study area. Due to revisions of the study corridor, two additional basic AHIMS searches were required—one on 18 September 2018, covering an area of approximately 3.5km north–south and 6.5km east–west, and the second on 17 October 2018 covering an area of approximately 2.6km north–south and 2.4km east–west (Client Service ID 371210 and ID377094 respectively).

The searches identified 72 Aboriginal sites, as tabulated below and shown in Figure 2.2.

Table 2.1 Results of AHIMS Search.

Site Feature	Frequency	Percentage %
Grinding Groove	1	1.4
Modified Tree (Carved or Scarred)	31	43
Potential Archaeological Deposit	1	1.4
Stone Arrangement	1	1.4
Stone Artefact Site	37	51.4
Waterhole	1	1.4

Total	**72**	

This figure removed due to sensitive data

Figure 2.2 Previous AHIMS search results with original study area. (Source: NSW LPI with GML additions, 2018)

The results of the AHIMS searches show that stone artefact sites were the most common within the region, making up 51% of all sites. Stone based sites and artefacts by nature preserve best in the archaeological record. Modified trees were also a dominant site type in this region (43%). One modified tree was within the study area and four others were in close proximity to the study area. Subsequent investigation revealed that a number of the modified trees were not culturally scarred trees.

This range of site types suggests that the region was used in multiple ways. Stone artefact sites are commonly associated with resource (food) procurement, processing and discard. Modified trees are also associated with broader traditions and cultural practices.

Of note was the distribution of these sites which favoured the southern part of the study area, mainly focussed around Ulandra Nature Reserve, and Billabong Creek, (Figure 2.2), with no previously recorded sites in the vicinity of the current Zone 11 East investigation area.

2.2.2 Predictive modelling

A review of previous archaeological studies in the local area showed that they all concluded basically similar model of site distribution which focused around water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

Artefact sites, including scatters and isolated finds, were the dominant findings. The majority of artefacts were made from quartz, with lesser reliance on silcrete and volcanics. However, none of the previous studies note the presence of key raw material outcrops in the local area.

All studies note that scarred trees were unlikely due to the widespread clearing of the vegetation, and most of the flat or low-gradient landforms have been subject to ploughing and agricultural disturbances.

Literature Summary

The following reports were available for review:

- **Young to Wagga Wagga Looping Gas Pipeline – Heritage Assessment – AECOM 2010**

AECOM undertook an assessment, including survey, of the 61km pipeline route Stage 1—Bethungra to Wagga Wagga. Thirty-six Aboriginal sites (30 artefact scatters and six isolated finds) were identified during the survey. Their analysis and predictive modelling showed that the most likely Aboriginal site occurrences would be open artefact scatters and areas of subsurface archaeological potential within 200m of high order creeks and rivers on a range of landforms including creek banks, creek flats and terraces, and also on lower slopes and ridges overlooking water sources. Smaller open sites were also predicted to occur near ephemeral low order streams but were unlikely to occur where those water sources were first order streams with no defined channel.[1]

They concluded that their modelling generally confirmed Dan Witter's 1980s[2] model that Aboriginal land use in this general area was associated with well-watered areas.

- **Transgrid Powerline Access Track Maintenance Requirements: Beverly Hills Fire Trail, Ulandra Nature Reserve, New South Wales – Due Diligence Assessment – Tom Knight 2011.**

Knight observed that Ulandra Nature Reserve contained multiple AHIMS sites, and reviewed a range of archaeological assessments which had been undertaken in the Ulandra Nature Reserve, including a survey undertaken by Paton and Hughes in 1985 in which seven artefacts scatters and 15 isolated finds were recorded. Notable among these recordings was that most were within a valley context while only a comparatively smaller number of sites were recorded on ridges and slopes. Knight concluded that open valleys in the area were generally more heavily used than the surrounding ridge tops. The availability of water had a marked influence on the likely location of artefact scatter sites and therefore 'most archaeological evidence would subsequently be found in association with low gradient, well drained locations adjacent to water sources such as stream banks, terraces and footslopes'

- **Power Line Maintenance Work—Ulandra Nature Reserve and Adjacent Areas, Bethungra, NSW—Aboriginal Cultural Heritage Report—Charles Dearling Archaeological and Cultural Heritage 2007.**

The initial assessment of the study area in 2002 identified 28 Aboriginal sites, comprising 22 artefact scatters and six isolated finds, within the Ulandra Nature Reserve.[3] The scatters were generally small, containing less than 10 artefacts each, although the largest scatter contained 48 artefacts comprising mainly debitage with cores and a small number of formalised tool types, all made from quartz, chert and siltstone. Further survey in 2004 resulted in another seven artefact scatters and three isolated finds being recorded. A total of 146 artefacts were recorded from these sites, most of which were found along low-gradient spur crests.

Based on these surveys, Dearling hypothesised that the occupation of this area was largely characterised by low-gradient, well-drained locations in close association with water sources such as stream banks, terraces and foot slopes.

2.3 Landscape Context

Zone 11 East passes through 2 soil landscapes (Comerford and Oakville) and crosses Dudauman Creek, an ephemeral third order stream which drains the low ranges in the Combaning Conservation Area. Dudauman Creek flows north to join Bland Creek and Noonans Creek northeast of Stockinbingal.

The soils, landforms and landscape features of each landscape are summarised below and shown in Figure 2.3.

2.3.1 Comerford (cz) Erosional[4]

Landscape

Undulating low hills and rises formed on Devonian igneous and sedimentary rocks. Elevation 280–370m and <448m near Dirnaseer Road, local relief 20–80m, slopes 3–10% and <15% on steeper terrain. Extensively cleared, mid–high open eucalypt woodland.

Soils

Shallow (<50cm), well-drained Paralithic Leptic Rudosols (Lithosols) and Basic Paralithic Orthic Tenosols (Earthy Sands) on crests and ridgelines. Moderately deep (<100cm), imperfectly drained Mottled Magnesic Red Kurosols (Red Podzolic Soils; Solodic Soils) on mid to upper slopes. Mottled Eutrophic Red Chromosols (Red Podzolic Soils) on upper to lower slopes, and Mottled Eutrophic Brown Dermosols (Brown Podzolic Soils) on lower slopes.

2.3.2 Oakville (oe) Transferral[5]

Landscape

Gently undulating foot slopes and plains formed on recent Quaternary colluvium. Elevation 260–360m, local relief <30m, slopes <5%. Extensively cleared eucalypt woodlands.

Soils

Deep (>100cm), imperfectly drained Mottled Eutrophic Red Chromosols (Red Podzolic Soils) and Bleached-Mottled Eutrophic Brown Chromosols (Brown Podzolic Soils) on upper to lower slopes. Deep (>100cm), moderately well-drained Eutrophic Subnatric Red Sodosols (Solodic Soils) on some midslopes. Deep (>100cm), poorly drained Mottled Eutrophic Brown Sodosols (Solodic Soils) in drainage depressions and along creek lines.

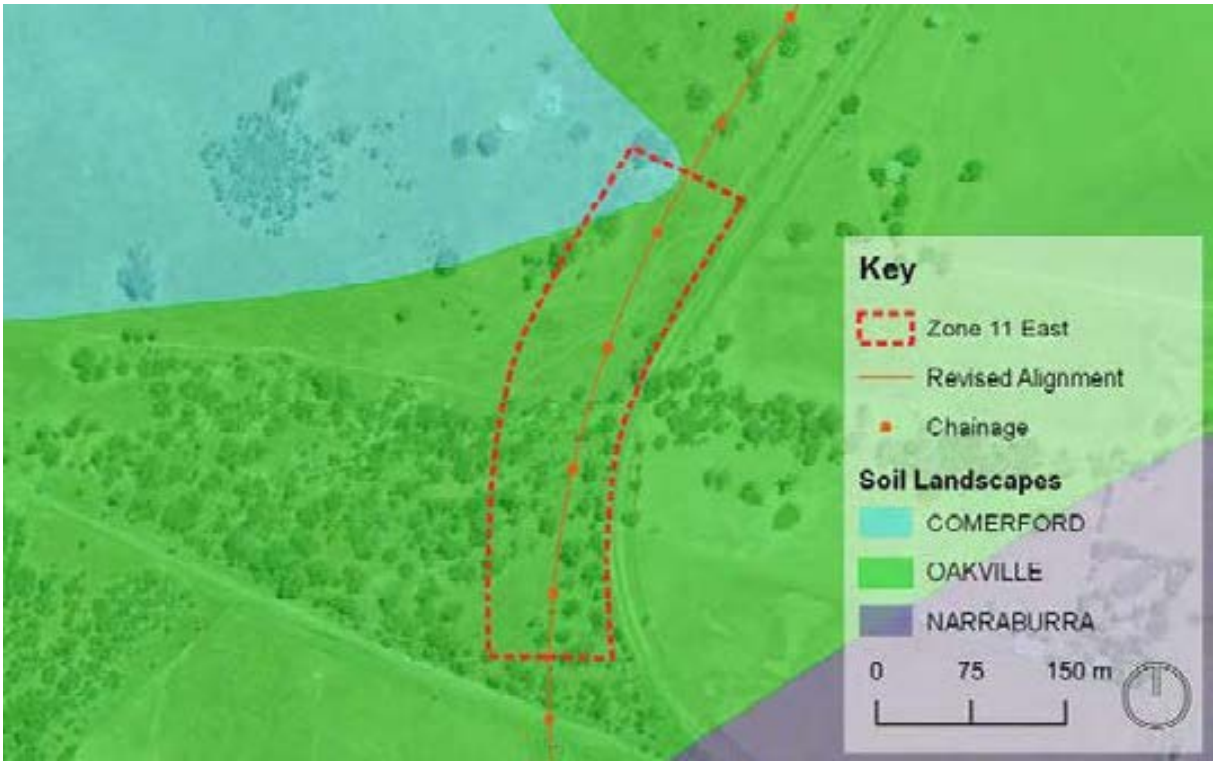


Figure 2.3 Soils landscapes in the area of Zone 11 East (Source: NSW LPI with GML additions)

2.3.3 Land Use History

Zone 11 East traverses two working farms. The land has undergone some substantial changes over time including vegetation clearance, construction of tracks, fencing, grazing and the construction and removal of a section of rail alignment across the southern part of the zone.

These impacts create erosion and other disturbances which reduce the potential for Aboriginal archaeological sites across some areas of this zone.

However, erosional soil landscapes are generally found to be shallow on upper slopes and deep on mid to lower slopes and along creek lines. Transferral soil landscapes can vary between shallow and deep on upper slopes and are generally deep across all other areas. Zone 11 East is wholly within the lower slopes and flats and therefore will have deeper soil profiles. The tendency for these well-formed soils

was demonstrated through the test excavation work in Zone 11 with Oakville soils reaching depths of up to 900mm.

Modified trees may be found in any soil landscape, in areas with mature vegetation. During and post land clearing, modified trees may have been destroyed and stone artefacts in erosional landscapes may have been displaced from their original discard point. Artefact movement down slopes is common in these situations. Soil landscapes with deep soil profiles are generally more stable and artefacts in these areas often undergo less displacement. Therefore, it can be predicted that artefacts may be found in the majority of the Transferral landscapes and in the mid to lower slopes of Erosional landscapes.

2.4 Summary Predictive Modelling

General predictive modelling for the whole proposal alignment favoured the the notion that Aboriginal occupation sites will mainly be present in association with water sources—primarily lower order streams—and low-gradient, well-drained landforms in close proximity to those water sources.

The presence of artefacts in the area of Zone 11 East gives some credence to this modelling for this immediate study area. The flat terrace landforms on the edges of Dudauman Creek was found to have a clear presence of artefacts. These locations were consistent with the predictive modelling based on their proximity to water, and also their well-drained nature.

Despite the land use modifications to Zone 11 East, we can expect the landscape to hold deep intact soils and therefore it is likely to yield further archaeological evidence. The relative number of mature trees in this zone may also give rise to the identification of modified trees.

2.5 Endnotes

1 AECOM, Young to Wagga Wagga Looping Gas Pipeline, Heritage Assessment Stage 1 - Bethungra to Wagga Wagga, report prepared for APA Group, January 2010. p50.

2 Witter, D 1980, An Archaeological Pipeline Survey between Wagga Wagga and Young, report prepared for the National Parks and Wildlife Service, Sydney.

3 Dearling, C, Aboriginal Cultural Heritage Study, Access Track Upgrades: Transgrid Power Line, Ulandra Nature Reserve and Environs, Near Bethungra, NSW, report prepared for Transgrid, Property and Environment Southern Yass, February 2004.

4 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 108.

5 Andersson K, M M 2010, *Soil Landscapes of the Cootamundra 1:250,000 Sheet*, NSW Department of Environment, Climate Change and Water, Sydney, p 369.

3.0 Aboriginal Community Consultation

3.1 Aboriginal Community Consultation to Date

GML have maintained ongoing consultation with the Aboriginal community for the ARTC Inland Rail project since the commencement of consultation in April 2018. This process has included informing the RAPs of extended timeframes in the assessment process due to reporting review and revisions and revised alignment options. Consultation was continued with all RAPs for this revised proposal alignment and updated Test excavation program for Zone 11 East.

3.1.1 Stage 1.1 and 1.2

Aboriginal community consultation was initiated in accordance with the Heritage NSW *Aboriginal cultural heritage consultation requirements for proponents*.[1] Stage 1.1 letters to statutory bodies were sent on 5 April 2018, requesting contact details for Aboriginal people who may have an interest in the study area. These statutory bodies included the:

- Heritage NSW (formerly OEH);
- Young Local Aboriginal Land Council;
- Wagga Wagga Local Aboriginal Land Council;
- Office of The Registrar, Aboriginal Lands Right Act 1983;
- National Native Title Tribunal;
- Native Titles Service Corporation;
- Junee Council;
- Cootamundra Gundagai Council;
- City of Wagga Wagga Council; and
- Greater Sydney Catchment Management Authority.

Following the receipt of responses from Stage 1.1, a number of potential Aboriginal stakeholders were identified. Stage 1.2 letters were sent to the identified Aboriginal people on 9 October 2018, and an advertisement was placed in *The Riverina Leader* on 26 September 2018. Both the Stage 1.2 letters and the advertisement invited Aboriginal people with an interest in the study area to register as a stakeholder to be involved in consultations. Registrations were accepted until 24 October 2018.

3.1.2 Registered Aboriginal Parties

Eleven Aboriginal parties registered an interest in the project. The following list of stakeholders are the Registered Aboriginal Parties (RAPs) for the project:

This table removed due to sensitive data

This table removed due to sensitive data

All registrations of interest were acknowledged via phone or email.

3.1.3 Survey Participation

Discussions about the cultural heritage values of the study corridor were undertaken during the survey of the route conducted between 26 and 30 November 2018.

Survey and discussion participants included:

This table removed due to sensitive data

3.1.4 Test Excavation Participation

Discussions about the cultural heritage values of the study corridor continued during the test excavation program conducted between 6 and 23 May 2019 and 24 September to 2 October 2019.

Test Excavation participants included:

This table removed due to sensitive data

This table removed due to sensitive data

Ongoing discussions will be conducted with RAPs during further stages in the project including review of this methodology, test excavation and review of the ACHAR and ATR reports.

3.2 Cultural Heritage Assessment Program

The Heritage NSW (previously OEH) has defined a number of stages during the Aboriginal consultation process.[2] The following table provides a synopsis of the process to date.

Stage	Status
Write to statutory bodies to obtain contact details for Aboriginal people who may have an interest in the project.	Complete
Write to identified Aboriginal people, inviting them to register an interest in the project.	Complete

Stage	Status
Place an advertisement in local print media, inviting Aboriginal people with cultural knowledge of the area to register an interest in the project.	Complete
Record names of Aboriginal people who have registered an interest in the project.	Complete
Advise the Local Aboriginal Land Councils (LALCs) and OEH of RAPs' details (subject to privacy requests).	Complete
Present information regarding proposed project to RAPs.	Complete
Provide methodology for the cultural heritage and archaeological assessment to RAPs – Stage 1 – Survey	Complete
Invite RAPs to provide input for the assessment methodology.	Complete
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Complete during field survey
Provide methodology for the cultural heritage and archaeological assessment to RAPs – Stage 2 – Test Excavation	Complete
Invite RAPs to provide input for the assessment methodology.	Complete
Undertake Test Excavation Assessment program with RAPs	Complete
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Complete during Test Excavation program
Provide RAPs with project update including information on proposed revised proposal alignment	This document
Provide methodology for updating the cultural heritage and archaeological assessment to RAPs for proposed revised proposal alignment – Test Excavation	This document
Invite RAPs to provide input for the assessment methodology.	Pending
Undertake further assessment with RAPs – Additional Test Excavation	Pending
Invite RAPs to identify: • whether any Aboriginal objects of cultural value are present within the study area; and • whether any places of cultural value are present within the study area.	Pending
Invite RAPs to comment on potential management outcomes.	Forthcoming
Prepare draft ACHAR and provide to RAPs for comment.	Forthcoming
Incorporate RAPs comments into final ACHAR.	Forthcoming
Provide final ACHAR the RAPs, LALC and Heritage NSW.	Forthcoming

3.3 Roles and Expectations

The Heritage NSW[3] Consultation Requirements list a number of responsibilities and expectations for both the Aboriginal community and the proponent regarding the assessment of the study area's cultural heritage.

The Aboriginal community is responsible for determining who is authorised to speak for Country and its associated cultural heritage. If there is a dispute regarding who has the right to speak for Country, it is up to the Aboriginal community, not the proponent or Heritage NSW, to resolve the dispute in a timely manner.[4]

RAPs are also responsible for providing information relating to Aboriginal cultural heritage relevant to the study area to assist in managing its cultural significance in an appropriate manner.[5]

It is expected that:

- Aboriginal people providing knowledge regarding the cultural heritage of the study area are trusted and allowed by the rest of the Aboriginal community to speak for Country;[6]
- people speaking for Country hold knowledge about the cultural significance of their heritage and are able to provide input into appropriate management strategies;[7]
- RAPs have an understanding of the commercial environment in which the proponent is operating and the constraints associated with this environment;[8] and
- RAPs understand that the Secretary of the Department of Planning and Environment in consultation with the Chief Executive of the Heritage NSW (formerly OEH) is the final decision maker relating to the approval of works relating to the SSI project and that these decisions may not be consistent with the views of the RAPs.[9]

The proponent is responsible for consulting with the Aboriginal community and managing the consultation process in accordance with the Consultation Requirements.[10]

It is expected that:

- the proponent would develop and implement appropriate consultation methods, in accordance with the Consultation Requirements;[11]
- Aboriginal views are considered and appropriately incorporated into the assessment process;[12] and
- the consultation process is accurately documented, including both the consultation undertaken and the input from the RAPs.

3.4 Endnotes

1 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).

2 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).

3 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW).

4 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 36.

5 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.

6 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.

7 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 8.

8 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

9 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 15.

10 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

11 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 6.

12 Department of Environment Climate Change and Water NSW 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*, Department of Environment, Climate Change and Water (NSW), p 16.

4.0 Assessment Methodology

4.1 Updated Assessment of the Revised Alignment

Since the previous test excavations were undertaken, revisions have been made to the proposal alignment. Those revisions fall mainly within existing Aboriginal Cultural Heritage investigation areas, with the exception of a section near Stockinbingal, near investigation Zone 11. This section of the revised proposal alignment occurs to the east of the existing Zone 11 investigation area—hence its description as 'Zone 11 East'. This zone warrants further investigation through test excavation as it falls within a zone of previously identified archaeological sensitivity.

The comparison between the two alignments is shown earlier in Figure 2.1.

The further assessment methodology outlined below is specifically designed for the Zone 11 East assessment area.

4.2 Archaeological Test Excavation Methodology

4.2.1 Mechanism for Test Excavations

The test excavation program will be undertaken in accordance with the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code of Practice).[1]

Archaeological test excavation is permitted under the Code of Practice without the need to obtain a permit under Section 90 of the NPW Act. That is, it is excluded from the definition of 'harm' under the NPW Act provided that the subsurface investigations are not carried out in the following areas:

- in or within 50m of an area where burial sites are known or are likely to exist;
- in or within 50m of a declared Aboriginal place;
- in or within 50m of a rock shelter, shell midden or earth mound; and/or
- in areas known or suspected to be Aboriginal missions or previous Aboriginal reserves or institutes.

As described by the Heritage NSW, the purpose of test excavation is to:

> *… collect information about the nature and extent of sub-surface Aboriginal objects, based on a sample derived from sub-surface investigations. Test excavations contribute to the understanding of site characteristics and local and regional prehistory and they can be used to inform conservation goals and harm mitigation measures for the proposed activity.*[2]

This section provides details of the proposed archaeological test excavation in accordance with Requirements 14–17 of the Code of Practice. It includes both the test excavation sampling strategy and the method for test excavation. It has been designed to meet the specific sampling and systematic grid requirements, test excavation unit size and excavation processes outlined under Requirement 16a.

Aboriginal community consultation has been undertaken in accordance with NPW Regulation subclause 80C(6) prior to this proposed methodology being prepared and will continue throughout the project.

4.2.2 Sampling Strategy

The Code of Practice specifies that a sampling strategy meet the following requirements:[3]

- Provide a framework for sampling all PADs that are at risk of harm within the subject area.
- Describe the differentiation of the PAD to be test-excavated from the surrounding archaeological landscape.
- Test those areas of PAD that have no archaeological exposure or visibility.
- Test the boundaries of known sites (where appropriate).
- Confirm areas of low potential (where relevant).
- Describe how the sampling area relates to the area that is proposed to be impacted by the proposed activity.

The proposed approach to test excavation sampling strategy is based on the results of the site survey and assessments of areas of predicted sensitivity within 200m of the Dudauman Creek. It covers the area surrounding the two artefacts (ARTC10 and ARTC11) previously identified, and accounts for the same landform (river terraces) where Aboriginal cultural heritage was previously identified during the earlier test excavations in Zone 11.

A total of 25 Test Units (TUs) is proposed for excavation as outlined in Figure 4.1.

The approach spans the potential impact area for the proposal alignment and conforms with the earlier sampling strategy. The TUs distribution covers both of the landforms in the study area—the level terraces of Dudauman Creek, and the base of lower slopes of an adjacent hill.

Responding to On-site Results and Variation

During the test excavation, Aboriginal representatives and field archaeologists will be able to respond to the initial results of excavation and determine whether further TUs should be sampled in any particular testing area.

Should a sample transect identify that significant ground disturbance has occurred, thus removing the artefact bearing portion of the soil horizon, then affected TUs may be abandoned once disturbance is identified, and may be repositioned to an agreed appropriate location to continue to maintain a credible sampling strategy.

4.2.3 Method

Manual Excavation

Based on the requirements of the Code of Practice, the test excavations would comprise a series of hand excavated TUs set out on systematic grids and based at 20m intervals. The expansion of individual TUs would occur based on the excavation results where higher artefact densities are recovered.

TUs will be excavated in 500mm x 500mm units using hand tools only. Vertical control will be maintained through 50mm or 100mm excavation levels (‘spits’) as appropriate to the soil landscape and stratigraphy. All material excavated from the test excavation units will be dry-sieved using 5mm aperture wire-mesh sieves.

TUs will be excavated to at least the base of the identified Aboriginal object-bearing units and must continue to confirm that the soils below contain no further cultural material.

Data to be Collected

Data will be collected for each TU during the test excavation on a specific TU context sheet. Data collected will include:

- TU number;
- TU location;
- TU landform;
- TU aspect;
- depth of each spit as excavated;
- number of stone objects (or other feature/s) per spit;
- total number of objects;
- any features or inclusions (such as carbon);
- taphonomic factors (disturbance, bioturbation etc); and
- soil characteristics.

Section and plan diagrams (especially where features are present) will be created where appropriate, and recommendations made as to whether the TU should be expanded (in accordance with Heritage NSW guidelines) or if further TUs should be located surrounding the one excavated in order to better understand the extent of an archaeological deposit.

The excavation director will supervise all TU recording and determine whether further TUs should be opened (in addition to those defined by the sample grid), or whether a TU should be expanded.

A running total of features and Aboriginal objects will be kept to determine an in-the-field comparison between sample areas.

TU Location

All TU locations would be set out in the field using GPS coordinates based on the mapping outlined in Figure 4.1 below. Adjustments in field will be made using standard surveying techniques when and if required, and GPS coordinates will be taken to ensure correct mapping of activity areas for reporting. Excavation of each spit will be determined by an archaeologist using a hand tape.

Spatial control of TU locations and vertical excavation will be sufficiently precise to define the location of archaeological deposits across the study area and to allow the research questions to be addressed.

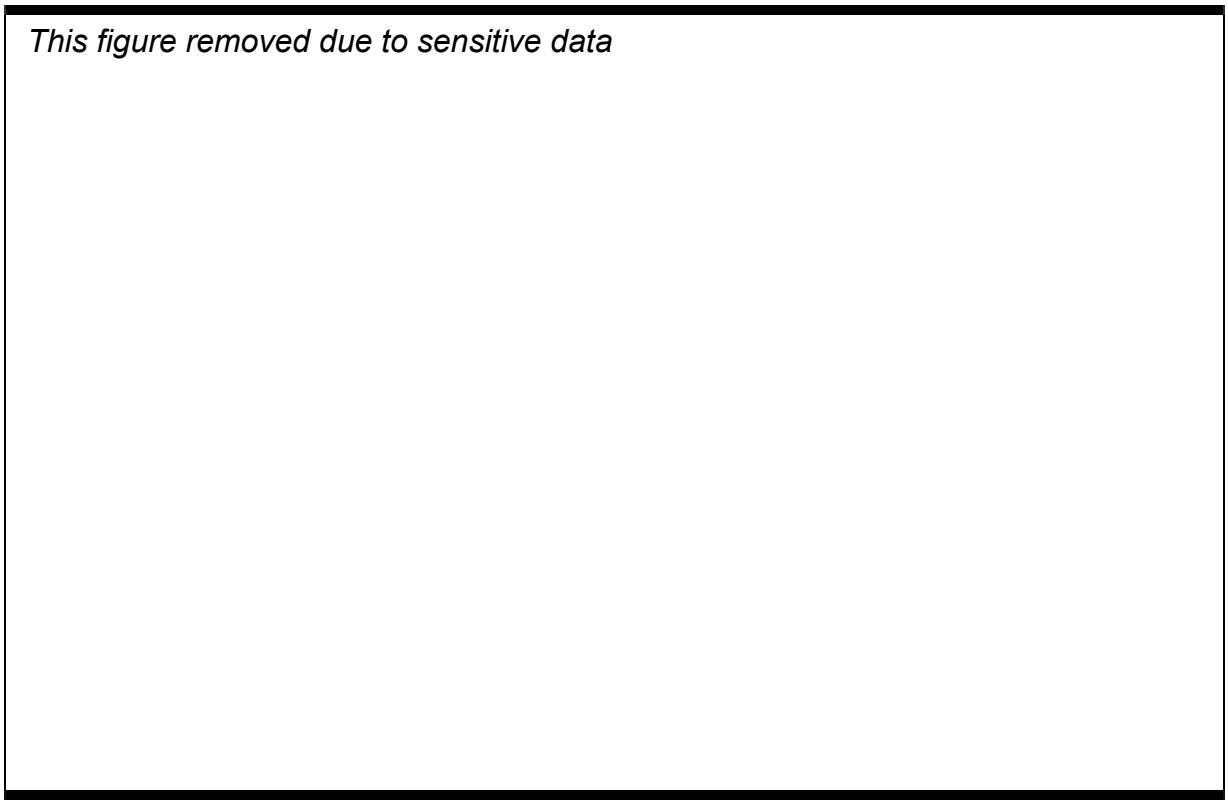


Figure 4.1 Proposed test excavation locations in Zone 11 East for Aboriginal archaeology. (Source: NSW Nearmap 2016 aerial with GML additions)

4.3 Research Questions

The objective of the archaeological test excavation is to gather sufficient information about the archaeological resources of the study corridor to allow an assessment of the nature, extent and significance of the cultural material to be made within a local and regional context, and with reference to the previous assessment results.

In particular, results from this investigation will be fed back into the analysis of the existing research questions posed for the earlier test excavation work.

Previous research questions included:

1. What are the characteristics of soil horizons across the study area?
    a. How has the land use history impacted the study area and survival of soils and thus archaeological material?
    b. At each location, is the deposit consistent? Or does it possess characteristics that tell of different depositional or formation events?
2. Are there archaeological deposits present?
    a. Are the deposits stratified?
    b. Is there archaeological evidence which can be dated (both through scientific methods, carbon dating, OSL and/or relative dating)?
    c. Do the deposits have different degrees of archaeological potential with depth?

d. What evidence—if any—other than stone artefacts is present for Aboriginal occupation and/or use of the study area?

e. How do the archaeological deposits relate to the predictive modelling?

f. Is there variation in the nature of the archaeological deposits across different areas of the study corridor?

3. What is the general nature of stone artefacts recovered from the study area? How can the stone artefact assemblage be characterised?

   a. What raw materials are represented in the stone artefact assemblage?

   b. Can any information be ascertained from the stone artefact assemblage regarding the intensity of stone artefact reduction and discard?

   c. Can a difference between stone artefact deposits be identified by different strata in the assemblage over time? If so, what is the nature of that difference?

   d. Can a difference between stone artefact deposits be identified across different areas of the study corridor?

4. How can the deposit be interpreted?

   a. Is there any evidence for variation in landscape use and selection strategies?

   b. Can deposits or features be dated? What is the antiquity of the evidence?

   c. Does the archaeological deposit vary spatially within one location/site? How?

   d. What does the archaeological deposit tell us about Aboriginal use of this landscape?

5. Can the archaeology be interpreted in a regional context?

   a. What is the source of the artefactual stone? How does this correlate with current regional research and knowledge of stone resources?

      i. Is raw stone material for artefact manufacture readily present within or near the study corridor?

      ii. Has stone been brought into the study corridor? From how far away has the stone been brought?

      iii. What is the main discard and reduction strategy pattern that can be observed for different raw materials across the study corridor?

   b. Do the archaeological deposits within this study corridor conform to the distance from water regional predictive model and theories or not?

6. Is the archaeological deposit culturally significant?

   a. What is the heritage value of the deposit, both scientifically and culturally?

   b. How does the Aboriginal community view and value the deposit identified?

7. Is there a deposit worthy of conservation or of future research?

   a. Where and what deposits should be conserved for future generations?

b. Which deposits should be subject to more extensive investigations?

In addition to the questions above, specifically the results from the Zone 11 East test excavation consider the following:

8. How do the archaeological deposits compare to those in the Zone 11 testing area?
9. What is the general nature of stone artefacts recovered from the study area and how do they compare to those in Zone 11? How can the stone artefact assemblage be characterised?
10. Is the archaeological deposit culturally significant? How does the Aboriginal community view and value the archaeological findings for this area in conjunction with the results from Zone 11?

4.4 Significance Assessment

Management of Aboriginal cultural heritage within the study area is largely based on an assessment of its significance.[4] Generally, an assessment of the significance of Aboriginal cultural heritage considers two factors—archaeological (or scientific) values, and the cultural values identified by the RAPs.

Consideration of these two values would allow an assessment of the significance of cultural heritage within the study area. An assessment of the cultural significance of any objects or places identified within the Zone 11 East study area will be sought from the RAPs prior to the finalisation of the ACHAR. Should any restrictions apply to the cultural knowledge supplied (for example, male-only information), these will be strictly adhered to by the proponent.

The archaeological significance of any Aboriginal objects or places identified within the study area would be assessed in accordance with *The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance, 2013* (the Burra Charter).[5]

Any archaeological potential would be mapped and zoned as high, moderate or low, based on consideration of the predictive model for the study area and the assessed archaeological significance criteria.

4.5 Analysis and Reporting

Following test excavation, all recovered Aboriginal stone objects (artefacts) will be subject to analysis by one of GML's stone artefact specialists, in accordance with the analytical methods used for the previous investigation, analysis and reporting.

Recording of all relevant attributes will be undertaken in accordance with Requirement 19 of the Code of Practice and widely used Australian stone object analysis techniques.[6] Outcomes from the analysis will be incorporated into the technical report that has previously been prepared addressing the research questions presented above, and research outcomes will be updated as appropriate.

Following test excavation, a discussion will be held with the Aboriginal community to assess the excavation results and to determine the mechanism for ongoing management of the recovered artefacts.

Should human skeletal material be identified during the test excavation, work will cease in the immediate area, and Heritage NSW and the New South Wales Police Department will be notified.

If recovered, carbon samples associated with cultural features would be submitted for carbon dating.

Landscape analysis and all other reporting will be undertaken by GML, assisted by the field archaeologists present during the test excavation. All results will be analysed with the assistance of ArcGIS, and mapping of sites, place, landscapes and heritage values will be GIS based.

The information derived from test excavation will be used to expand the heritage values assessment of the study area. The heritage values assessment will be written up in an ACHAR which will provide direction for conservation of Aboriginal heritage and an impact analysis for all known objects, sites, places and values within the study area. The report will detail any sites and places that require further study and excavation (if they cannot be conserved during the development process).

The report will also compare and contrast the study area within the wider region and provide direction for future studies and predictive models.

All Aboriginal objects and sites identified during the survey will be reported to Heritage NSW for inclusion on the AHIMS.

4.6 Community Input

This methodology has been provided to all RAPs for their review and comment. Any input from the RAPs will be considered in the final methodology for the project.

As part of the ongoing RAP consultation process, the test excavation program would include the RAPs to assist in the work. The field team will include three GML archaeologists along with a select number of RAPs to be determined in conjunction with ARTC. Modification of the proposed program will only be in consultation with the RAPs.

GML is currently planning the archaeological test excavation component of this project, and intend to commence this work following the 28-day review period for this methodology. In accordance with Heritage NSW guidelines, please provide written and/or oral comments by **4 December 2020**.

4.7 Endnotes

1 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* pp 24–28.

2 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 24.

3 DECCW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales,* p 25.

4 Department of Environment, Climate Change and Water 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

5 Marquis-Kyle, P and Walker, M 2004, *The Illustrated Burra Charter*, third revision, Australia ICOMOS.

6 Holdaway, S and Stern, N 2004, *A Record in Stone: The Study of Australia's Flaked Stone Artefacts,* Museum of Victoria and Aboriginal Studies Press, Melbourne.

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix H Context sheets for test units

Appendix H

Context sheets for Test Units (TU) excavated during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Zone 1, TU 4.
Excavators	Jarrah, Jack & Sarah	Date 7/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	2
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	IRONBOIG CREEK		
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

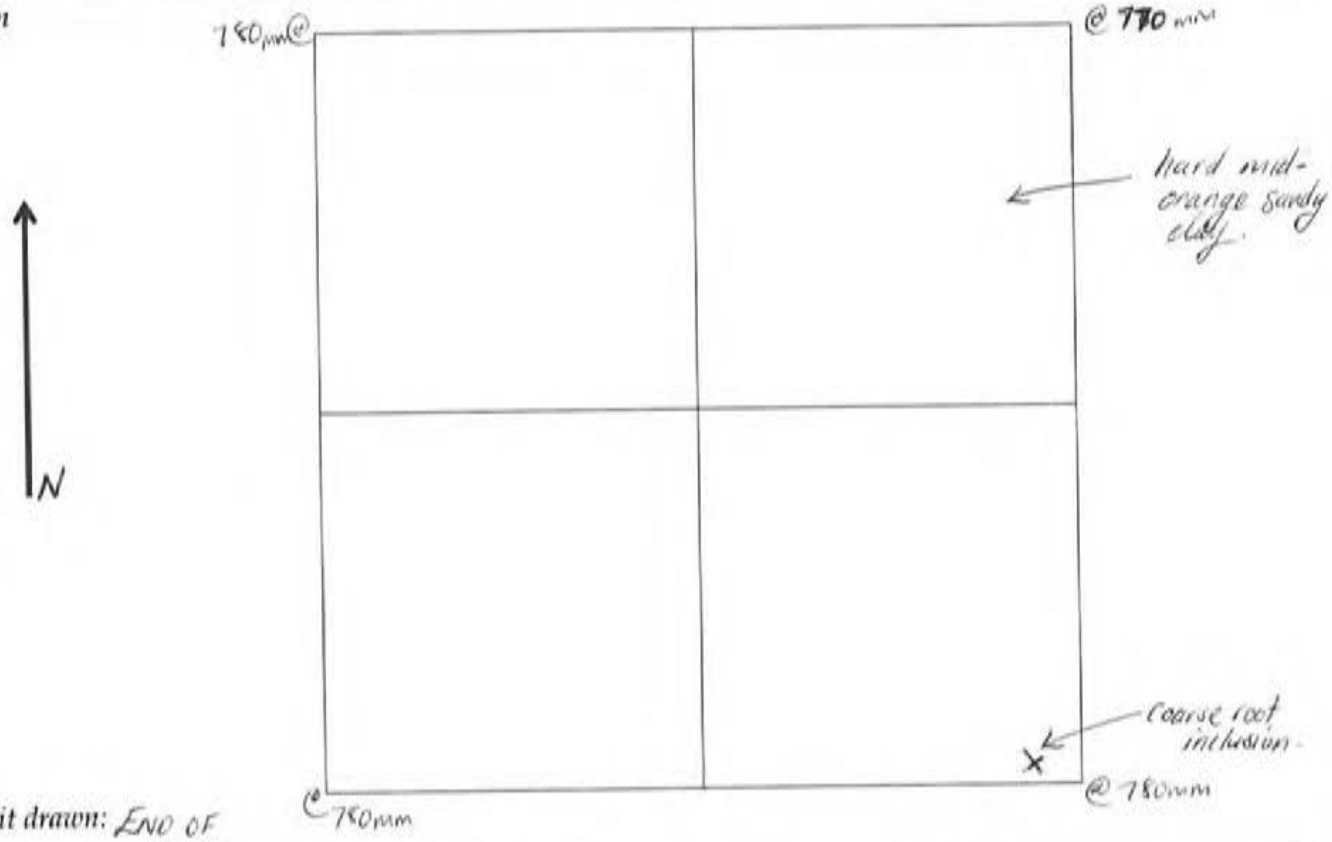
EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A
3	100	A1 A2 (B) Other			N/A
4	100	A1 A2 (B) Other			N/A
5	100	A1 A2 (B) Other			1
6	100	A1 A2 (B) Other			N/A
7	100	A1 A2 (B) Other			1
8	~~Base~~ 80				N/A
Totals	780				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer A1	Spit 1	Eg. Gravels, sand, litter, evidence of disturbance etc. Surface sparse grass and coarse fine. A1 = ~10cm thick, pale grey brown to Sandy Brown - Loam, v very fine, soft silty clay loam, pale orange to orangey brown in colour. Very fine to fine root inclusions, c. 2-5%, and stone inclusions to centre and inclusions.
A1 B	Spit 2	As above, but slightly paler in colour, and slightly to moderately compact. Very fine to fine root inclusions c. 2%. Few medium to coarse root inclusions. Fine gravel-size charcoal inclusions, c. 1% or less.
A2 B	Spit 3	As above, with c. 1% charcoal inclusions. Very fine root inclusions c. 1%. A single medium root inclusions in the N section, and one coarse root inclusion in the same section.
B	Spit 4	As above, with no charcoal inclusions. A single medium root inclusion in the N face, and very fine root inclusions c. 1%.
B	Spit 5	As above, slightly darker orange in colour, more compact and more compact. Seems to be a slight increase in clay content. A single silcrete (?) artefact found at base in this spit. Slightly brownish orange sandy silty clay loam.
B	Spit 6	As spit 5 above. Appears to be a darker but friable darker orange clay in the NW corner of the TU. No artefacts found in this spit. A single coarse root inclusion in the S section. Fine root inclusions c. 1%.
B	Spit 7	Description of material below B or the limit of excavation: As above. A compact, slightly orange silty clay loam, NW with a higher clay content than spit above. Becoming a sandy clay at base. Fine root inclusions c. 0.5%, a single coarse root inclusion in S section. Rare fine gravel-size charcoal inclusions.
B	Spit 8	As spit 7 above. A compact to very mid orange silty clay loam to sandy clay. No artefacts. No (or very rare) very fine root inclusions. A single coarse root at base, in SE corner. Base of TU, a hard mid orange sandy clay. Mottled but uniform.

Plan

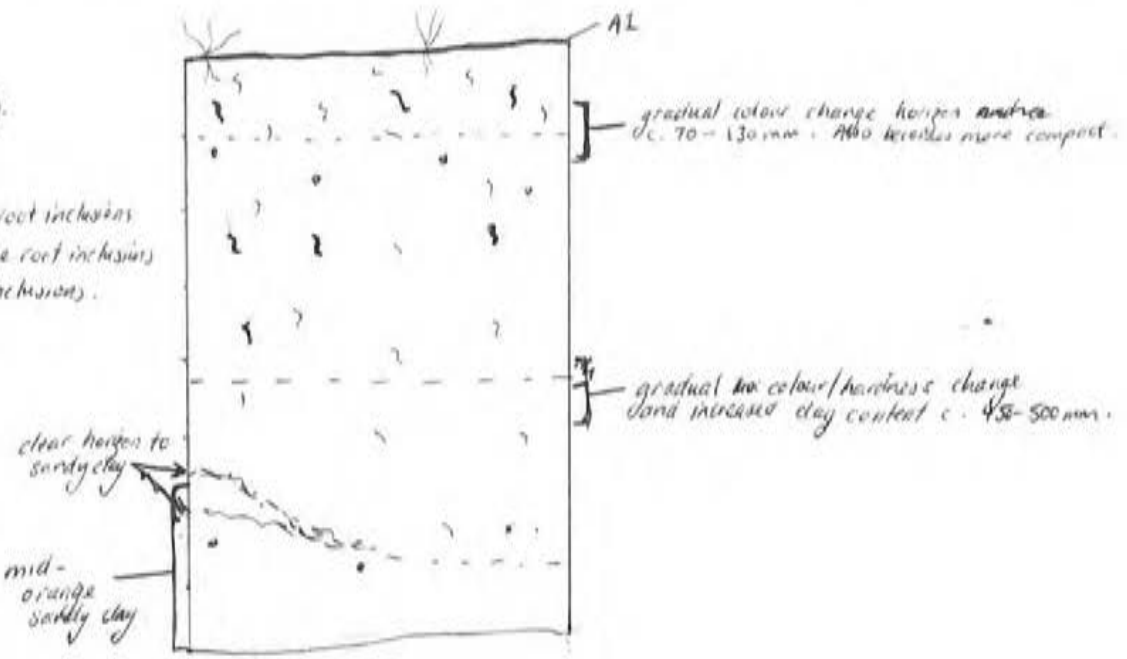


Spit drawn: END OF EXCAV

Section Plan

Face: NORTH
Scale: 1:10 (APPROX).

KEY
- Very fine to fine root inclusions
- medium to coarse root inclusions
- fine charcoal inclusions.



Further descriptions and relationships to other TU

- Note that gravel/stone inclusions of any sort were extremely rare in this deposit — ~~there were no root examples~~ aside from the two artefacts, there was next to no stone in this TU, of any size.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 1, TU 5
Excavators	Sarah, Jodi & Jirrah.	Date 6/5/2019	PAGE 1/2

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

PAGE 1/2

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	IRONBONG CREEK		
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION

wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other. c. 1cm			N/A
2	100	A1 A2 (B) Other			N/A
	100	A1 A2 (B) Other			N/A
4	100	A1 A2 (B) Other			N/A
5	100	A1 A2 (B) Other			N/A
6	100	A1 A2 (B) Other			N/A
7	100	A1 A2 (B) Other			N/A
Totals	700 + (see p. 2).				

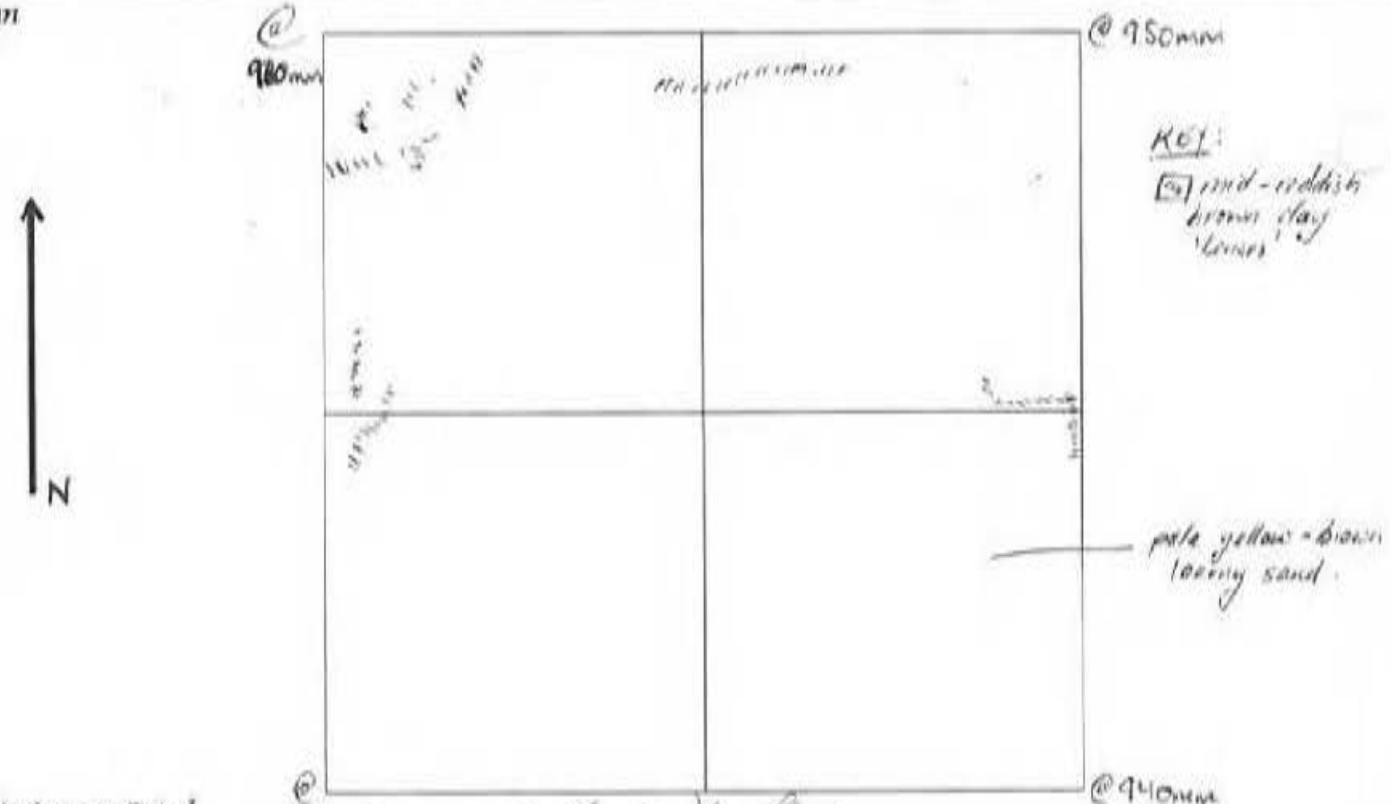
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	Spit 1	Eg. Gravels, sand, litter, evidence of disturbance etc. Surface – Moderate long grass cover; A1 layer < 1cm, mid brown, very fine sandy loam with frequent fine root and other organic inclusions. Rest of spit below A1 = pale brown sandy loam, very soft, very fine. Very fine root inclusions, few to common in frequency. Very few fine gravel inclusions, < 1%. Relatively clear horizon change from deposit to deposit below at c. 10cm on the N, S & W faces of TU.
A1 B	"	
A2 B	Spit 2	Clear horizon change from deposit above, occuring at c. 15cm on the eastern side of TU. A very fine, soft pale yellow grey-brown loamy sand, with very fine root inclusions, and < 1%. very fine quartz gravel inclusions. Becomes paler in colour with depth.
B	Spit 3	As above (spit 2), but paler in colour, and slightly more compact (but still soft!). → and more uniformly pale yellow grey-brown.
B	Spit 4	As above, relatively uniform pale yellow grey-brown. Soft, and very fine loamy sand. Increase in fine quartz gravel fregency in this spit to c. 2%. Fine gravel-size charcoal inclusions, < 1%. Very fine root inclusions c. < 1%.
B	Spit 5	As above. Started to hit a mid reddish-brown sandy clay at base of spit (50cm depth) on south, west, north + E sides of TU. Very fine gravel size charcoal inclusions < 1%. Fine quartz gravel inclusions c. 2-5%. Very fine root inclusions c. < 1% (bioturbated).

Description of material below B or the limit of excavations

Thought that this clay was the clay layer where we would stop, but proved to be a c. 5cm clay layer that was easily dug through.

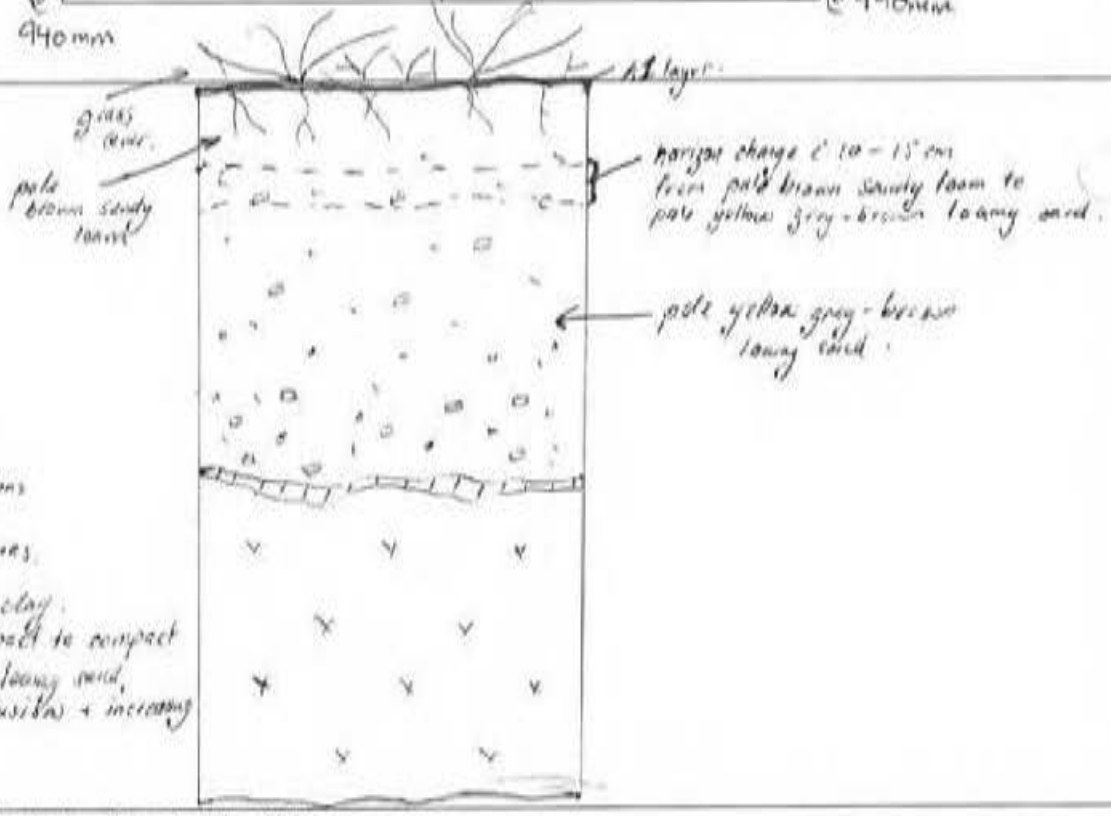
Plan



Spit drawn: End of Excavation

Section Plan

Face: South
Scale: 1:10 (APPROX)



KEY:

- very fine root inclusions
- charcoal inclusions
- quartz gravel inclusions.
- mid - reddish - brown clay.
- slightly lightly compact to compact pale yellow - brown loamy sand, ironstone gravel inclusions + increasing clay content.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 1, TU 5
Excavators	Sarah, Jodi & Jacob	Date 6/5/2019	PAGE 2/2

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

PAGE 2/2

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	IRONBONG CREEK	
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved (dry sieved)

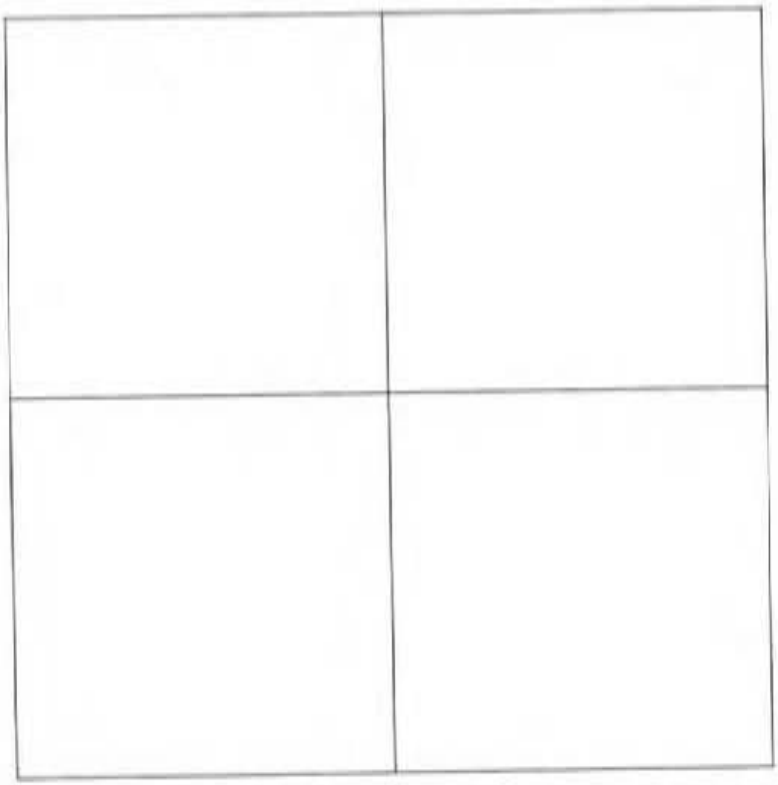
Spit #	Depth (mm) (CONTINUOUS FROM P.1)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
8	100	A1 A2 (B) Other			N/A
9	100	A1 A2 (B) Other			N/A
10	40 – 60	A1 A2 (B) Other			N/A
		A1 A2 B Other			
		A1 A2 B Other			
		A1 A2 B Other			
		A1 A2 B Other			
Totals	940 – 960				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Topsoil Layer	8	Eg. Gravels, sand, litter, evidence of disturbance etc. fine ironstone gravels c. 1-2%
A2 SPIT 6	B	Top of spit (i.e. top 2-3cm) a fine compact but friable and moist reddish-brown sandy clay, over most of this pit, except in the NW corner. Below this, a distinct layer of yellowish-brown (pale) loamy sand, coarse fine, but coarser grained than above. No charcoal inclusions, and few gravels.
A2 SPIT 7	B	As above: clay content increasing with depth, but still largely a loamy sand. Fine ironstone gravels c. 1-2%
SPIT 8	B	As above, but sandy clay (compact, friable reddish-brown) beginning to show up in NW corner. Now compact, rather than lightly compact. Fine ironstone gravels c. 1-2%
SPIT 9	B	As above. Fine ironstone gravels c. 1%
SPIT 10	B	As above. Some lenses of mid reddish-brown clay showing up, but clay layer still not reached. Fine ironstone gravels c. 1%

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

SEE PAGE 1 FOR PLAN + SECTION

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 1, TU. 6
Excavators	SARAH, JODI, JIRRAH	Date 7/5/2019	

SUMMARY OF EXCAVATION

tal Count Aboriginal Objects	
Other evidence?	TU incomplete
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	IRONBONG CREEK	
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved (dry sieved)

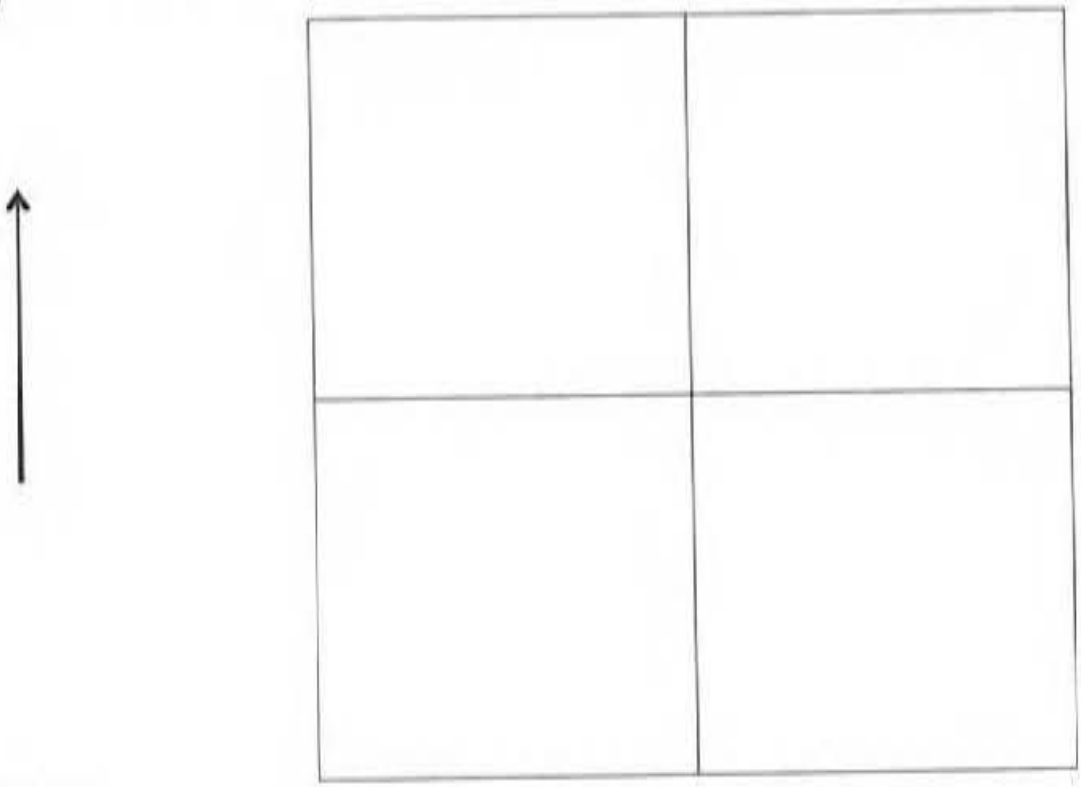
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1		(A1) A2 (B) Other (≈ 1cm)			N/A
2		A1 A2 (B) Other			N/A
3		A1 A2 (B) Other			N/A
4		A1 A2 (B) Other			
5		A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer A1 B	Spit 1	~~Grasses, sand, litter, evidence of disturbance etc~~ Sparse grasses present and patches of burned over ash on surface. A1= mid grey fine loamy sand ≤ 1cm thick. Base shows as mid orange/yellow brown, very fine
A1 B	Spit 2	
A2 B	Spit 3	
B	Spit 4	
B		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	7 Zone 1 1 of 2
Excavators	Seb Steve + pete	Date 7/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	Icombong Creek	
Landform	(Creek Bank) / (Terrace) / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) (A2) B Other			
3	100	A1 (A2) B Other			
4	100	A1 (A2) B Other			
5	100mm	A1 (A2) B Other		Fleked grants	1 small
6	100mm	A1 (A2) B Other			
7		A1 A2 B Other			
Totals					

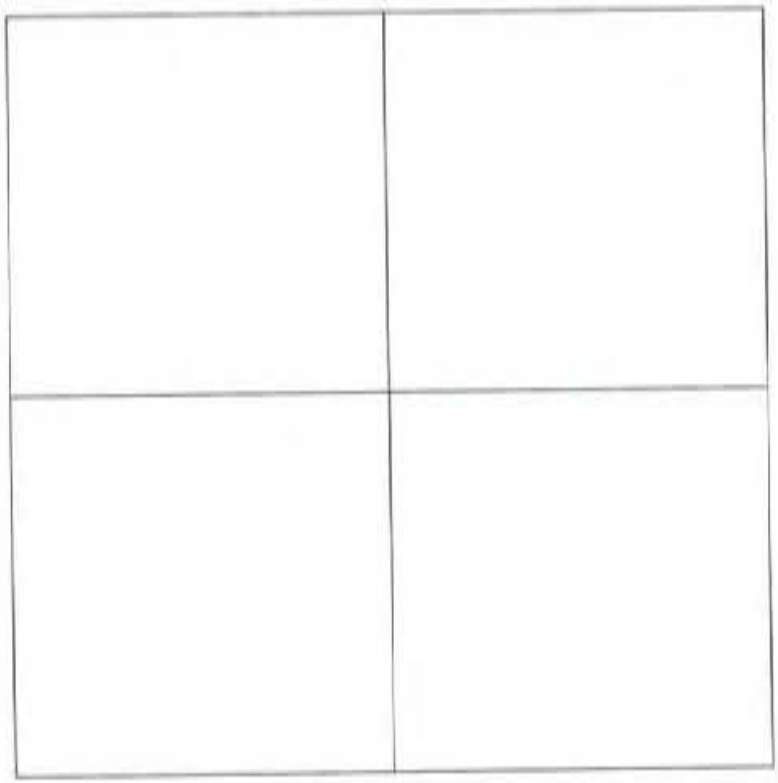
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. plant material, grasses, dead roots bees + some erosion
A1	100mm	Alluvial silty loam, highly organic ~~calcitic~~ material, lightly compact with grass roots bioturbation
A2	100	Alluvial silty loam, high organic content with some grass roots very fine
	100	Alluvial silty clay loam, compact, light brown fine roots/less than 1%
	100	Alluvial silty clay loam, compact, light brown, dry fine
	5	Alluvial Fine silty clay loam, compact, light brown in colour and dry
	6	Fine Alluvial silty clay loam, compact, light brown and dry

Description of material below B or the limit of excavations

Continued

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	7 Zone 1 252
Excavators	Seb Steve pete	Date 7/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Ironbong Creek		
Landform	(Creek Bank) / (Terrace) / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

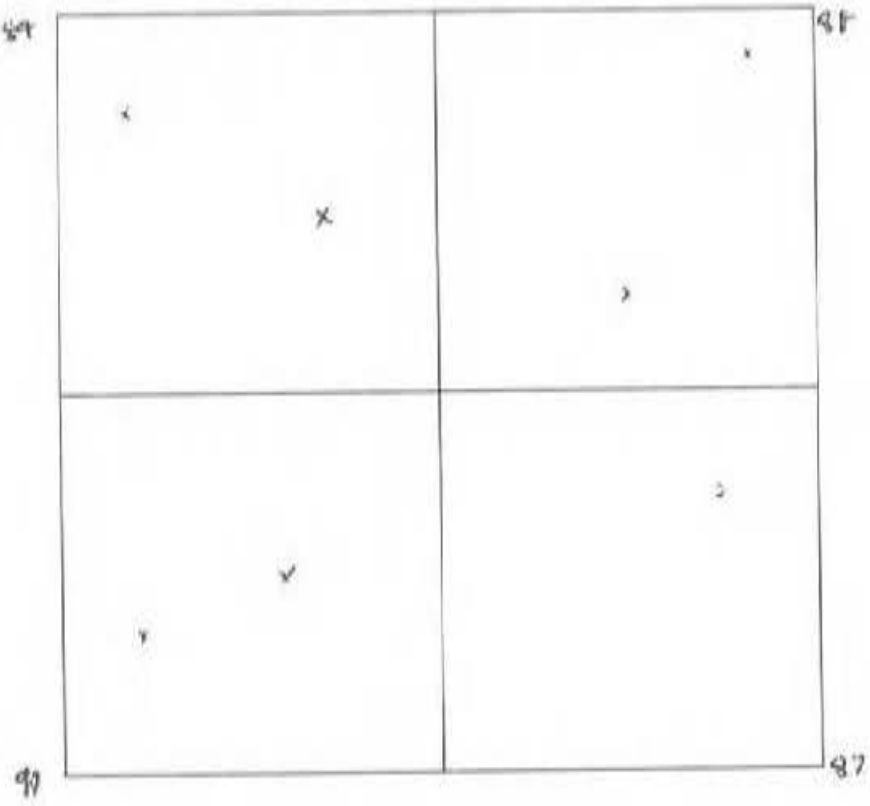
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
#7	100mm	A1 (A2) B Other			
#8	100mm	A1 (A2) B Other			
9	100mm	A1 (A2) B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	7	Alluvial silty clay loam, Compact dry with less than 1% bioturbation from very fine grass roots
A2	8	Alluvial silty clay, Compact dry very fine tree roots. less than 1% no visible evidence of clay etc
	↓ 9	excavation was stopped at a limit of 900mm

Description of material below B or the limit of excavations presumably Horizon boundarys are diffuse and gradual

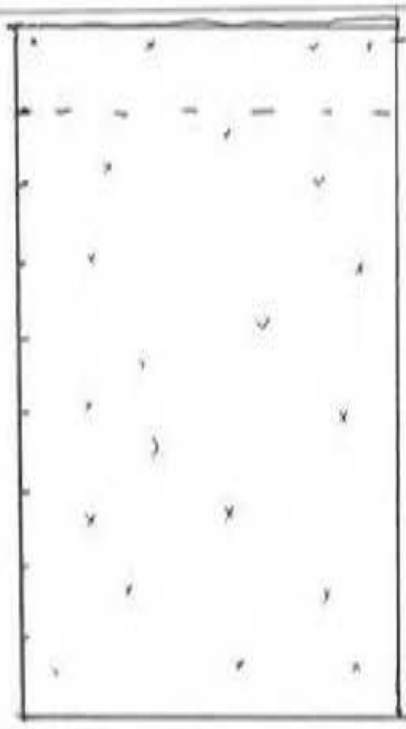
Plan



Spit drawn:

Section Plan

Face: south
Scale: 1-10



area of dampness from recent rain

very fine roots

limit of pit

Further descriptions and relationships to other TU

no clear soil Horizons, all soils consistent throughout with fairly consistent 1% fine tree roots.

ZONE 1 PIT: 8

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	8 (1 of 2)
Excavators	REBECCA VARNEY KEITH FREESTAN, CAROLINE ERSKINE	Date 6.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	X1 WORKED RIVER COBBLE. (X1 negative with scar + evidence of pitting.)
Other evidence?	–
Worthy of expansion? How?	Possibly depending on what is found in later test pits.
Plan #	
Samples (description & number)	–

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Alluvial / Reworked Silty Sand to potential evidence of old surface @ recent 60-70cm depth (?)		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	3-5%

EXCAVATION wet sieved dry sieved

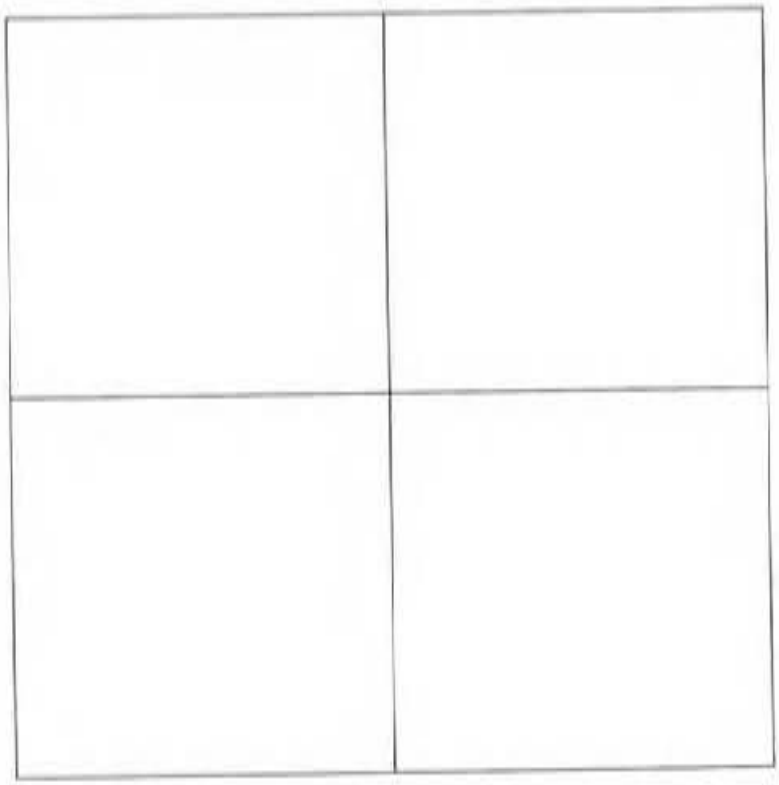
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	50	(0-20cm) A1 A2 B Other		SMALL GRAVELS (ROUNDED / ANGULAR) NON-ACHEMIAN	Ø
2	100	A1 A2 (B) Other			Ø
3	150	A1 A2 (B) Other			Ø
4	200	A1 A2 (B) Other			Ø
5	250	A1 A2 (B) Other		SMALL (X2) QUARTZ FRAGMENTS	Ø
6	300	A1 A2 (B) Other			Ø
7	350	A1 A2 (B) Other			Ø
~~8~~ Totals	400	(B)			Ø

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	(All) (1)	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE 95% INTRODUCED GRASSES & GRASSES. SMALL NARROW ROOTLETS.
A1 (0-17cm)	(1) → (4)	SILTY SAND, BROWN, WELL SORTED, ~~strong~~ ~~Early~~ FINE TO MEDIUM GRAINED. FEW SMALL NARROW ROOTLETS @ 0-5CM) LESSENS ABUNDANCY TO DEPTH
~~A2~~ B	2 → 15 (Spit)	SILTY SAND, LIGHT BROWN, FINE GRAINED AND INCREASING TO SILT TO DEPTH. SMALL MINOR INCLUSIONS OF QUARTZ GRAVEL + SMALL (<1%) FRAGMENTS OF SHALE.
		ALLUVIAL = REWORKED SILTY SAND FROM CREEK. THIS AREA APPEARS TO BE SUBJECT TO SEASONAL FLOODING.

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	8 2 of 2
Excavators	REGAN WATTS, LEIGH MCKENNA & MARNIE BRADLEY	Date 6-5-19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	POSSIBLY WORTH EXPANDING NORTHERN WALL DUE TO PRESENCE OF WORKED RIVER COBBLE RECOVERED IN NORTHERN WALL.
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	3-5%

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
9	450	A1 A2 (B) Other			Ø
10	500	A1 A2 (B) Other			Ø
11	550	A1 A2 (B) Other			Ø
12	600	A1 A2 (B) Other	SILTY SAND / ALLUVIAL & RE-DEPOSITED.	WORKED RIVER COBBLE ONE CHERT IN NORTHERN WALL @ 57cm	(x1)
13	650	A1 A2 (B) Other			Ø
14	700	A1 A2 (B) Other	TRANSITIONS INTO THIN SEAM OF SANDY SAND IN NORTHERN PORTION OF SQUARE		Ø
15	756	A1 A2 (B) Other	TRANSITIONING INTO (C) HORIZON.		Ø
Toilet 16	800	(C)	(C) HORIZON RED SANDY	CLAY / COMPACT.	Ø

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	B	Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	B	AT APPROX. 70 – 75cm (SPIT 14 & 15) CONCENTRATION / THIN LENS OF CLAYEY SAND EMERGES IN NORTHERN PORTION OF PIT. SILTY SAND IS STILL PRESENT SOUTHERN PORTION OF PIT
A2		AT APPROX 70 → 85 cm BEGINS A SLOW TRANSITION INTO THE (C) ~~HORIZON~~ HORIZON. RED COMPACT SANDY CLAY. COMPACT AND SLOPING DOWNWARD TO + TOWARD THE SOUTH. THIS MAY BE A TRANSITION FROM AN OLD LAND SURFACE & THE SILTY ALLUVIAL DEPOSITS OF THE RIVER DUE TO CLAY IN THE NORTH THAT SLOPES DOWN TO ABOUT / ~~WARD~~ LATERALLY THE SILTY SAND TO THE SOUTH WITHIN PIT.

Description of material below B or the limit of excavations

Plan

WORKED RIVER COBBLE AT DEPTH OF 57cm.

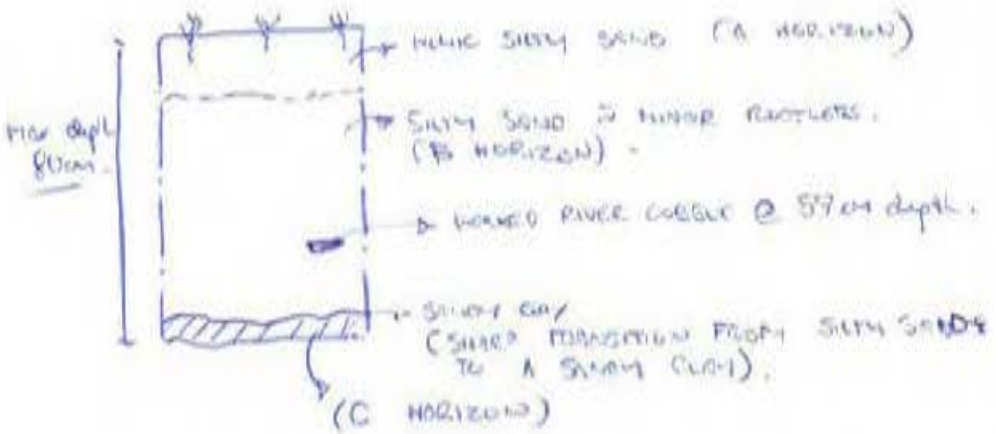
N

Spit drawn:

Section Plan

N

Face: NORTHERN SECTION
Scale: 1:20



Further descriptions and relationships to other TU

SILTY SAND APPEARS TO BE WORKED AND GEOMORPHED ALLUVIAL DEPOSITS W MINOR INCURSIONS OF SMALL QUARTZ GRAVELS + SHALES (>1cm) AND NON-ARCHAEOLOGICAL ROOT DISTURBANCE. SEDIMENTS BEING DEPOSITED DUE TO VARIOUS FLUCTUATIONS IN CREEK. AT APPROX 70-80cm MINOR TRANSITION INTO SOLID CLAY WHICH MAY BE AN OLDER LAND SURFACE DUE TO COMPACTION AND CHANGE IN MATRIX.

N Bilkuborg CREEK
FLOW LOCATED DOWNSLOPE SOME 10-15m to the SOUTH.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	9 zone 1
Excavators	Seb porter + steve	Date 6/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

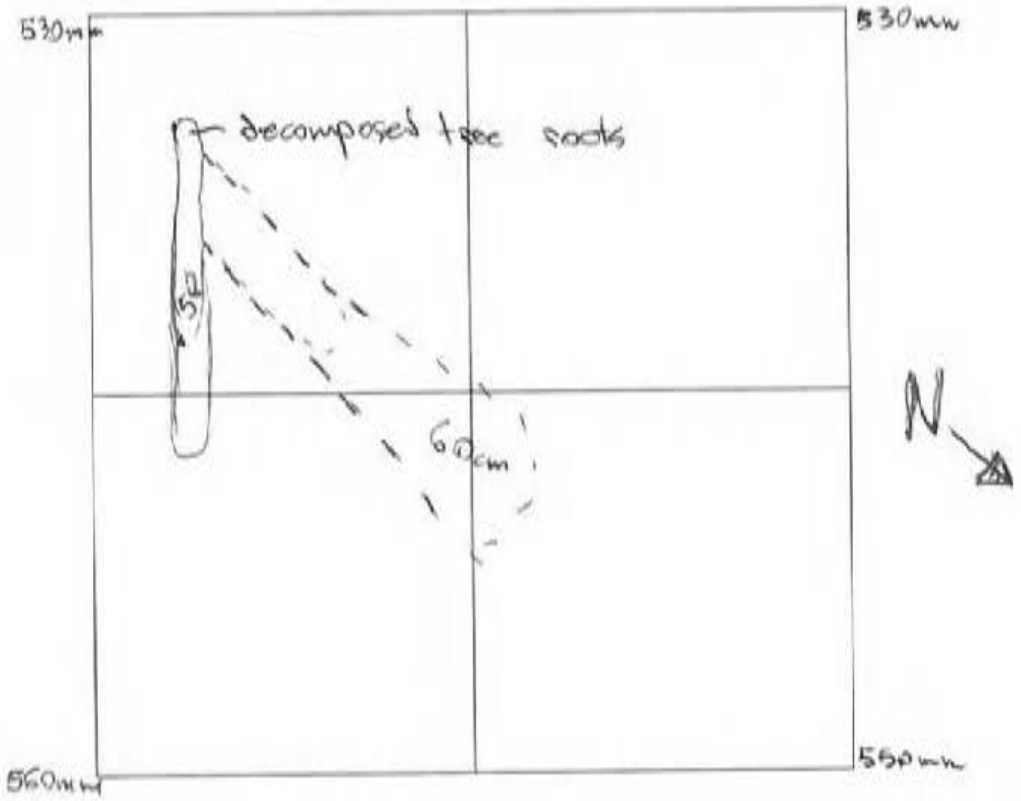
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100mm	(A1) A2 B Other			
2	100mm	(A1) A2 B Other			
	100mm	(A1) A2 B Other			
4	100mm	(A1) (A2) B Other			
5	100mm	A1 (A2) B Other			
6	50mm	A1 A2 (B) Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. grass and Spx/Bindys Flora ground cover
A1	1	Alluvial lightly compact silty loam, slightly damp from recent rain High level of organic matter, grass and plant material
A2	2	Alluvial silty loam, compact, dry light brown slight dampness from recent rain onto dry compact surface
	3	Alluvial silty loam, compact, dry light brown dry continued
	4	Alluvial silty, loam, compact dry with ~~low bioturbation~~ transition to silty clay mottled alluvial clay layer
	5	silty clay very compact transition to sterile clay layer
	6	Base clay with some tree root bioturbation

Description of material below B or the limit of excavations (see plan)

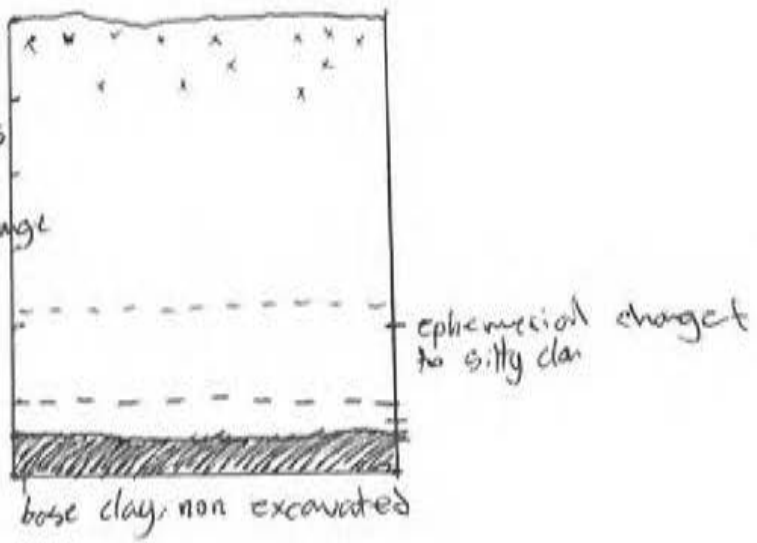
Plan



Spit drawn:

Section Plan

Face: west
Scale: 1-10
Key
x grass roots
Approx soil change



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Z1/10
Excavators	AP, SVANS, DILLON	Date 06/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	/
Worthy of expansion? How?	/
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	IRONBARK CREEK	
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	(N) E S W	Slope %5

EXCAVATION wet sieved (dry sieved)

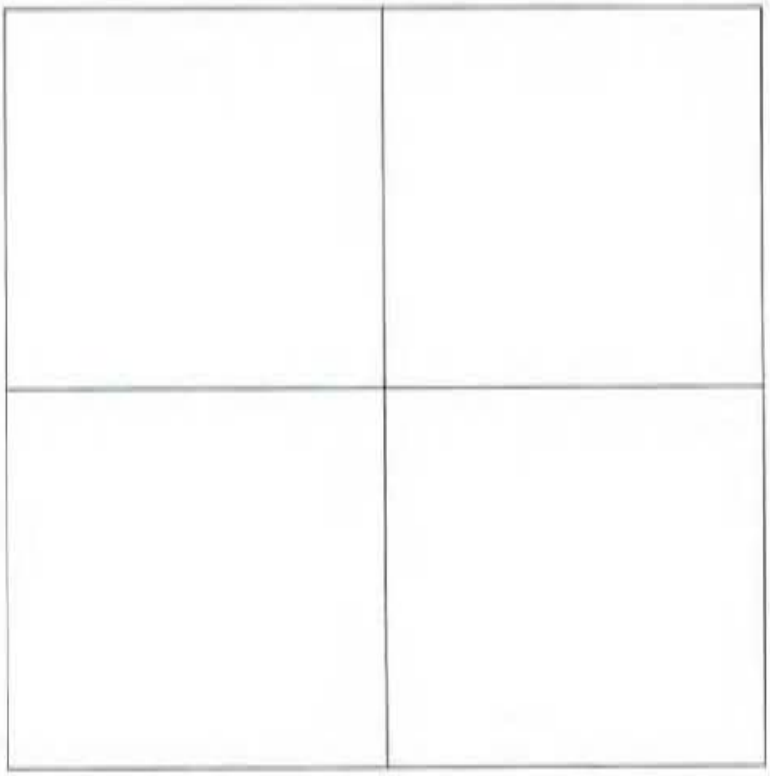
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	10	(A1) A2 B Other			
2	10	(A1) A2 B Other			
3	10	A1 (A2) B Other			
4	10	A1 (A2) B Other			
5	10	A1 (A2) B Other			
6	10	A1 A2 B Other			
7+8+9	10+10+10	A1 (A2) B Other			
Totals	90				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. HEAVY SOIL LITTER – V OCCA
A1	170mm	MID BROWN SILTY LOAM, OCC GRAVEL DISTURB FROM GRASS SLIGHTLY DARK, SOFT. 170mm MIX CLEAR TRANSITION
A2	430mm	SUBSOIL RUBBLY WHITE SILTY MINERAL OCC ROCKS ETC. WATER AT SUBSOIL

Description of material below B or the limit of excavations

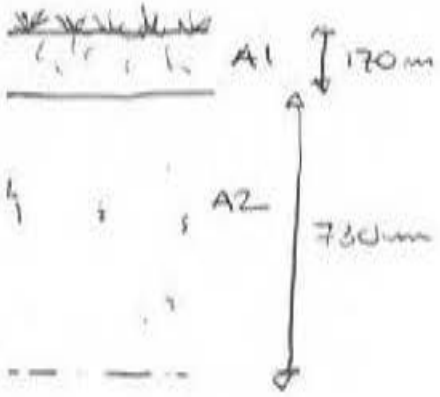
Plan



Spit drawn:

Section Plan

Face: NORTH
Scale: 1:20



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Z1, 11 SHEET 1 / 2
Excavators	AP, JAMES & DILLON	Date 07/05/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	IRONBARK CREEK		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

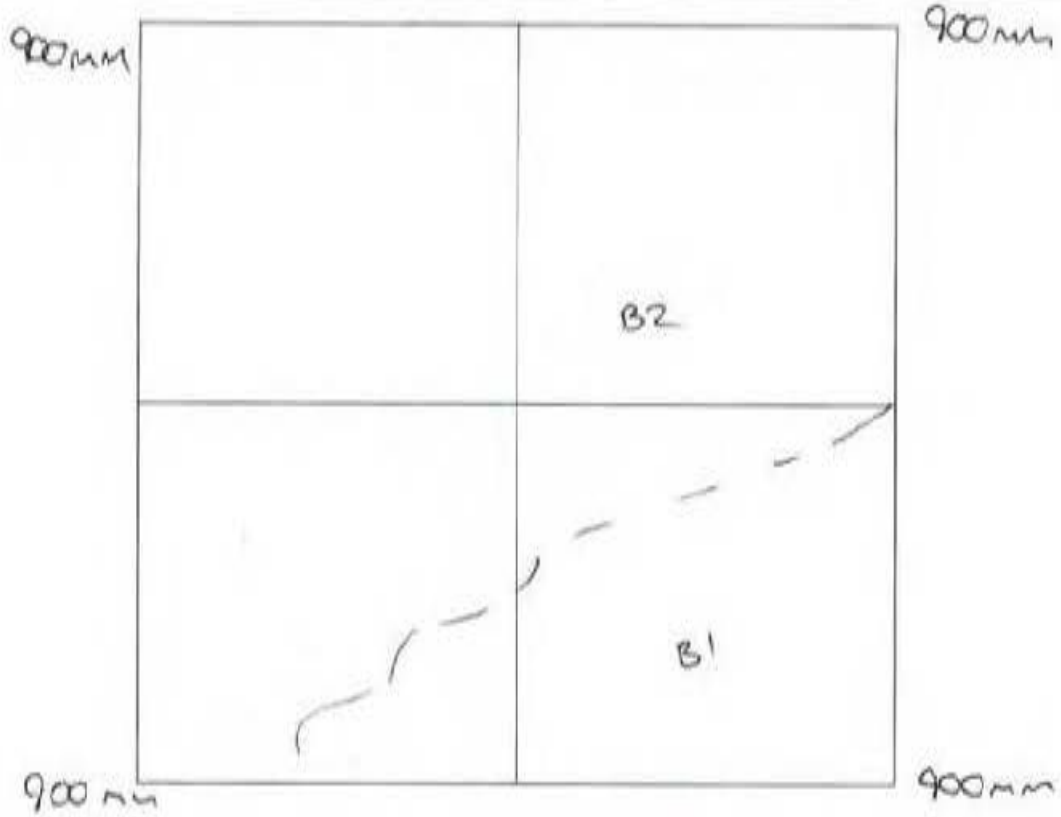
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6	100	A1 A2 (B) Other			
7	100	A1 A2 (B) Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	LEAF LITTER, GRASS	Eg. Gravels, sand, litter, evidence of disturbance etc. DRY GRASS, TWIGS – OCCASIONAL.
A1	1-2 TROWEL SCRAPES AT 140cm DEPTH.	FRIABLE LIGHT BROWN SANDY LOAM, WEAK LIGHT MEDIUM DISTURBANCE FROM GRASS & SOFT, SLIGHTLY CLUMP. CAN). CLEAR TRANSITION TO PALE WHITE A2 SANDY CLAY LOAM, BLEACHED.
A2	2, TROWEL SCRAPES AT 200mm	AS ABOVE.
B1	3-8, TROWEL SCRAPES AT 800mm	CLEAR BOUNDARY WITH PALE GREY BROWN SANDY CLAY LOAM (CAN) WEAK. ROOT DISTURBANCE, MOD. INSECT DISTURBANCE, WEAK. QUARTZ WEVEL. MORE COMPACT
B2	9, TROWEL SCRAPE TO 1000	CLEAR BOUNDARY TO MID ORANGE CONTACT ~~SANDY~~ SAND. SANDY LOAM. CONTINUED INTO LOE.

Description of material below B or the limit of excavations

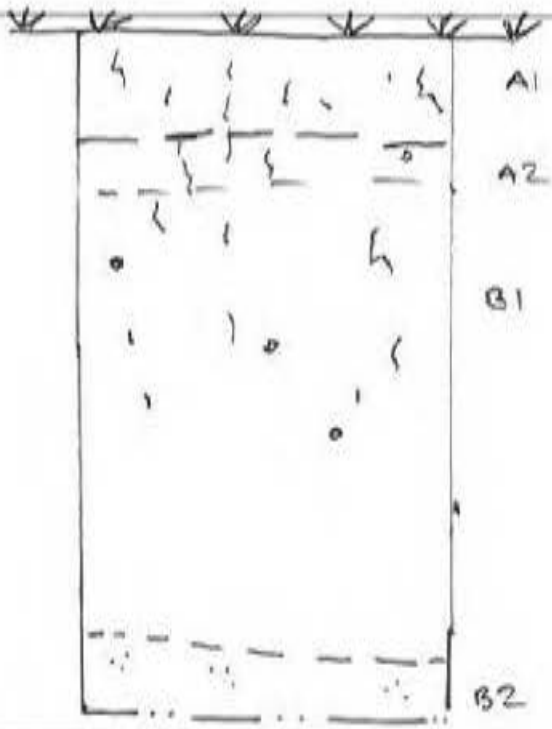
Plan



Spit drawn:

Section Plan

Face: NORTH
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT #**	Z1/1
		PHOTO #	SHEET 2 OF 2
Excavators		Date 7/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

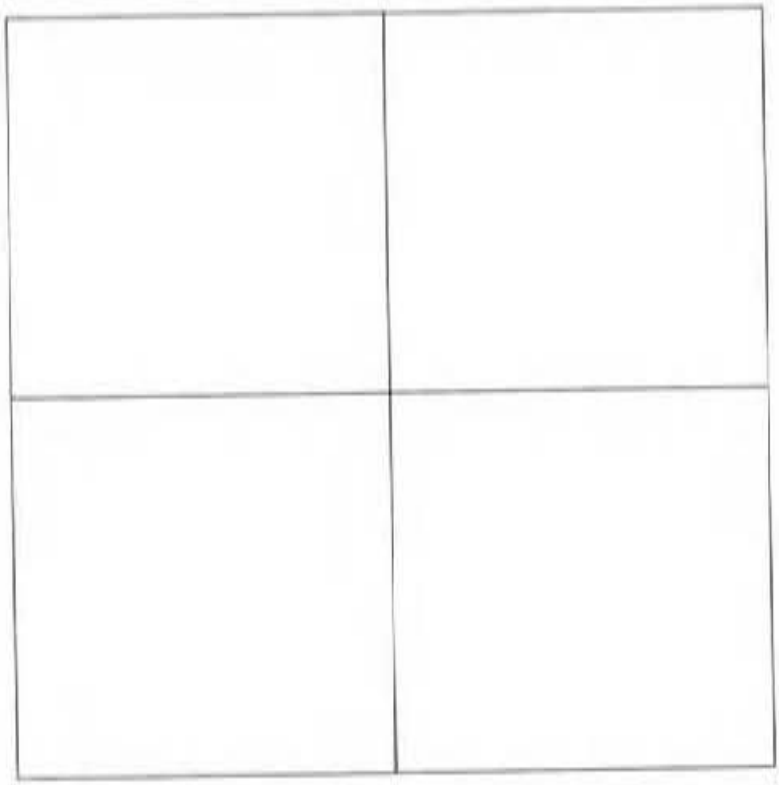
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
~~8~~	100	A1 A2 (B) Other			
~~9~~	100	A1 A2 (B) Other			
		A1 A2 B Other			
~~4~~		A1 A2 B Other			
~~5~~		A1 A2 B Other			
6		A1 A2 B Other			
~~7~~		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 2 PIT 12
Excavators	MARNIE FREEMAN, KEITH FREEMAN, REECE WATTS	Date 9.5.2017	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	x1 ANGULAR QUARTZ FRAGMENT (?) SPIT 2 (100 - 200 mm)
Other evidence?	NONE.
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	—

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	FLAT PLAINS / ALLUVIAL		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope % 3-5%	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0 - 100mm	A1 A2 B Other		INCLUSIONS = RAILWAY GRAVELS THROUGHOUT.	Ø
2	100 - 200 mm	A1 A2 B Other		x1 QUARTZ FLAKE. FRAGMENT (?)	x1
3	200 - 300mm	A1 A2 B Other		—	Ø
4	300 - 400mm	A1 A2 B Other		x1 ANGULAR QRTZ (?) FRAGMENT. (NON-ARTEFACTUAL)	Ø (2) Ø
5	400 - 500 mm	A1 A2 B Other			Ø
6	500 - 600mm	A1 A2 B Other			Ø
7	600 - 700mm	A1 A2 B Other C			Ø
8 Totals	700 - 800mm	C		MINOR QUARTZ PIECES (NON-ARTEFACTUAL)	Ø

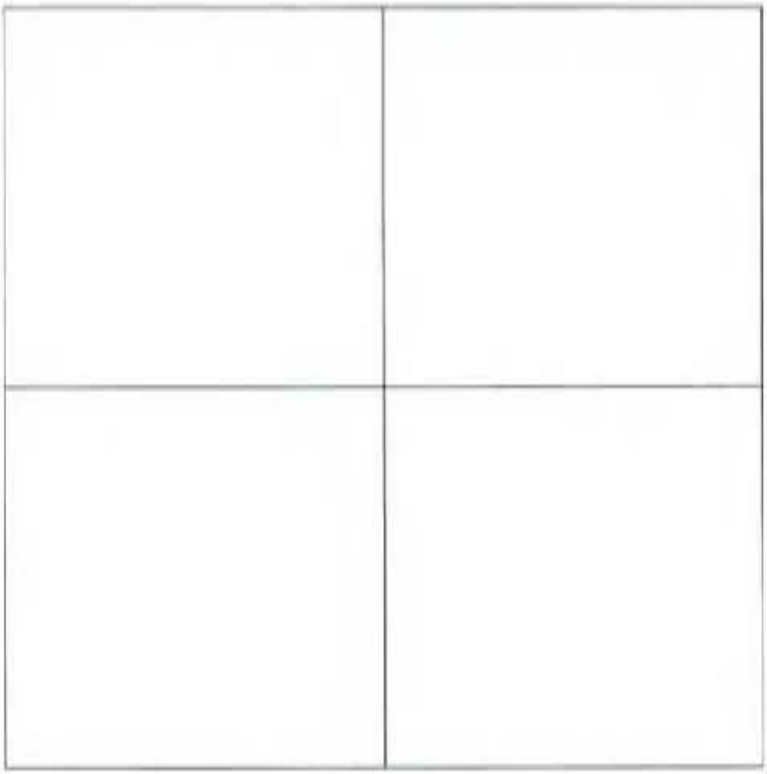
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = 100% WEEDS (EXCEPT WHERE OTHERWISE STATED)
A1	1 → 3	MINOR SILTY SAND W NARROW ROOTLETS AT 0 - 45CM. MATRIX IS DAMP AND BECOMES DRY AT AROUND MUCH DEPTH. WELL SORTED & FINE GRAINED. SMALL INCLUSIONS (≈10%) OF GRAVELS FROM RAILWAY LINE. ROOTLETS LESSENING @ APPROX 30 - 45 cm.
A2 (A2)		
B (HORIZON)	B	SILTY SAND, FINE GRAINED & SLIGHTLY MOIST. MINOR INCLUSIONS (<5%) OF QUARTZ GRAVELS, (<1%) ROOTLETS LESSENING @ 50CM ONWARDS. GRAVELS FROM RAILWAY ARE NO LONGER EVIDENT WITHIN THIS HORIZON.
	SPIT (2)	PARTIALLY AND RAILWAY THROUGH SPIT (2). GRAVELS ARE VOID WITHIN THIS LEVEL.
C HORIZON	C	SILTY SANDY CLAY, COMPACTED AND HARD & VERY DRY. FINE GRAINED & WELL SORTED. POTENTIALLY THE ORIGINAL SURFACE BELOW THE MORE RECENT UPPER LEVELS OF REDEPOSITED ALLUVIAL SILTY SANDS.

Description of material below B or the limit of excavations

SILTY SANDY CLAY - @ 80 cm LIMIT OF EX DUE TO LACK OF ARTEFACTS & PRESENCE OF COMPACTED CLAY BASE.

Plan

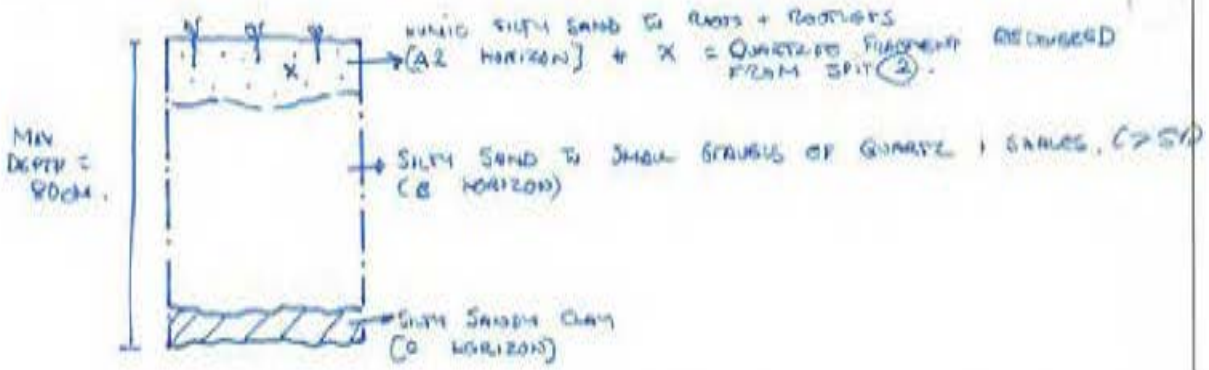


Spit drawn:

Section Plan

Face: NORTHERN ASPECT

Scale: 1:20



*LIMIT OF EXCAVATION AT 80CM DUE TO CLAY BASE / DEPTH + LACK OF CULTURAL/ARTEFACTUAL MATERIAL.

Further descriptions and relationships to other TU

THIS PIT FOLLOWS THE SAME STRATIGRAPHIC PATTERNS AS PIT (14) & (11). ALLUVIAL SILTY SANDS ATOP A LOWER CLAY LEVEL. SMALL QUARTZITE GRAVELS ARE EVIDENT WITHIN PIT HOWEVER HIGHLY UNLIKELY NOT TO BE OF CULTURAL ORIGIN DUE TO SMALL SIZE OF QUARTZITE SUGGESTING IT HAS COME ~~FROM THE~~ FROM THE CREEK DURING TIMES OF FLOODING.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	13 Zone 1 1/2
Excavators	Seb Steve Pete	Date 7/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Ironbark Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

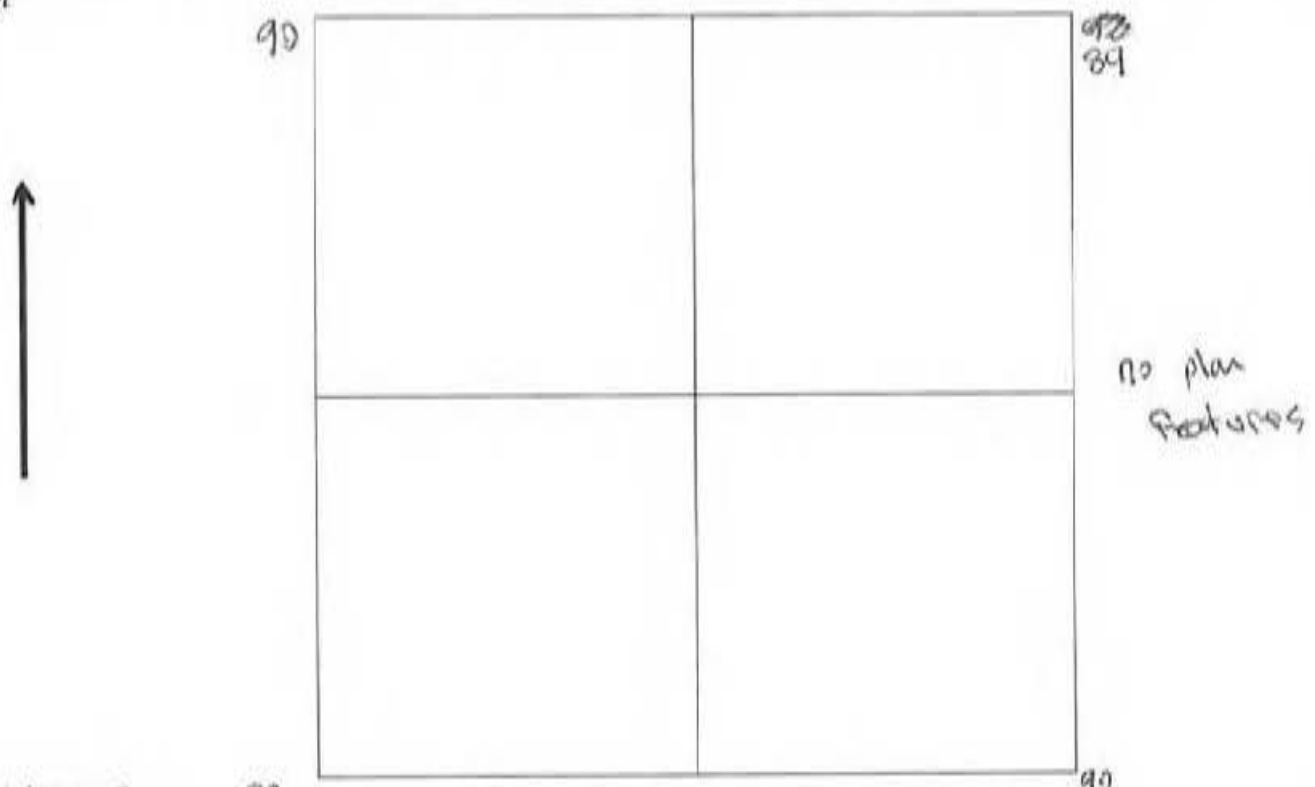
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other		quartzite stone	#
3	100	A1 (A2) B Other		milky quartz + quartz pebbles/non cultural	# (30mm)
4	100	A1 (A2) B Other			
5	100	A1 (A2) B Other			
6	100	A1 (A2) B Other			
7	100	A1 (A2) B Other			
Totals	700	100 100 82 52			

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. vegetation, grass primarily
A1	1	silty clay loam, moist, soft with high organic content, grass roots
A2	2	Friable silty clay loam lightly compact and pale brown clear change to compact silty clay loam yellowish brown - earth worm onto very compact
	3	Silty clay loam, very compact Brown with fine gravel loose Brown silty clay with inconsistent composition from compact to very compact + fine root
	4	silty clay very compact brown with fine gravel inclusions
	5	a large tree root and some very fine roots compact soil clumps show alot of bioturbation small organisms
	6	silty clay loam compact and light in colour loose from above
	7	Compact light brown silty clay Some fine gravel and fine roots

Description of material below B or the limit of excavations

Plan



Spit drawn: 9

Section Plan

Face:

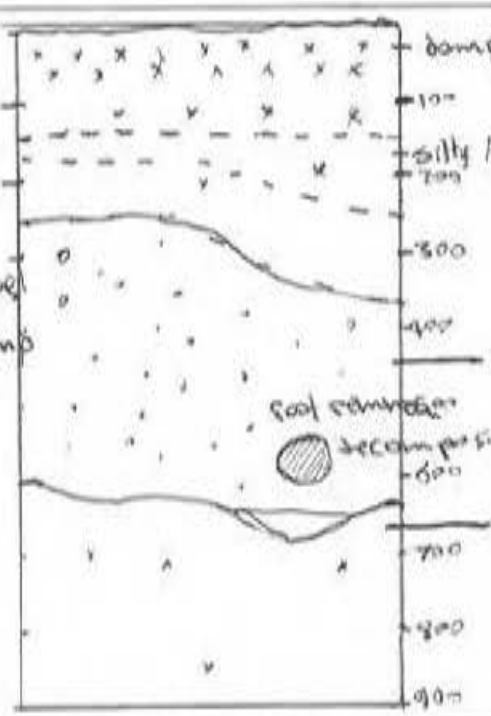
Scale:

Key

x fine root

o fine gravel

tree decomposed



Farther descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	13 Zone 1 2/2
Excavators	Seb steve pete	Date	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Isonbecah		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

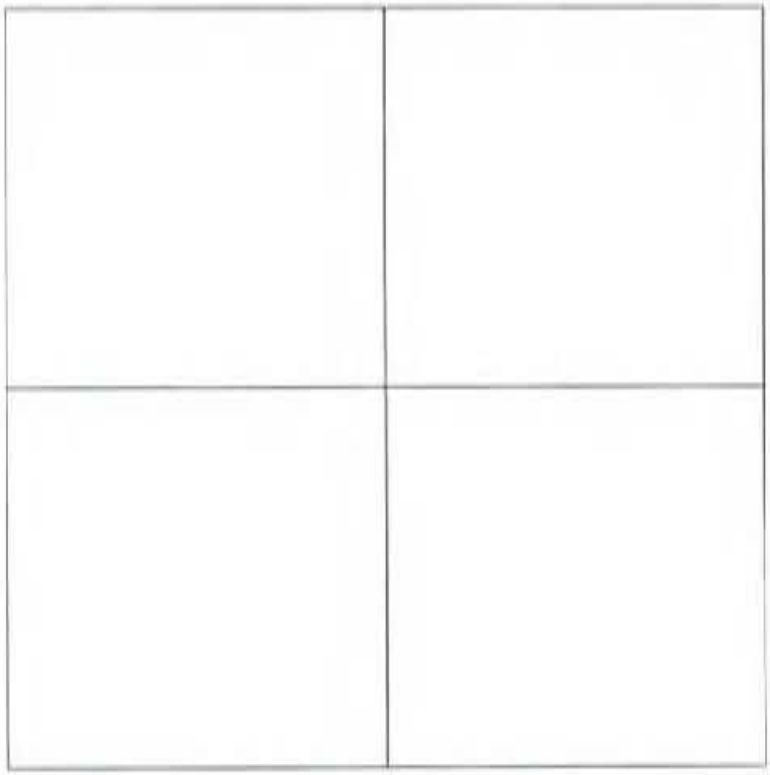
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100/200	A1 (A2) B Other			
2	200/900	A1 (A2) (B) Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	100/400	Compact silty loam, pale brown below very compact fine gravelly
A2	100/900	limit of excavations same as above

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	14
Excavators	Lisa + Lara	Date 7.5.2019	

JMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	TU incomplete
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Ironbong Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

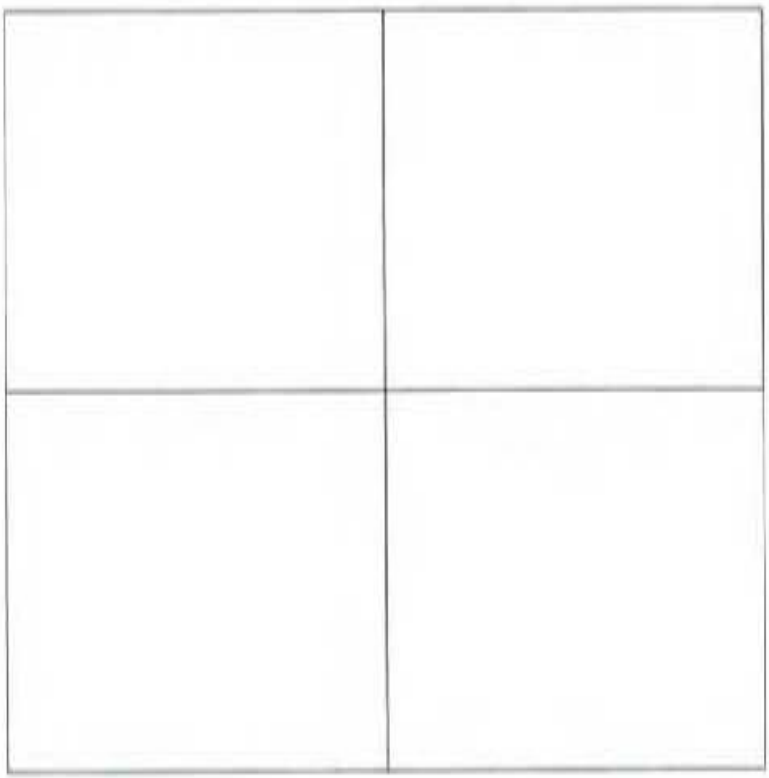
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0-100	A1 A2 B Other			
2	100-200	A1 A2 B Other			2
3	200-300	A1 A2 B Other			
4	300-400	A1 A2 B Other			1
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	15
Excavators	Seb, Stese, Pete	Date 7-5-2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	TU incomplete
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Ironbong Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

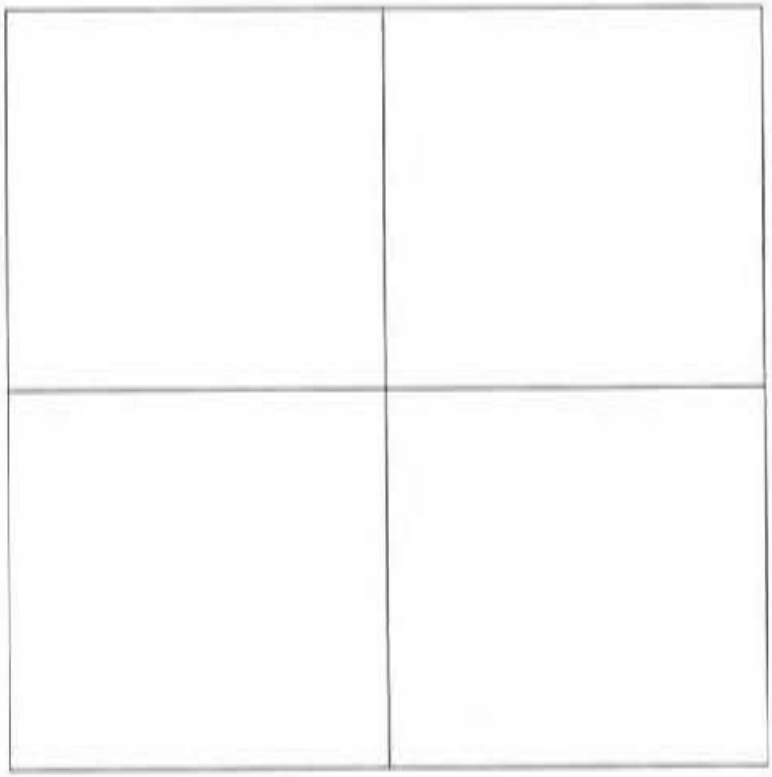
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0-100	A1 A2 B Other			0
2	100-200	A1 A2 B Other			0
	200-300	A1 A2 B Other			0
4	300-400	A1 A2 B Other			0
5	400-500	A1 A2 B Other			0
6	500-600	A1 A2 B Other			0
7	600-700	A1 A2 B Other			0
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 1 PIT #16
Excavators	KEITH PEDERSEN, HEIDIE PEDERSEN, REBECCA YARTO	Date 7-5-2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	-
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting □□□□□□	Northing □□□□□□	
Soil landscape	IRONBARK CREEK		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 1% (Slightly undulating)	

EXCAVATION wet sieved dry sieved

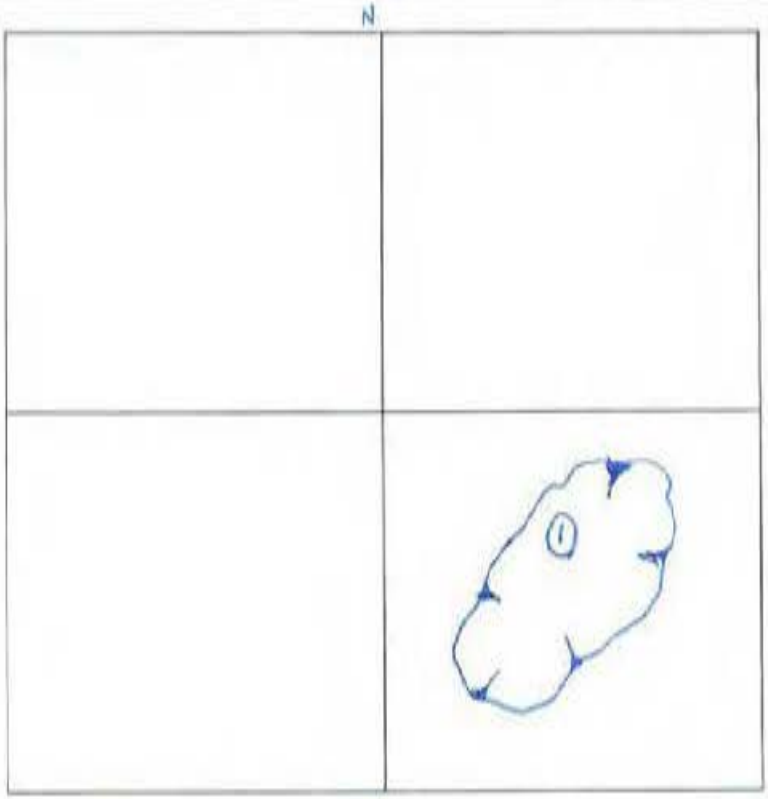
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
				SMALL ANGULAR MILKY QUARTZ FRAGMENTS = GRAVEL PLAIN CHUNKY.	
1	0 - 100 mm	(A1) (A2) B Other		TRACEMENT OF RIVER COBBLE IN CONTEXT. (x1)	x1 (Possible)
2	100 - 200 mm	A1 A2 (B) Other	DIFFUSED / GRADUAL CHANGE FROM INTO B HORIZON.	ANGULAR QUARTZ FLAKE (?) (Possible, NON-CULTURAL - NOT CONFIRMED)	~~Ø~~ x1
3	200 - 300 mm	A1 A2 B Other		SMALL ANGULAR MILKY QUARTZITE FRAGMENTS (<1%)	Ø
4	300 - 400 mm	A1 A2 B Other		SMALL ANGULAR MILKY QUARTZITE (<1) NON-CULTURAL	Ø
5	400 - 500 mm	A1 A2 B Other		SMALL AMOUNT QUARTZ GRAVELS (<1%).	Ø
6	500 - 600mm	A1 A2 B Other			Ø
7	600 - 700 mm	A1 A2 B Other		(1) ANGULAR QUARTZ PIECE (NON-ARTEFACTUAL)	Ø
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	0- 3mm	Eg. Gravels, sand, litter, evidence of disturbance etc. INTRODUCED WEEDS 100% COVERAGE. PEBBLES (0-6 100 mm) AND LESSENING IN DEPTH. (A1 & A2 HORIZONS)
A1	1 → 2	REMNANT TOPSOIL. HUMIC, FINE GRAINED, MOIST SOFT SANDY. DIFFUSED TO GRADUAL TRANSITIONS INTO B HORIZON.
A2		FRAGMENT OF RIVER COBBLE IN CONTEXT BASED DUE TO ITS CLOSE PROXIMITY TO BURIED RIVER COBBLE CLUSTER AT PIT (1m NW OF THIS PIT) FOUND ON SURFACE.
	(B HORIZON)	SPITS (2)-(3) TO SPITS (5) SILTY SAND, FINE GRAINED & VERY SORTED W MINOR INCLUSIONS OF ANGULAR MILKY QUARTZITE FRAGMENTS (NON-ARTEFACTUAL) (<1%). CIRCULAR VOID WITH LOOSE SILTY SAND FILL WITHIN SE PORTION OF PIT. APPEARS TO BE OLD ANIMAL BURROW. SMALL NODULE CHARCOAL (<1%)
		* PLEASE NOTE IS WITHIN THE B HORIZON AT APPROX. 40-50cm AND CONTAINING REMNANT INSECT EXCREMENT EXCAVATIONS. THIS IS DUE TO SMALL NODES FOUND WITHIN LARGER MASSIVE DARK BROWN STRINGS AND 'BALLS' & VERY COMPACT NATURE OF THE MATRIX. APPEARS TO BE AN OLD ANT NEST THAT HAS COMPACTED THROUGH TIME.

Description of material below B or the limit of excavations

Plan



① 15 cm → 55cm in depth.

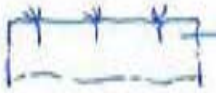
Spit drawn:

① 7.5YR LOOSE HUMIC SILTY (CIRCULAR SHAPE) BEGAN @ 15cm AND CONTINUES TO DEPTH. ? THIS HOLE IS MOST PROBABLY FROM RECENT ANIMAL ACTIVITY DUE TO LACK OF STRUCTURE OR TREE ROOTS. CONTAINS MANMADE ROOTS & VERY LOOSE MATERIAL.

Section Plan

Face: NORTHERN SECTION

Scale: 1:20



A2 HORIZON. HUMIC SILTY SAND, WITH NARROW ROOTS & ROOTLETS. SMALL ANGULAR GRAVELS & RIVER GRAVELS. MOIST & FINE GRAINED WELL SORTED. & TRANSITIONS INTO B HORIZON AS GRADUAL/DIFFUSED.

Further descriptions and relationships to other TU

PIT 16 IS POSITIONED HIGHER UP ON SLOPE TO (15) & (14). IT IS DIRECTLY WEST OF RAILWAY TRACKS AND APPROX: 2-3 METRES WEST OF DIRT ROAD. APPEARS TO HAVE PREVIOUS DISTURBANCE OF CLEARING OF LAND, EROSION & SOME IMPACTS TO CONSTRUCTION OF RAILWAY LINE. THIS PIT IS SITUATED ON A SLOPE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	17 Zone 1
Excavators		Date 7/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	Test unit incomplete
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	(Creek Bank) / (Terrace) / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

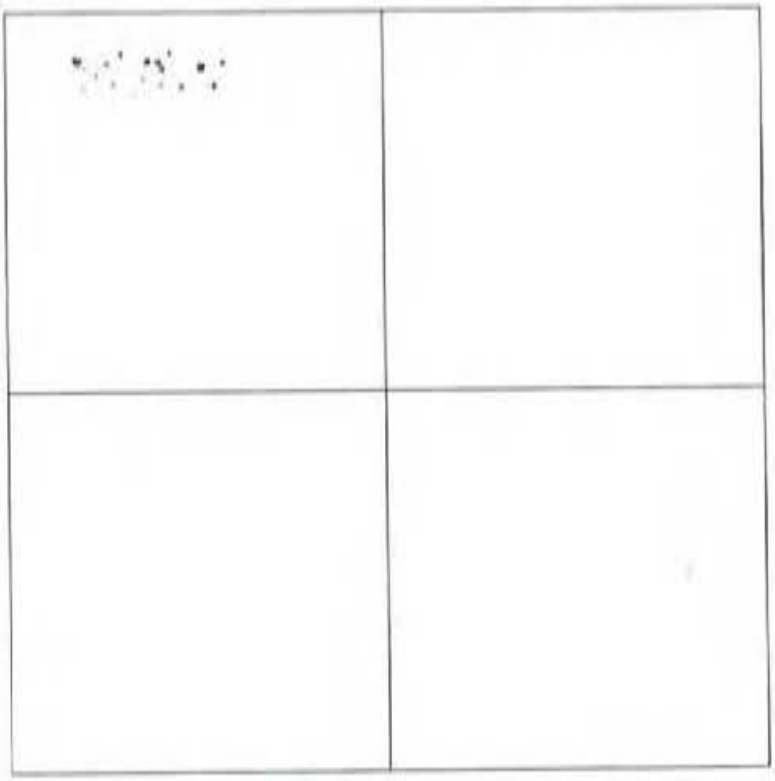
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) (A3) B Other			
2	100	A1 (A3) B Other			
3	100	A1 (A2) B Other			
4	100	A1 (A2) B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	
A2	2	
	3	
	4	
	5	
	6	
	7	

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	G1 Zone 2
Excavators	Seb Ariya Rebecca	Date 14/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	IronBark Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

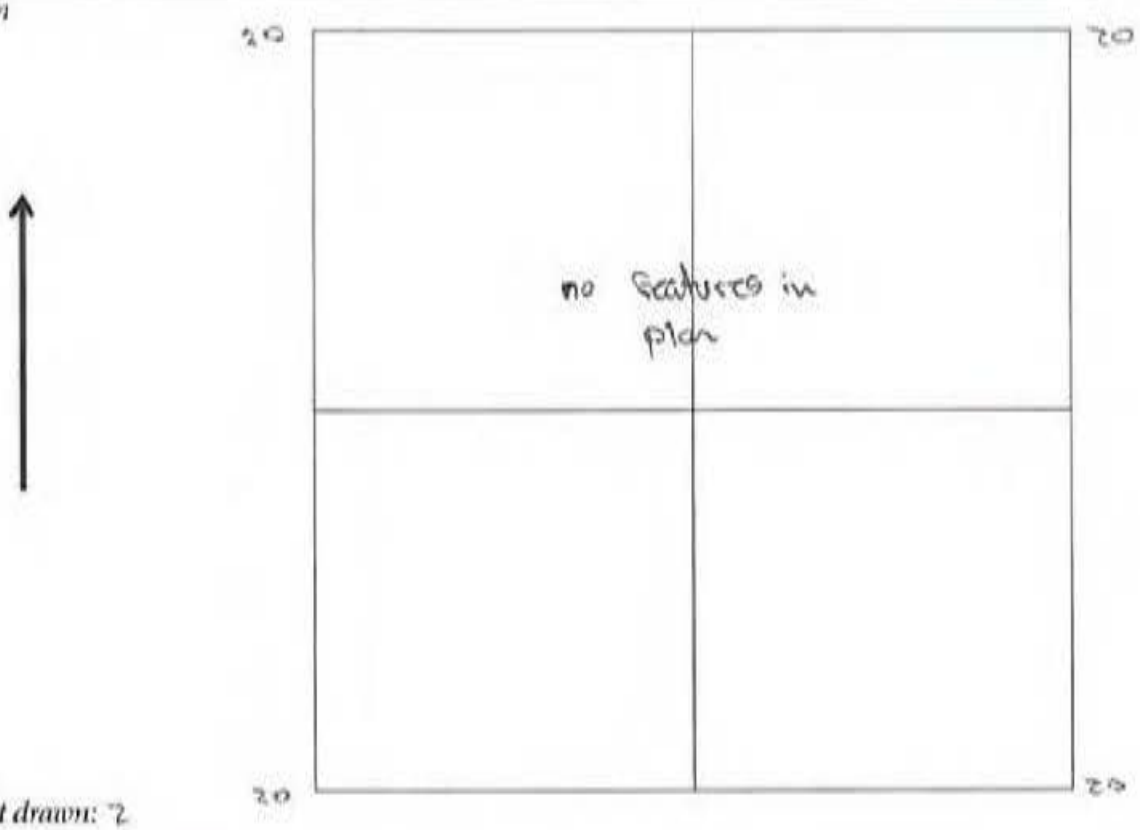
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			0
2	100	A1 (A2) B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	dark greyish brown sandy silty clay loam, loosely compact with small gravels some fine grass root inclusions/ high concentration of farming organics on the surface
A2	2	Same as above approaching distinct change to dark yellow sandy silty loam.

Description of material below B or the limit of excavations

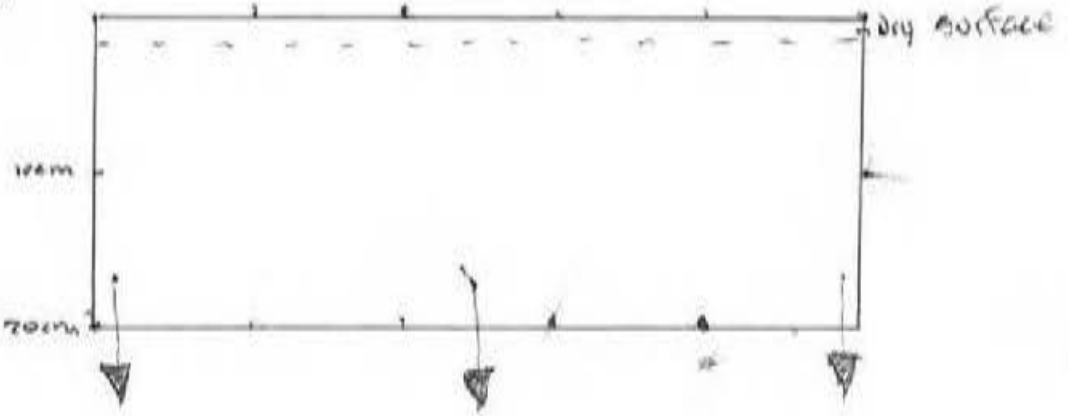
Plan



Spit drawn: 2

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

excavation halted due to time constraints at Spit 2

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	G2 - zone 2
Excavators	Seb arinya, rebecca	Date 14/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	5+
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	Ironbong Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

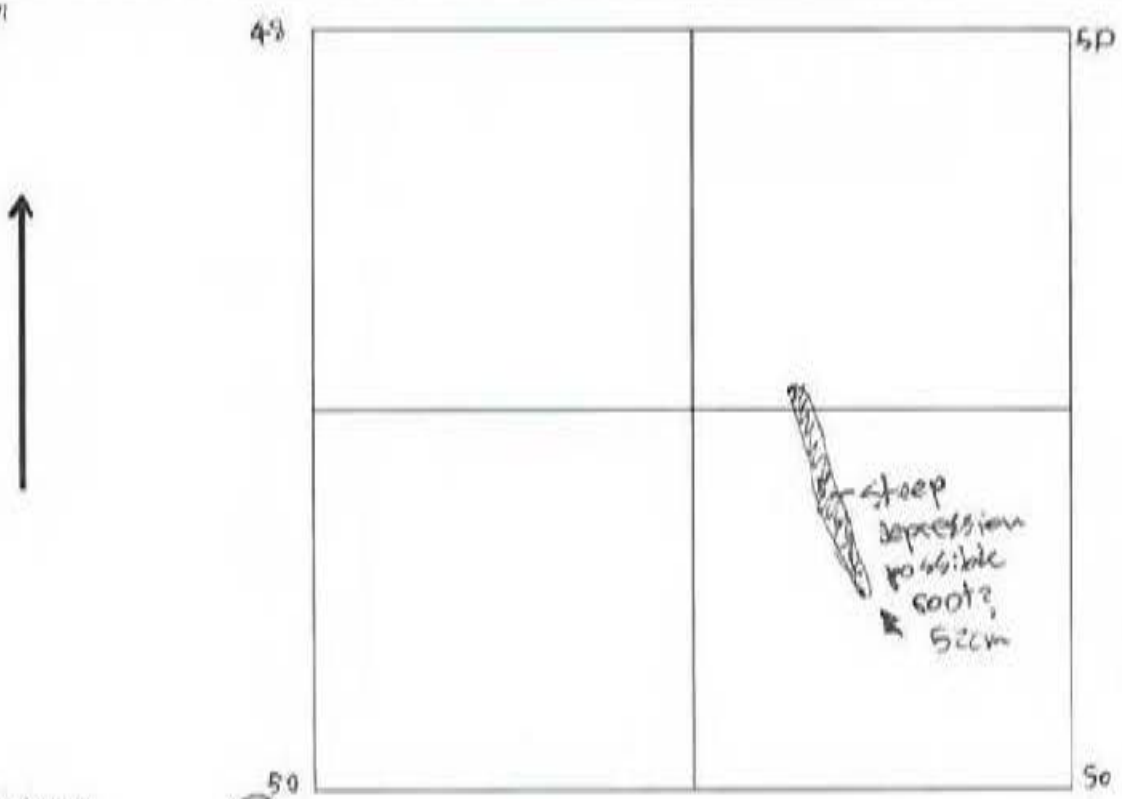
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other			0
2	100	A1 A2 B Other		possible worked dark quartzite	2
	100	A1 A2 B Other		possible flaked quartzite	1
4	100	A1 A2 B Other			0
5	100	A1 A2 B Other		possible flaked quartz	1
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	very dark silty Sand loam with remnant organic material from farming on the surface. lightly compacted and Coarse grained the soil is likely the product of cultivation with a thin dark organic live maybe from a clear event,
A2	2	dark ~~yellowish~~ sandy loam, Coarse grained and loosely Compacted with some quartz pebbles 7 1% gravels, distinct change to yellowish dark
	3	yellow dark sandy silt, Coarse with small gravels included. soil is lightly damp with lenses of darker silty sand bioturbation from farming grazing
	4	Continued sandy clay yellowish brown with medium gravels, lightly compacted into a pale yellowish brown sandy silt above base clay
	5	base sandy clay red and Compact

Description of material below B or the limit of excavations

Plan

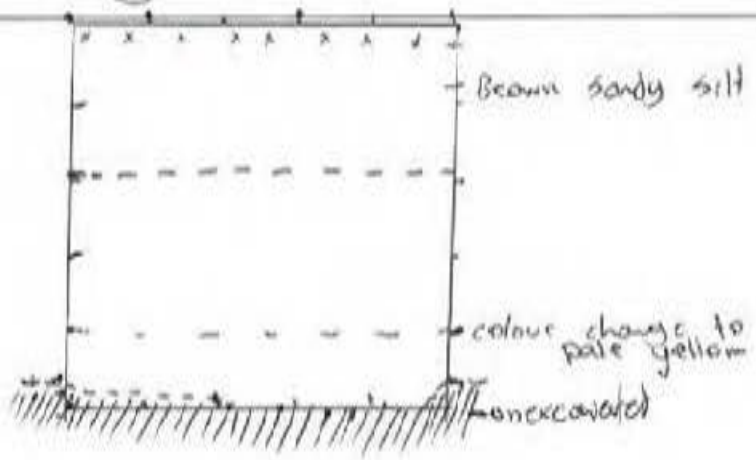


Spit drawn:

Section Plan

Face:

Scale:



Further descriptions and relationships to other TU

disturbance from plowing is potentially limited to 20cm at the present meaining

orientated facing north ↑ from the north west corner

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2, TU. 63
Excavators	JIRRAH, MEGAN, SARAH	Date 14/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	IRONBONG CREEK		
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	Ploughed field.	
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1 (0-10)	100	c. 3cm. (A1) A2 (B) Other			N/A
2 (10-20)	100	A1 A2 (B) Other			N/A
3 (20-30)	100	A1 A2 (B) Other			N/A
4 (30-40)	100	A1 A2 (B) Other			N/A
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400.	→ NE corner deep due to grooves in base (460mm).			

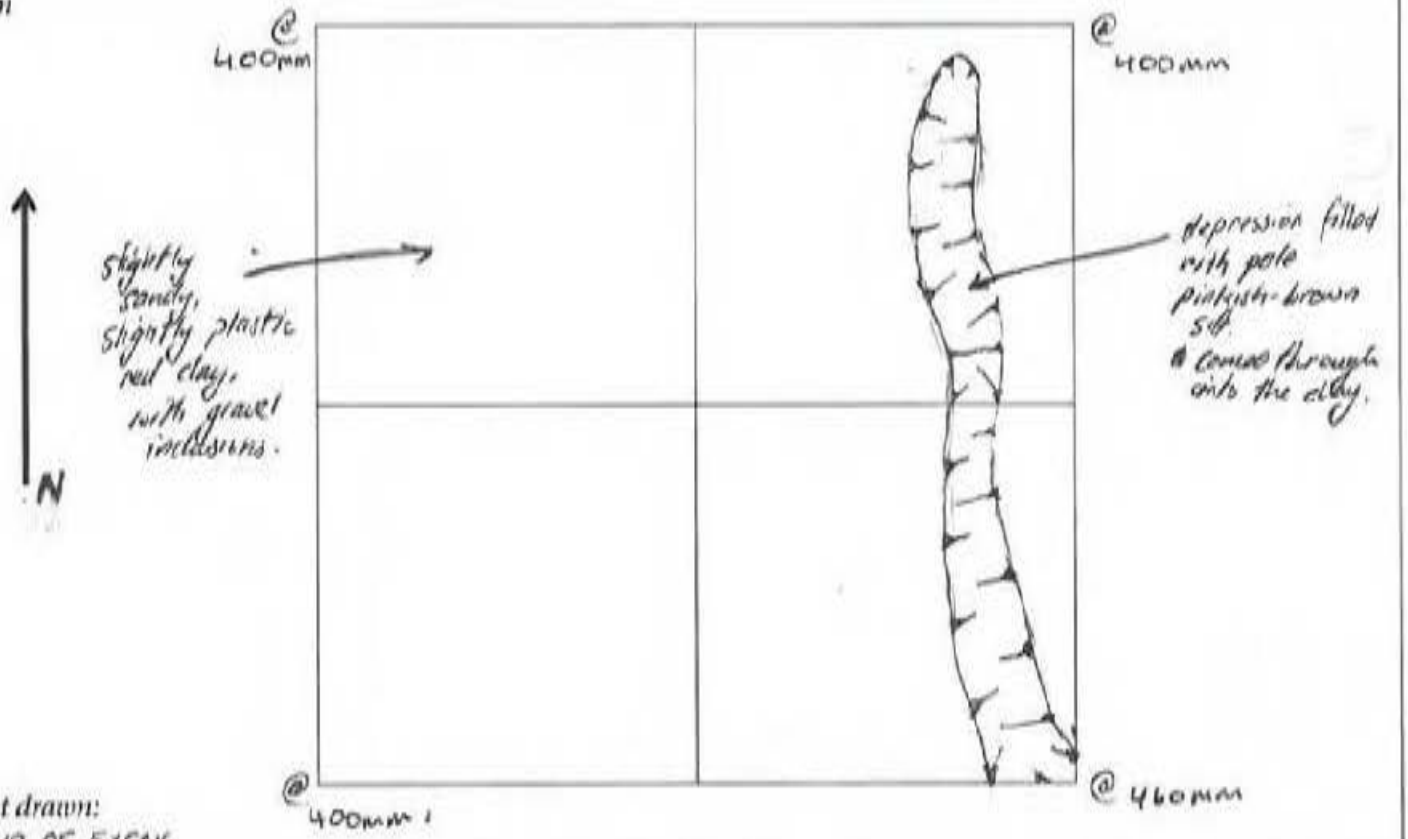
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle. → very fine root inclusions c. 10-15%
Surface Layer	SPIT 1	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = ploughed field. Sparse to medium dead grass cover. Occasional weeds. (A1 = soft, grey brown silty loam. very fine humic component BELOW THIS: a mid to dark brown silty clay loam. Soft. Fine to medium gravel inclusions c. 2-5%. Very fine root inclusions c. 1-2%.
A1 B		c. 17cm depth. and slightly indurated
A2 B	SPIT 2	As spit 1 above (brown silty clay loam). Sharp horizon change to A mid yellow-brown, soft, firm, sandy clay loam. A band of dark brown silty clay loam, c. 20-5cm wide, marks this horizon. & Very fine root inclusions c. <1%. Fine to med. gravel inclusions c. 2-5%
B	SPIT 3	As spit 2 above, slightly increasing clay content with depth. Fine to med gravel inclusions c. 2%. Very slight reddening of deposit @ c. 30cm but no distinct horizon.
B.	SPIT 4	As spit 3 above. & Fine to medium gravel inclusions c. 2%. Uneven and clear horizon where red clay at base begins to show, c. 37cm depth. → Irregular

Description of material below B or the limit of excavations

BASE = RED, SANDY CLAY, SLIGHTLY PLASTIC. Very fine – fine gravel inclusions c. 15-20%. hard, compact. Grooves on side of TU base variably 2-5 cm deep filled = paler pinkish-brown, very soft, very fine silt.

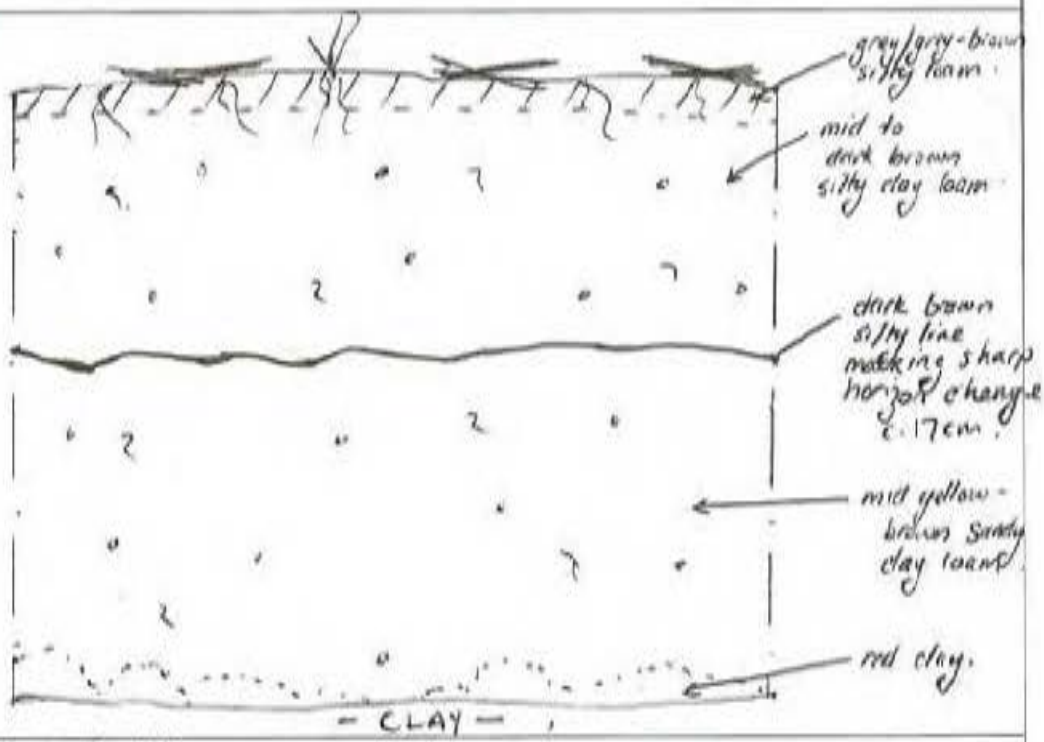
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5



KEY:
/// A1.
ℓ Fine root inclusions.
o gravel inclusions
dead grass on surface.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2 TU. 64
Excavators	REBECCA VASTO	Date 12.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	PROBABLY NOT DUE TO LOW ARTEFACT COUNT.
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☒☒☐	Northing ☐☐☒☐☐☐☐
Soil landscape	FRONSONE CREEK. LOCATED ON THE FLATS APPROX 10-15m EAST OF CREEK	
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope % —

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 – 6mm	A1 (A) A2 B Other			QUARTZ.
2	6mm – 15mm	A1 (A) A2 B Other			Ø
	150mm – 160-44	A1 A2 (B) Other			QUARTZ.
4	160 – 150mm	A1 A2 B (C) Other			Ø
5	NSRD 300	A1 A2 B (C) Other			Ø
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

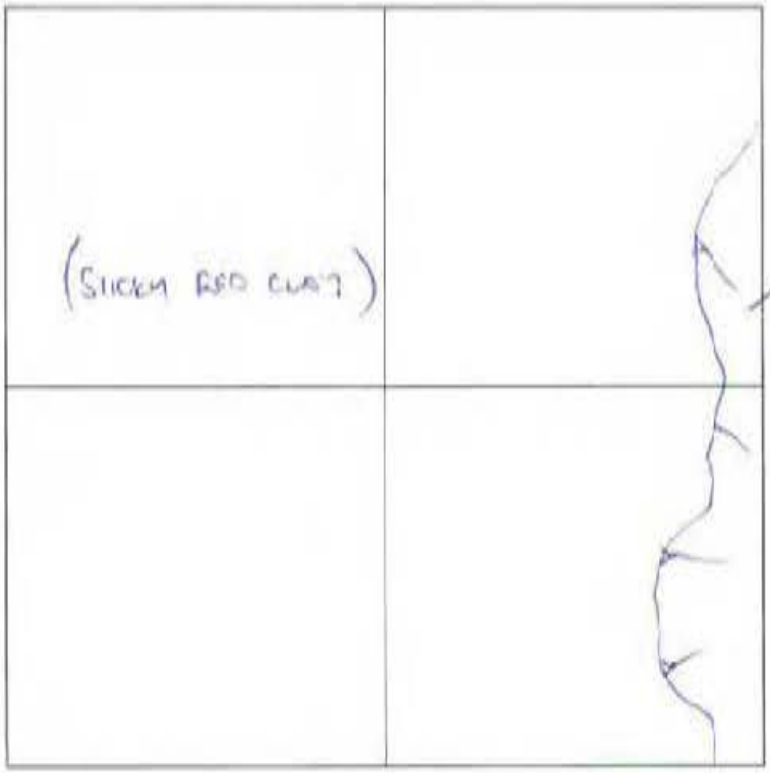
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASSED & MOWED FIELD TO SMALL SPARSE WEEDS (SURFACE VISIBILITY 95%)
A1 SPIT (1) TO (2)	(A)	SANDY SILT, MEDIUM COARSE GRAINED SAND, FINE GRAINED SILT. LIGHT BROWN/GREY. WEAK COMPOSITION. TRANSITION INTO (B) IS GRADUAL.
A2 SPIT (2) → (4)		CONTINUATION OF SANDY SILT W SMALL COMPONENT OF CLAY. SMALL PEBBLES CLAY INCREASES TO DEPTH. BROWN/REDDISH BROWN W depth.
SPIT (4) → (5)		STICKY REDDISH CLAY, COMPACT & FINE GRAINED AND SLOPING TO THE EAST GRADUALLY.

Description of material below B or the limit of excavations

STICKY COMPACT REDDISH BROWN/RED CLAY. FINE GRAINED & MOIST.

Plan



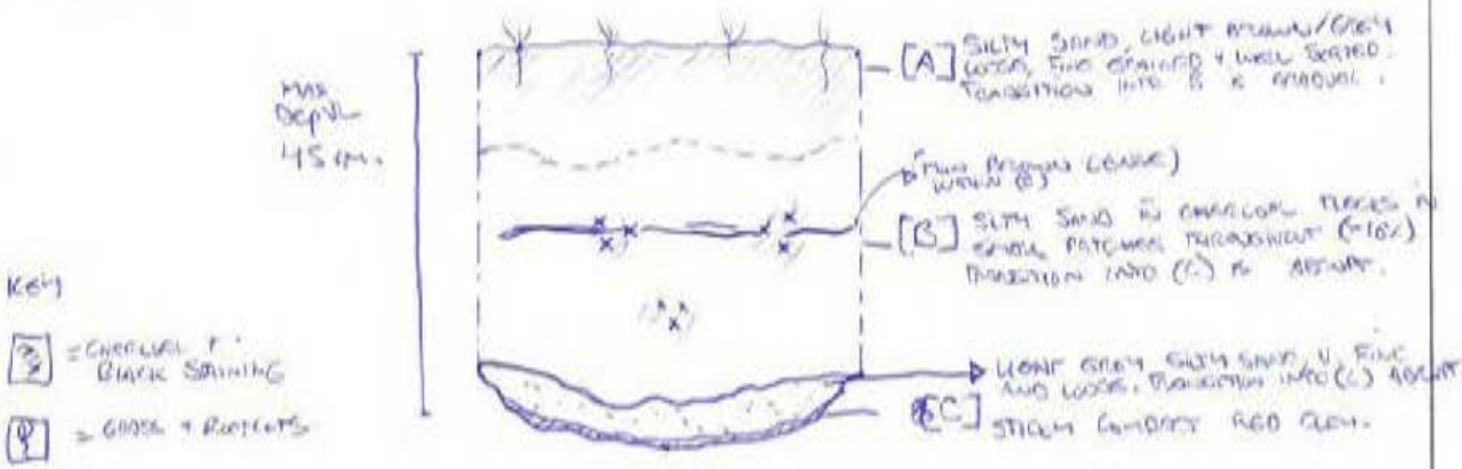
Spit drawn:

SPIT 5 - (EASTERN SIDE ONLY)

Section Plan

Face: EASTERN SECTION

Scale: 1:10



Further descriptions and relationships to other TU

TU: 64 Approx. 10-15 metres East of Creek (RED CHERT PRE-FLAKE FLAKE FOUND ATOP SURFACE 4.5 metres SE OF THIS PIT (Salvaged // FOUND BY MARNIE FREEMAN.)

CLAY AS BASE SLOPES DOWNWARDS (10-15% Slope) IN EASTERN SECTION.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	T4 22,65
Excavators	AP, James, Dillon	Date 14/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	1
Other evidence?	Surface Re (QUARTZ) to east.
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other		QUARTZ BIFACIAL CORE	1
2	100	A1 (A2) B Other			
	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

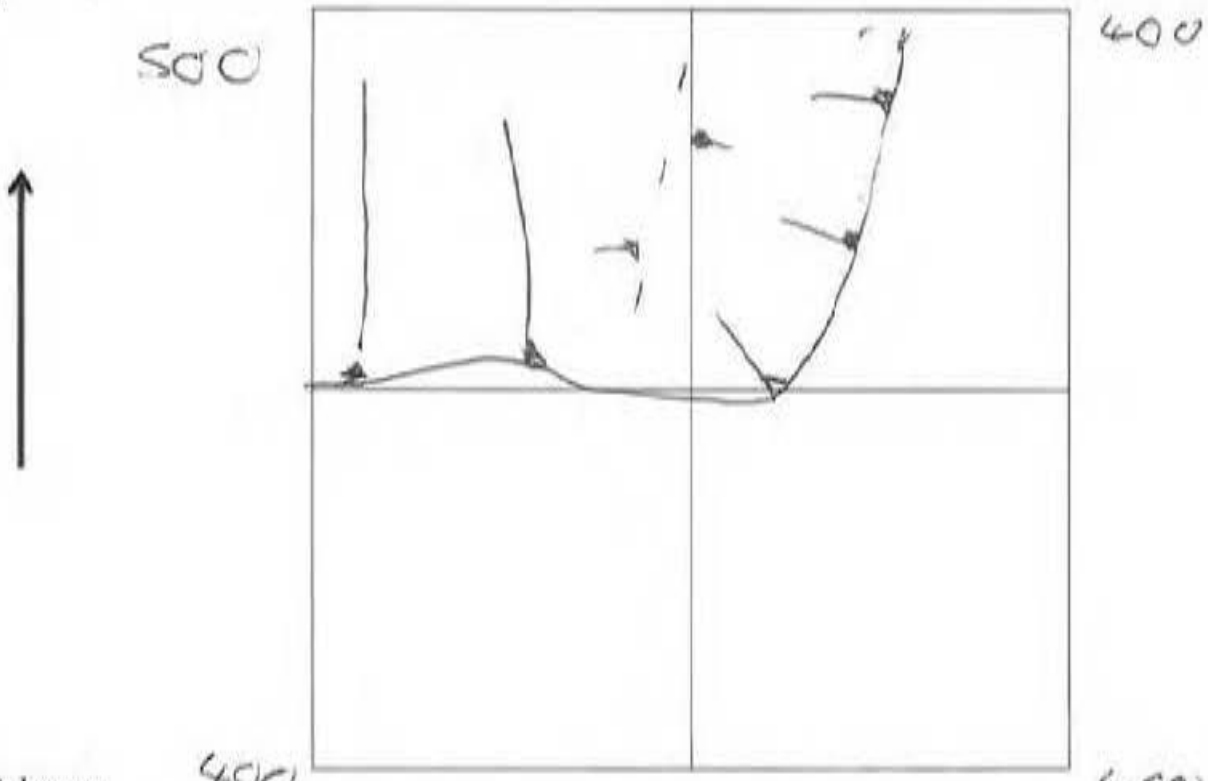
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS CROP, Ploughlines.
A1		Mid brown (grey) silty sand, occa rock disturbance. sCA. 40mm - clear into A2.
A2		Mid brown silty sand, sCA. Down to 150mm. clear into B.
B		light orange white silty sand (fine) sCA. onto C horizon at 400mm. ROOT DISTURBANCE down to 500mm in NW corner. clear transition.

Description of material below B or the limit of excavations

DARK RED CLAY.

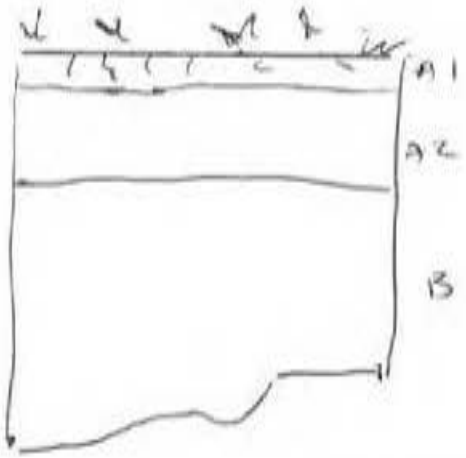
Plan



Spit drawn: end

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2, TU. 66
Excavators	JIRRAH, MEGAN, SARAH.	Date 14/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	1 NOT TAKEN DOWN TO CLAY (DUE TO TIME RESTRICTIONS)
Other evidence?	N/A.
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	IRONBONA CREEK		
Landform	(Creek Bank) / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	ploughed field.	
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			0
2	100	A1 A2 (B) Other			1
3	100	A1 A2 (B) Other			0
4	100	A1 A2 (B) Other			0
5	70 (max)	A1 A2 (B) Other			0
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	470 (max)				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. PLOUGHED FIELD. SURFACE = predicate to sparse grass/weed and dead grass roots. A1 = soft, grey to grey brown silty loam. Very fine humic component. Fine to fine rootlets. c. 5-10% and black.
A1 B	SPIT 1	BELOW THIS; A Soft, mid to dark brown sandy clay loam, with some charcoal flecking and fine to medium charcoal inclusions often 1-2%. Fine to medium gravel inclusions c. 5%. Clear horizon change to mid brown sandy clay loam at c. 10cm to 12cm depth.
A2 B	SPIT 2	Soft sandy clay loam, mid brown. Fine to medium gravel inclusions c. 2%. @ c. 17-25cm Sharp to clear horizon change to a mid yellowy-brown sandy clay loam, Diffuse horizon marked by a dark yellow-brown line c. 55mm thick on SE corner. (c. 20cm depth)
B.	SPIT 3	As spit 2 above. Mid yellowy-brown sandy clay loam. Soft but compact. Fine to med gravel inclusions c. 2%. Rare fine charcoal inclusions.
B.	SPIT 4	As spit 3 above. @ c. 38-41cm. Clear horizon change to pale yellowy-grey sandy clay loam. Compact. Fine to med gravel inclusions c. < 2%. A single coarse charcoal inclusion in S section.
B.	SPIT 5	Pale As above, horizon change to pale grey sandy clay loam at c. 38-41cm depth. Below this, pale grey to yellowy-grey sandy clay loam. Fine to med. gravel inclusions c. 1%.

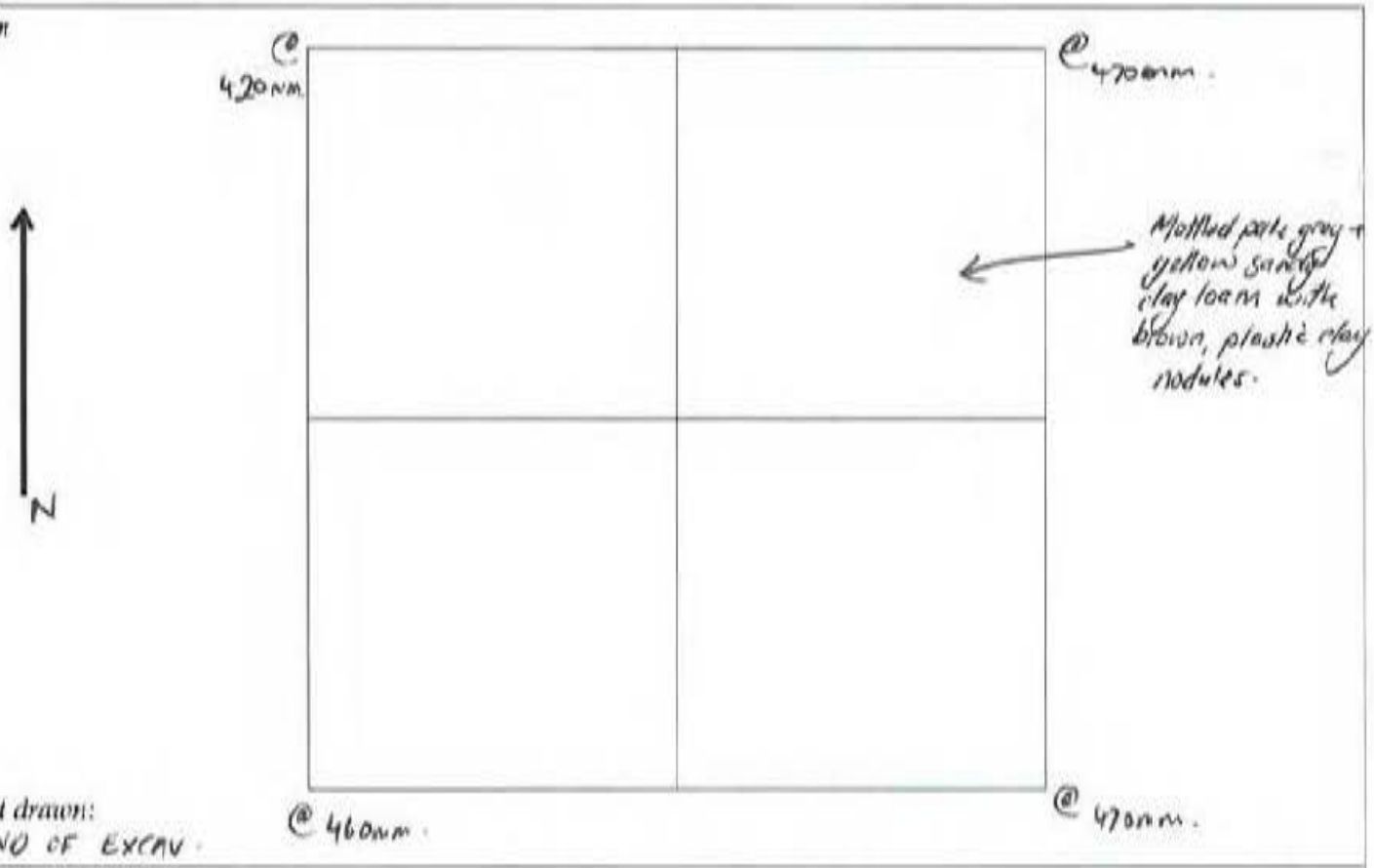
Description of material below B or the limit of excavations

BASE = Mottled pale grey and pale reddish/pinkish brown sandy clay loam, with mid reddish-brown plastic clay nodules. Compact.

D-10 10-20 20-30 30-40

V. fine root inclusions c. 1%. Rare fine charcoal inclusions c. 1%.

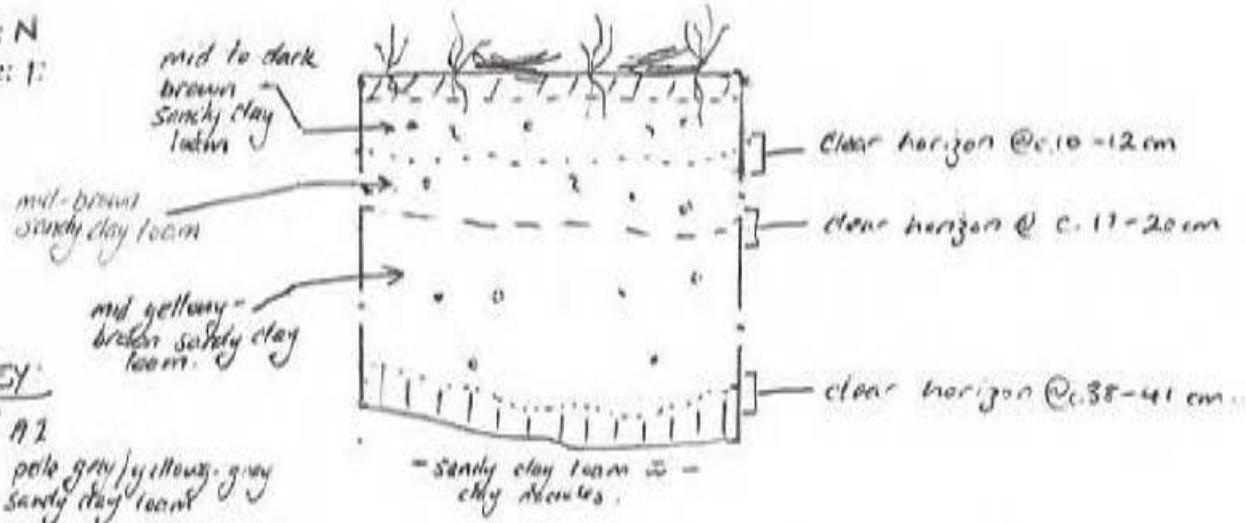
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:



KEY:

// A2

(1) pale grey/yellowy-grey sandy clay loam

• dense charcoal inclusions

o gravel inclusions

≀ fine root inclusions

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	ZONE 2, TU. 67
Excavators	MEGAN, JIRRAH, SARAH.	Date 14/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	1
Other evidence?	N/A.
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	IRONBONG CREEK	ploughed field.	
Landform	(Creek Bank) / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other (c. 3-4cm)			1
2	100	A1 A2 (B) Other			0
	50 (max)	A1 A2 (B) Other	depressions in base		0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	250 (max)				

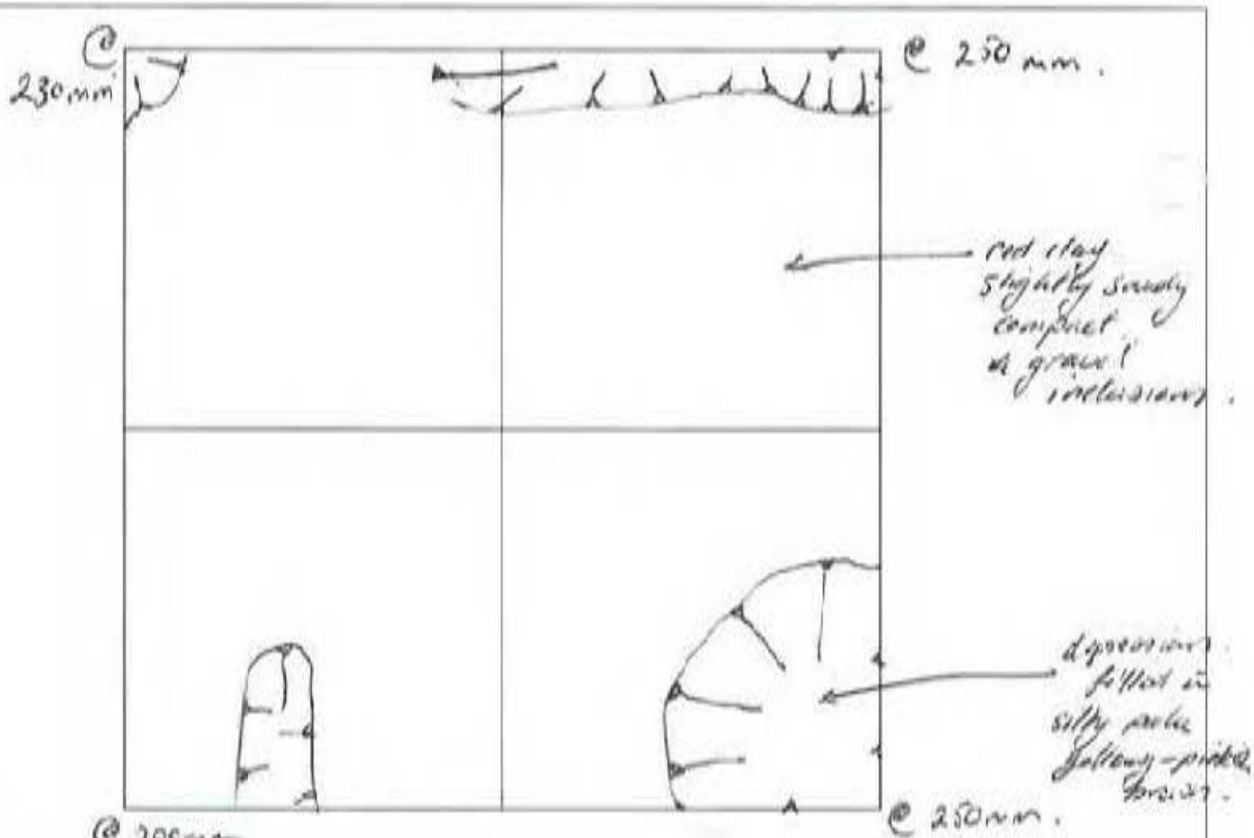
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = sparse to moderate grass/weed and dead grass cover. A2 on N/E/S sides.
A1 B	SPIT 1	A1 = mid grey to grey-brown silty loam. Very fine humic component soft, fine to medium grass inclusions c. 2%. c. 3-4 cm deep. BELOW THIS: a soft but compact mid reddish-brown sandy clay loam, with moderately high clay content. Very fine root inclusions c. 1-2%. Fine to coarse gravel inclusions c. 15%. Clear horizon change to a paler reddish-brown, soft sandy clay loam @ c. 9-11 cm depth.
A2		
B.	SPIT 2	A paler reddish-brown sandy clay loam, slightly higher clay content with depth. Fine to coarse gravel inclusions c. 5-10%. Very fine root inclusions c. 1%. Clear horizon change to red clay @ depth c. 18-21cm.

Description of material below B or the limit of excavations

BASE = A coarse slightly sand, slightly plastic red clay, with very fine to fine gravel inclusions c. 25%. Depressions in base filled with pale yellowish pinkish brown, soft very fine soft silt, and come down onto clay.

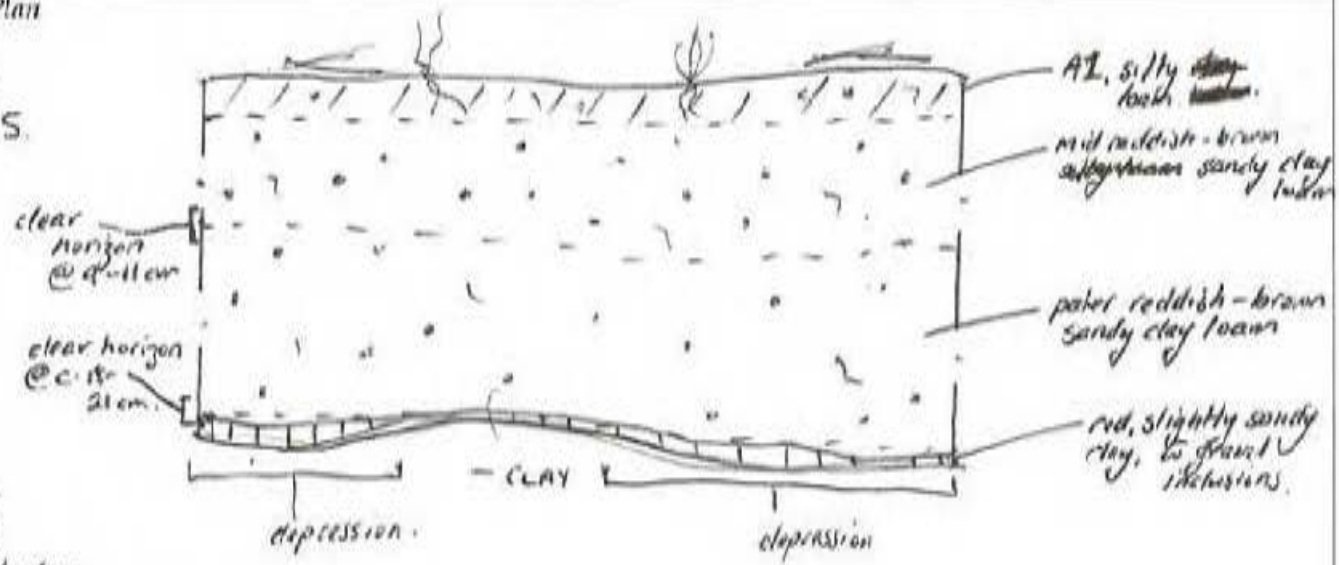
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1: 5.



KEY:
1/1 A1
111 red clay
2 fine root inclusions
*. fine to coarse gravel inclusions

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2. 68
Excavators	REBECCA VARTIS, NORMA & MARNIE FREEMAN.	Date 14.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	POSSIBLY DUE TO LOCATION + REFERENCES WITHIN AR.
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape	IRONBARK CREEK.		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	GV. Slight Slope towards river	
Aspect	N E S W	Slope %	1%

EXCAVATION wet sieved dry sieved

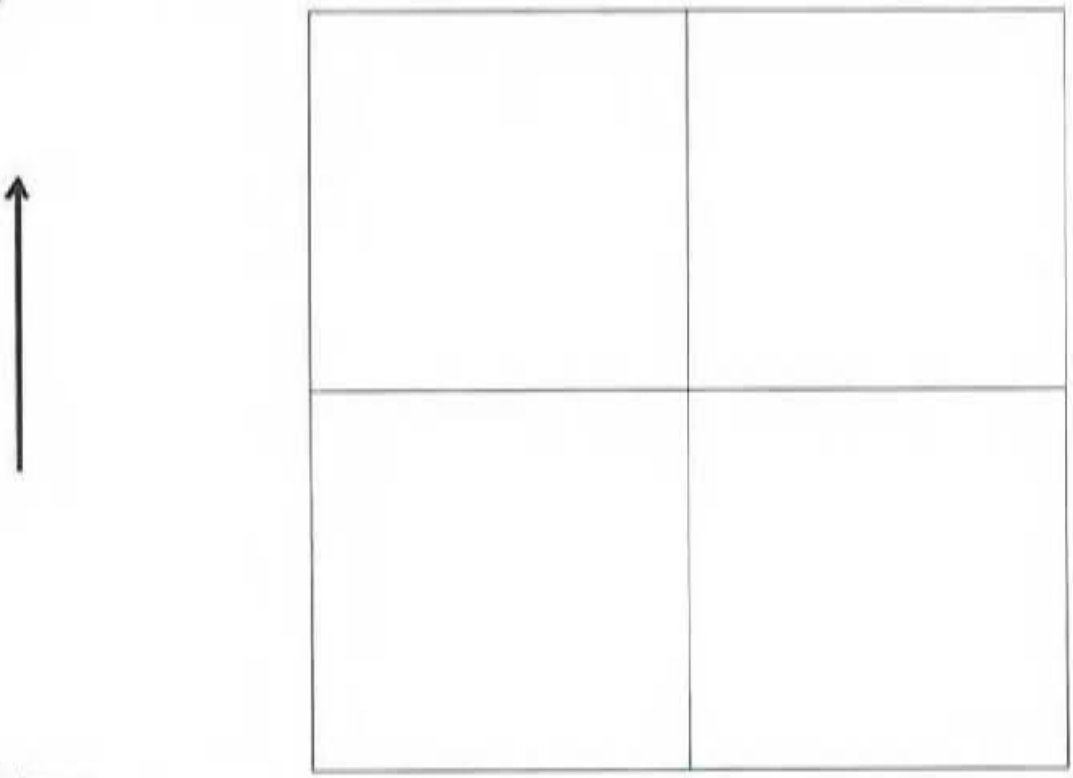
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 – 50mm	(A) A1 A2 B Other			QUARTZ + FLAKE CORTEX.
2	50mm – 100mm	A1 A2 (B) Other			Ø
	100 – 200mm	A1 A2 (B) Other			QUARTZ
4	305 – 400	A1 A2 B Other			Ø
5	400 – 430	A1 A2 (B) Other (C)			GRANITE FLAKE (T)
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE VISIBILITY 99%. SMALL PATCHES OF GRASS. WHITE MILKY QUARTZ FLAKE FOUND WITHIN SURFACE OF THIS AR. AR POSITIONED ON SLIGHT SLOPE OF RISE ADJACENT NW END OF CREEK.
A1	(A) Hard	COARSE GRAINED SALTY SAND. LIGHT BROWN/GREY WITH MINOR INCLUSIONS OF NARROW ROOTLETS, MOSS COMPACTION. TRANSITION IS GRADUAL INTO (B)
A2	(B)	SILTY SAND, FINE TO MED. COARSE GRAIN GRANULES INCLUSIONS OF QUARTZ (7%) + MINOR INCLUSIONS OF RIVER GRAVELS INCREASING IN DEPTH. LIGHT BROWN/RED. TRANSITION INTO (C) IS ABRUPT.
	(C)	LIGHT GREY/GREY, COARSE GRAINED SANDY CLAY W MINOR SILT COMPONENT, SMALL GRAVELS OF QUARTZ THROUGHOUT (60%) ab loose + Compact AREAS OF RED THIN LENSES OF CLAY.

Description of material below B or the limit of excavations

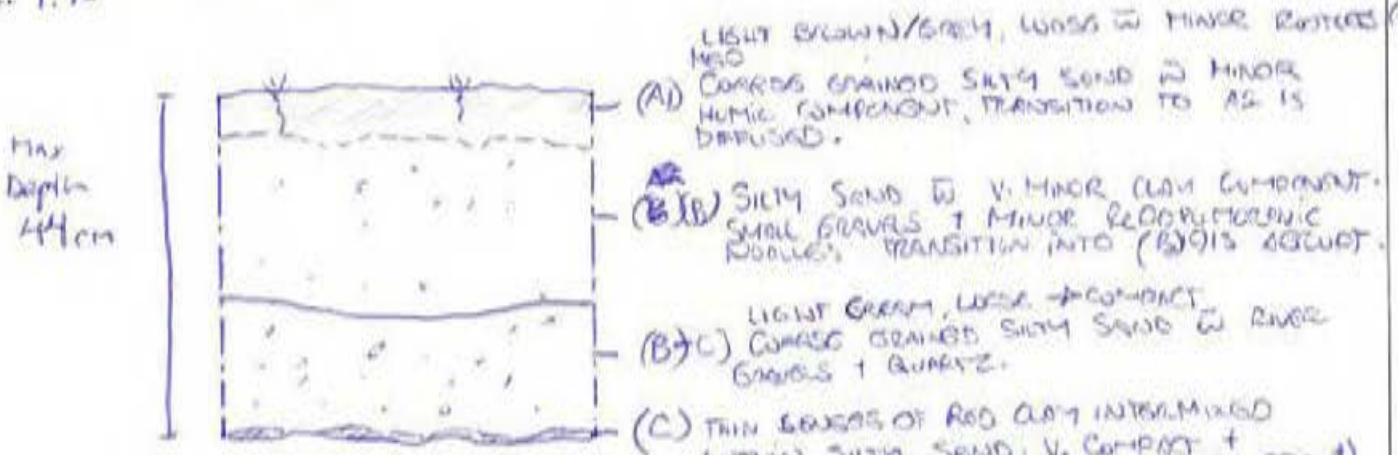
Plan



Spit drawn:

Section Plan N

Face: NORTHERN SECTION
Scale: 1:10



Further descriptions and relationships to other TU

TU : 68 POSITION ON SLIGHT SLOPE APPROX: 10m EAST OF CREEK BANK.
SURFACE SHOWS CLEAR EVIDENCE OF ROUGHING ON SURFACE AND FLAT
S-10-M, APPEAR TO CONTAIN HUMIC COMPONENT (probably W ADDED SOIL
FERTILISER
QUARTZ FLAKES FOUND ACROSS SURFACE & QUARTZ FRAGMENTS FOUND
WITH PIT (SEE REVERSE).

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	22,69
Excavators	AP / James . Dillon	Date 14/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) (B) Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	60	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	460				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		100m of Dark grey brown Sandy silt for 20m Dry, Moist below. occa. root disturbance - clear to A2.
~~A2~~ B1		100m Mid orange silty sand, gritty and coarser. Clear to B.
B2		Compact mid clayey sand. clear to red Chroma at base.

Description of material below B or the limit of excavations

red clay.

Plan:

420

460

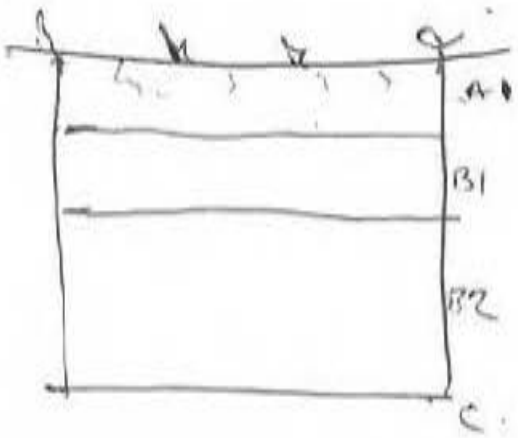
400

400

Spit drawn: end

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	22, 71
Excavators	AR / James, Dillon	Date 14/08/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	Gentle slope approx. 40m from Creek to North.		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

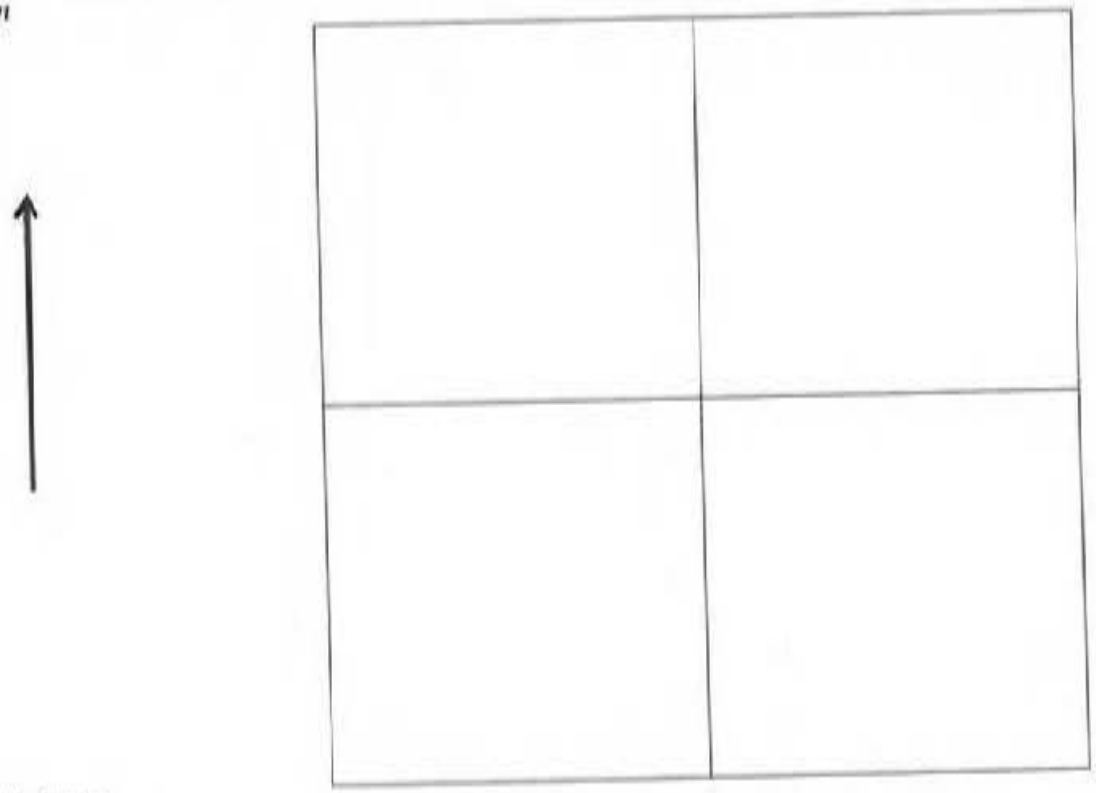
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6	100	A1 A2 (B) Other			
7	100	A1 A2 (B) Other			
Totals	700				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		100m Nice mid brown silty loam, occa rocking. Top 20m is Prey with Rev rocks. clear to B.
~~A2~~ B1		Pale brownish grey sandy silt. consistent occa. ~~Limit of Excavation - Creek Bed.~~
B2		as Above, more clay content (silty clay) mid grey, compact. Limit of exc. @ 700m. Bed of creek.

Description of material below B or the limit of excavations

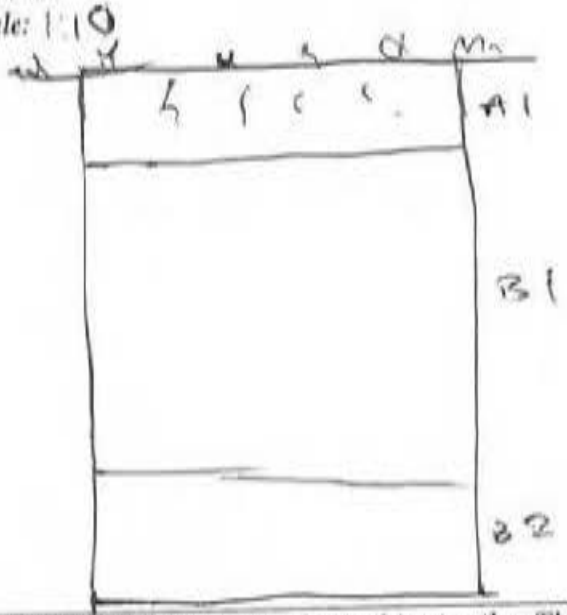
Plan



Spit drawn:

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2 TO 75
Excavators	REBECCA JAMES, [illegible]	Date 15.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	2 (?)
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☒☐☐	Northing ☐☐☒☐☐☐	
Soil landscape	ENDEAVOUR CREEK		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	1-2%

EXCAVATION wet sieved dry sieved

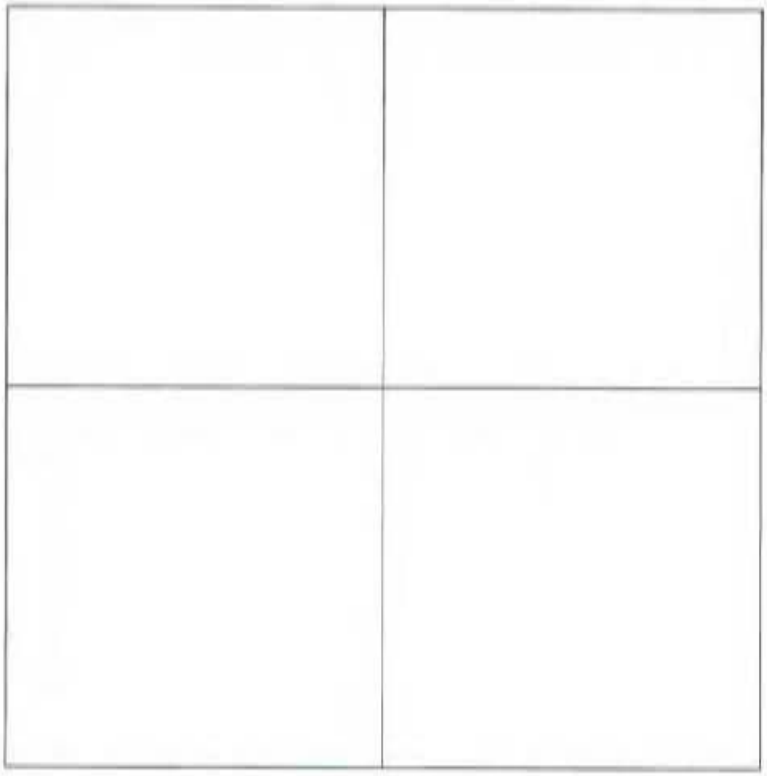
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 - 100mm	(A) A1 A2 B Other			Ø
2	100 - 200mm	(A) A1 A2 B Other			FLAKED QUARTZ A2 FINE
	200 - 300mm	A1 A2 (B) Other			Ø
4	300 - 400mm	A1 A2 (B) Other			Ø
5	400 - 500mm	A1 A2 (B) Other			Ø
6	500 - 600mm	A1 A2 (B) Other			Ø
7	600 - 700mm	A1 A2 (B) Other			Ø
Totals	700 - 800mm	(6)			Ø

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SPARSE GRASS/WEED VISIBILITY = 75%. STONE EVIDENCE REVEALING.
A1 Spit 1-2	(A)	MEDIUM BROWN + DARK BROWN, MOIST, COMPACT LIGHT BROWN, LOOSE + FINE GRAINED DIFFUSING INTO A B (HORIZON) @ APPROX 15-20CMS.
A2	(B)	V. LIGHT BROWN/GREY SANDY SILT. V. FINE GRAINED W MINOR INCLUSIONS OF GRAVELS, SMALL NON-CULTURAL QUARTZ (ROUNDED) PEBBLES + GRAVELS (20%) approx - V. MINOR INCLUSIONS OF CHARCOAL (<5%). 7(Y). MEDIUM TO LOOSE COMPACTION, DRY AND CONTINUING AT BASE.
		# LIMIT OF EX = 80CM DUE TO DEPTH + LACK OF ARTEFACTS & REDEPOSITED NATURE OF ALLUVIAL SANDY SILT. (REDEPOSITED (ALLUVIUM))

Description of material below B or the limit of excavations
MEDIUM COMPACTION, FINE - MEDIUM GRAINED SANDY SILT. (ALLUVIAL)

Plan

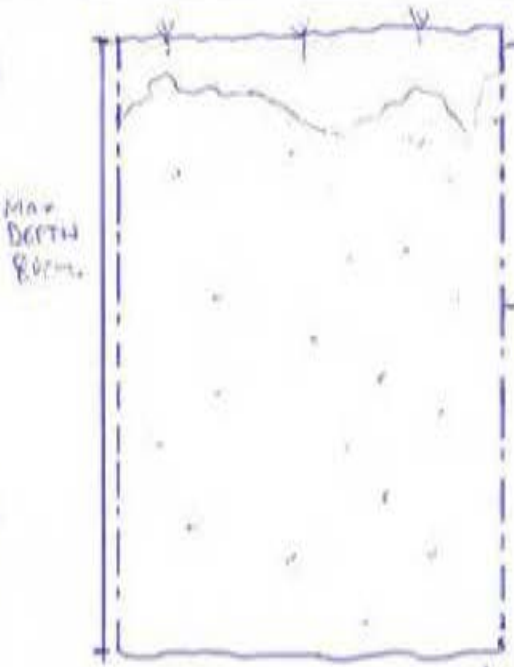


Spit drawn:

Section Plan

Face: EASTERN SECTION

Scale: 1:10 cm



↳ LIMIT EX DUG TO DEPTH + REDEPOSITED ALLUVIAL SANDY SILT & LOSE OF ARTEFACTS.

Further descriptions and relationships to other TU

PIT POSITION & SLIGHT SLOPE 2-3m WEST OF CREEK BANK. THIS PIT CONTAINS STRONG EVIDENCE OF REDEPOSITED ALLUVIAL SANDY SILT + VERY LIKELY TO BE A BUILD UP OF SOILS FROM FLOOD & FLUCTUATING WATER LEVELS OF THE ADJACENT CREEK.

- STRONG EVIDENCE OF PLOUGHING & PREVIOUS LAND CLEARING.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 2 - TU: 77
Excavators	REBECCA VARCO MARK & NORMAN FOLLOWS	Date 15-5-19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	x1 RIO CHERT FLKG.
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐/☐☐	Northing /☐☐☐☐☐☐	
Soil landscape	IROUBANG CREEK		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope % —	

EXCAVATION wet sieved dry sieved

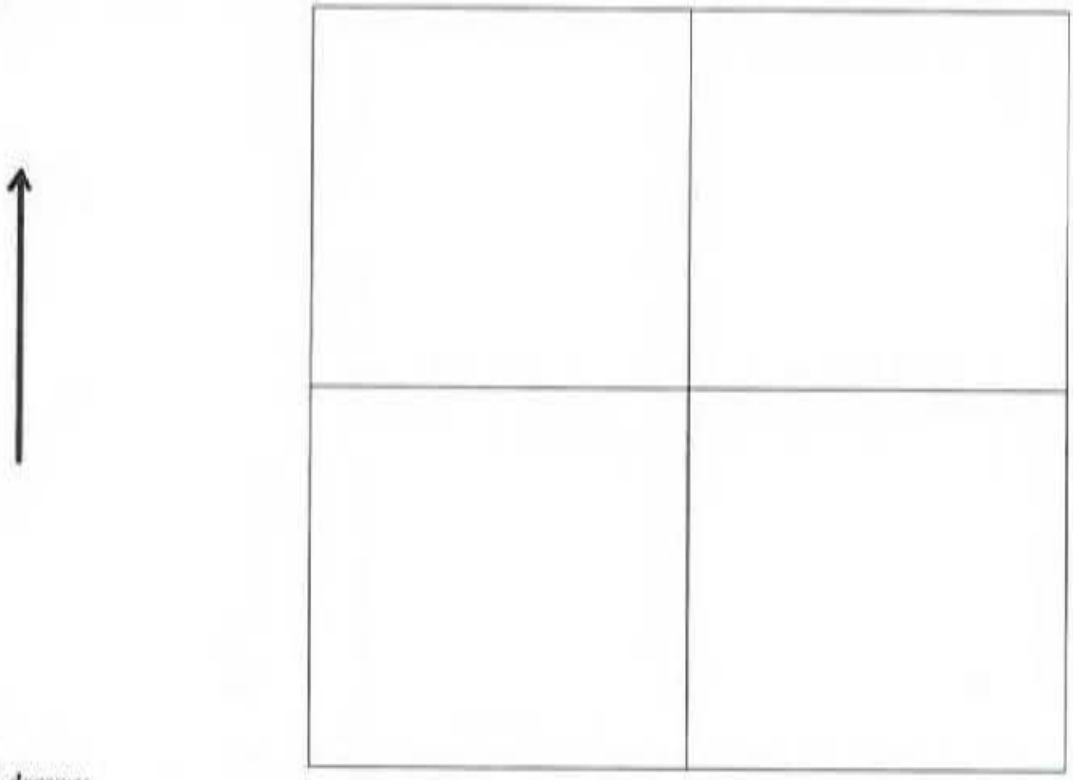
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-100mm	(A) A1 A2 B Other			x1 CHERT FLAKE.
2	100-200mm	A1 (A) A2 B Other			Ø
3	200-300mm	A1 (A) A2 B Other			Ø
4	300-400mm	A1 A2 (B) Other			Ø
5	400-500mm	A1 A2 (B) Other			Ø
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE CONTAINS OCCASIONAL WEEDS (VISIBILITY = 90-95%.) EVIDENCE OF BURNING + WILD OATS
A1 Spits 1→3	(A)	SANDY SILT TO HIGH HUMIC COMPONENT STRONG BROWN 10 YR 4/3. A VERY SMALL COMPONENT OF CHARCOAL (<1%). FINE GRAINED W MINOR COMPONENT OF VERY FINE GRAVELS. (10cm) TRANSITION INTO (B) DISTINCT BOUNDARY.
A2 Spits 4-5	(B)	LIGHTER BROWN/GREY SILTY CLAY, COMPACT & FRIABLE at V. FINE GRAINED.

Description of material below B or the limit of excavations

Plan

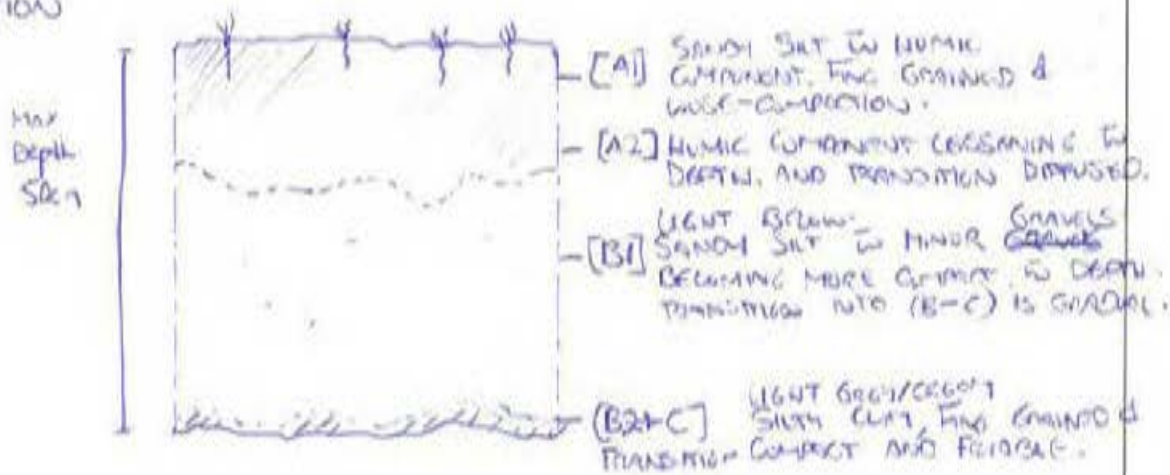


Spit drawn:

Section Plan

Face: ~~NORTHERN~~ EASTERN SECTION

Scale: 1: 10



Key/ [ ] = GRASS + ROOTLETS [ ] = TRANSITION FROM B → C HORIZON.

[ ] = DISTURBED DEPOSITION

Further descriptions and relationships to other TU

(PIT WITH CLEARED AND AROUSED FIELD)

↳ Compared with TU 75 → THIS PIT CONTAINS HIGHER HUMIC COMPONENT AT A deeper level. SEEMS TO NOT BE AS SUBJECT TO ALLUVIAL MATERIAL DUE TO BEING FURTHER AWAY FROM CREEK BANK MOST.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	79 - 22
Excavators	Deb Acinga	Date 15/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

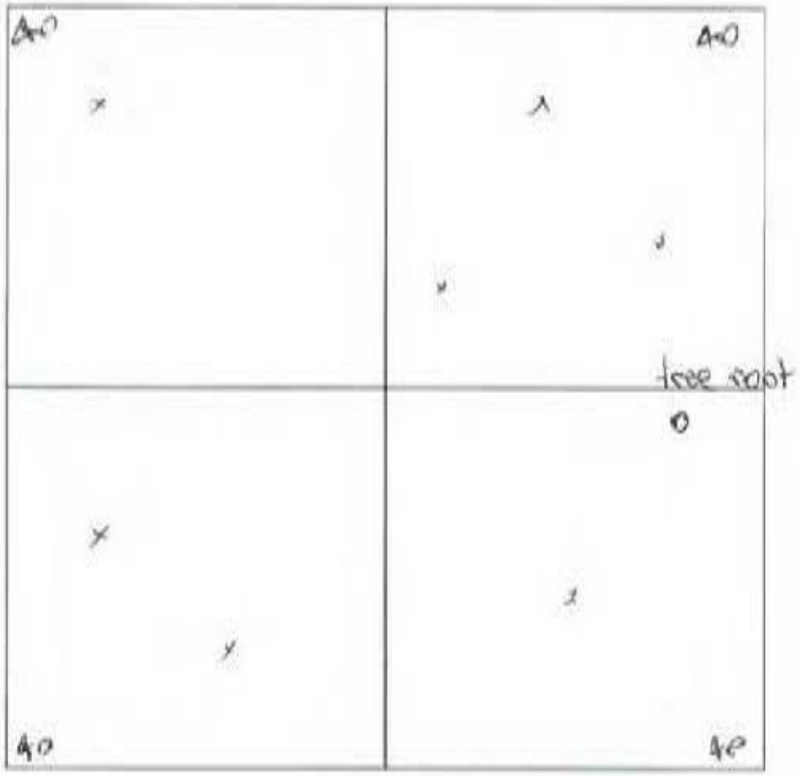
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
3	100	A1 (A2) B Other			
4	100	A1 (A2) B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silty clay loam. Friable lightly Compact pale brown slightly damp with some evidence of insect + [illegible] disturbance
A2	2	same as above becoming slightly more compact and inclusions of fine to small tree roots.
	3	compact silty clay with some tree root inclusions evidence of insect bioturbation – alluvial
	4	limit of site due to time constraints – to be plowed.

Description of material below B or the limit of excavations

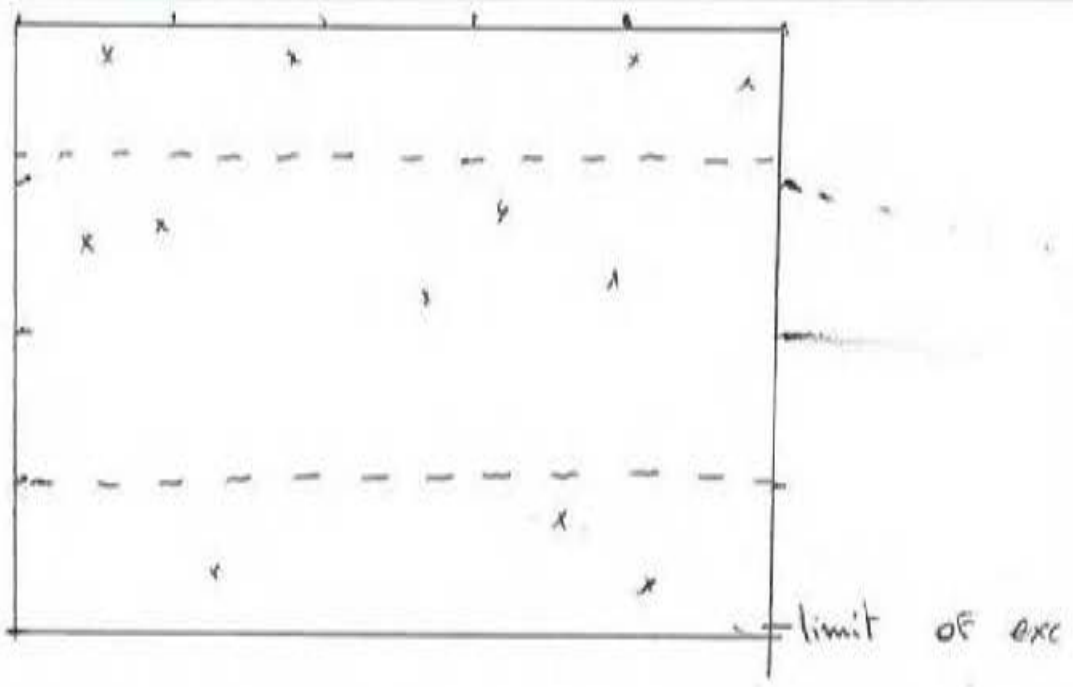
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	22 · 80
Excavators	AP. Jones, Piller	Date 15/05/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc GRASS.
A1	1 ~~100~~	100m Soft mid brown sandy clay silt. Ploughsoil. Occ. fragments.
~~A2~~ B1	~~2~~ 2&3	250mm Soft orange grey sandy silt. Occ.
B2	4&5	Pale orange silty clay. Occ. laminated.

Description of material below B or the limit of excavations

Plan

500 500

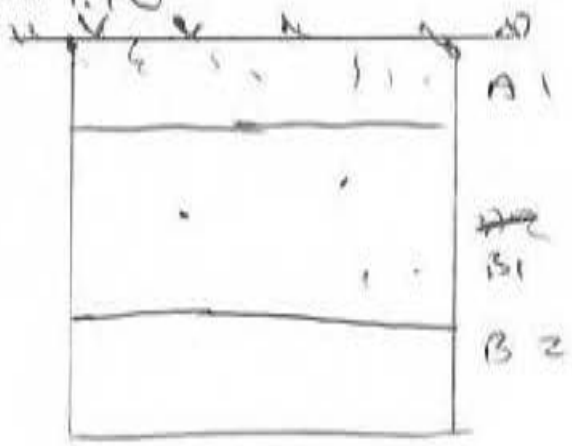
500 500

Spit drawn: 0 x 0 (.

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	~~80~~ 81
Excavators	LTo, SF, AO.	Date 15/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Ironbong Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	10	A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	410mm				

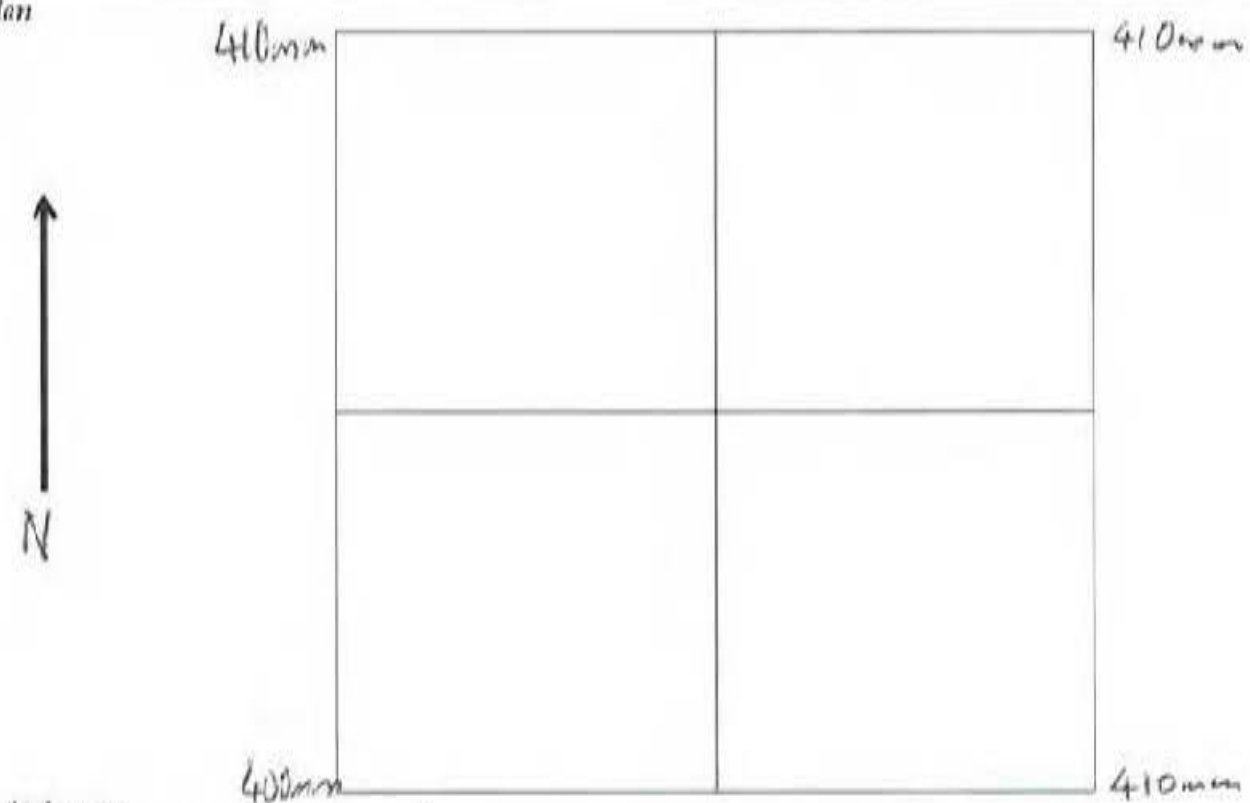
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Ploughed landscape, Flat Creekbank 30m SE.
A1	1	Dark brown sandy clay. Friable, ~~less than~~ <5% fine gravel inclusions ~~throughout~~. Lower 20-30mm boundary to B horizon clear & at approx 100mm depth.
A2 B1	2	Brown/lighter than Spit 1, sandy clay loam. Moderately compact <5% fine gravel and ironstone inclusions, occasional charcoal flecks throughout ~~throughout~~ (~6mm)
	3	As above, increasing clay. Start of Diffuse (20-30mm) boundary to B2 clay dominated soils (approx)
	4	As above. ~~Start of diffuse boundary into more clay dominated soils (B2)~~
	5	Silty clay for the sandy (clay) with very occasional inclusions (<3%), ~~very~~ Extremely compact.

Description of material below B or the limit of excavations

Highly compact silty clay

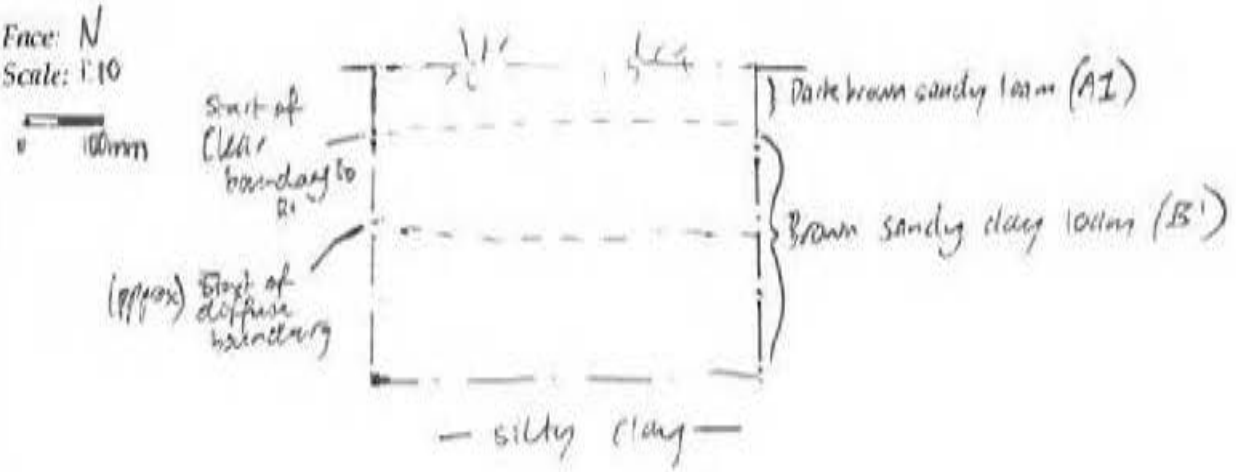
Plan



Spit drawn: Base of excavation.

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Very similar to TU 85, approx 20m NE

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	82
Excavators	Lara	Date 15/5/18	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	IRONBARK CREEK		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

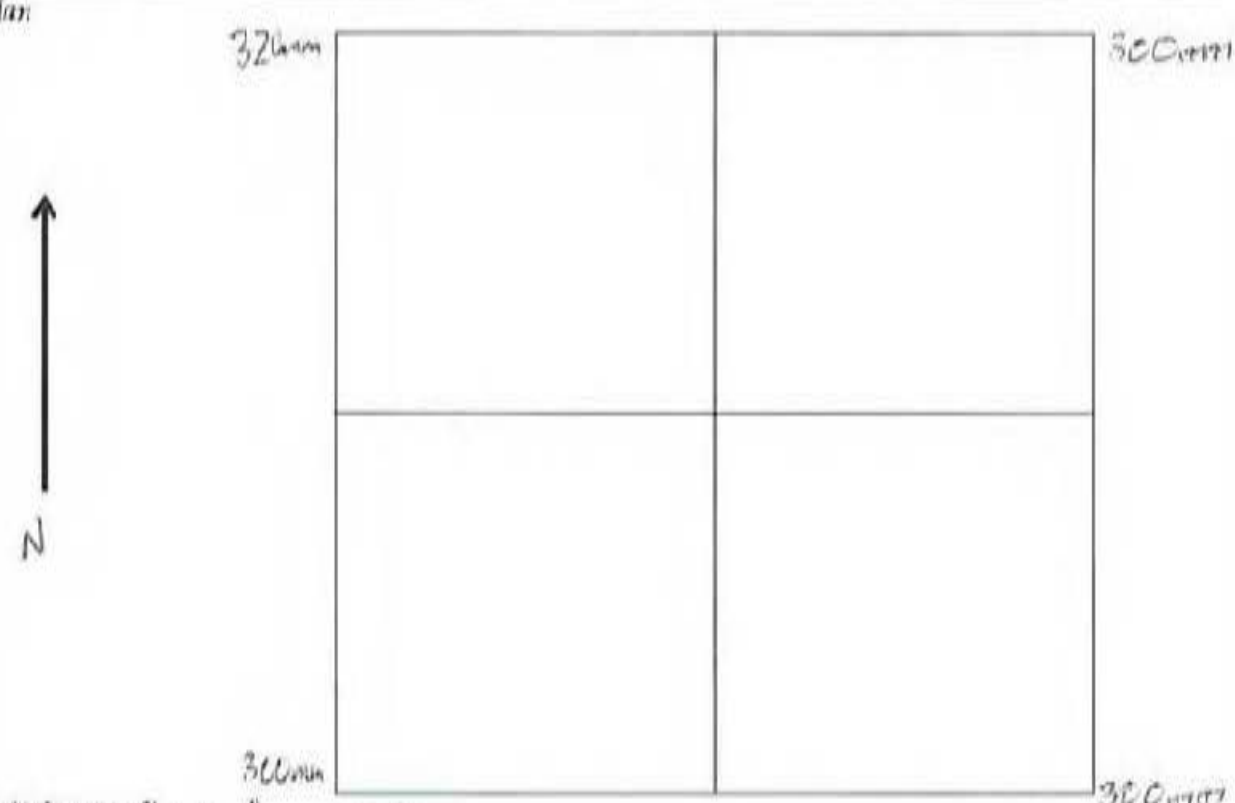
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			
2	100	A1 A2 (B) Other			
	100	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	300 – incomplete TU				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Ploughed Landscape. Creekline 20m to the South
A1	1	Dark brown sandy loam, friable, fine river gravel inclusions (<5%) clear (20-500mm horizon boundary
A2	2	Brown (lighter than spit 1) Sandy clay loam - moderate compact, River gravel inclusions + ironstone (approx 5%) charcoal flecks throughout (<5%) Quite sterile
	3	As above, with increasing clay.
		Although we hit the start of diffuse boundary to B2 horizon existed here UNFINISHED as we had to leave field early due to wet ploughing work, undertaken Predicted to be like TU 81 + 85 and continue for an extra 200mm

Description of material below B or the limit of excavations

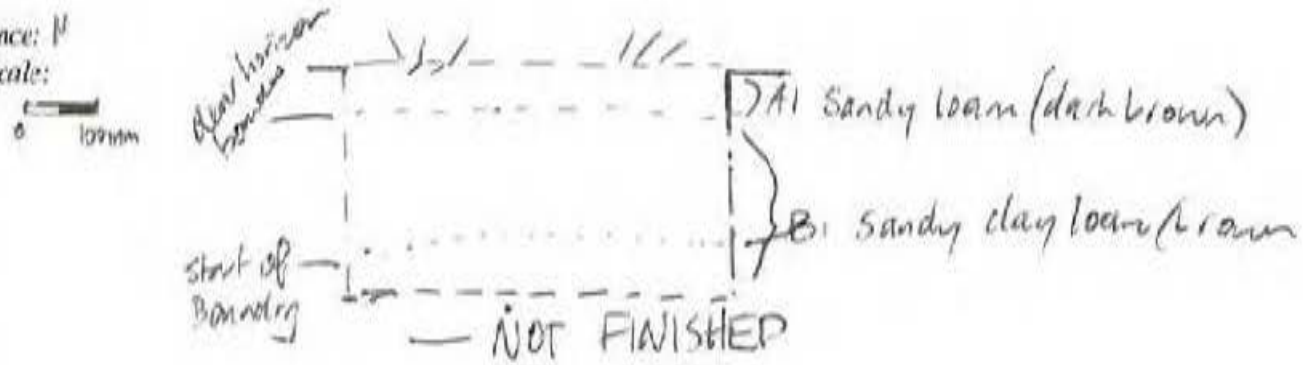
Plan:



Spit drawn: @ end of excavation

Section Plan

Face: N
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	83 Zone 2
Excavators	Sebastian Cayzoega	Date 15/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Iron Brook Creek		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

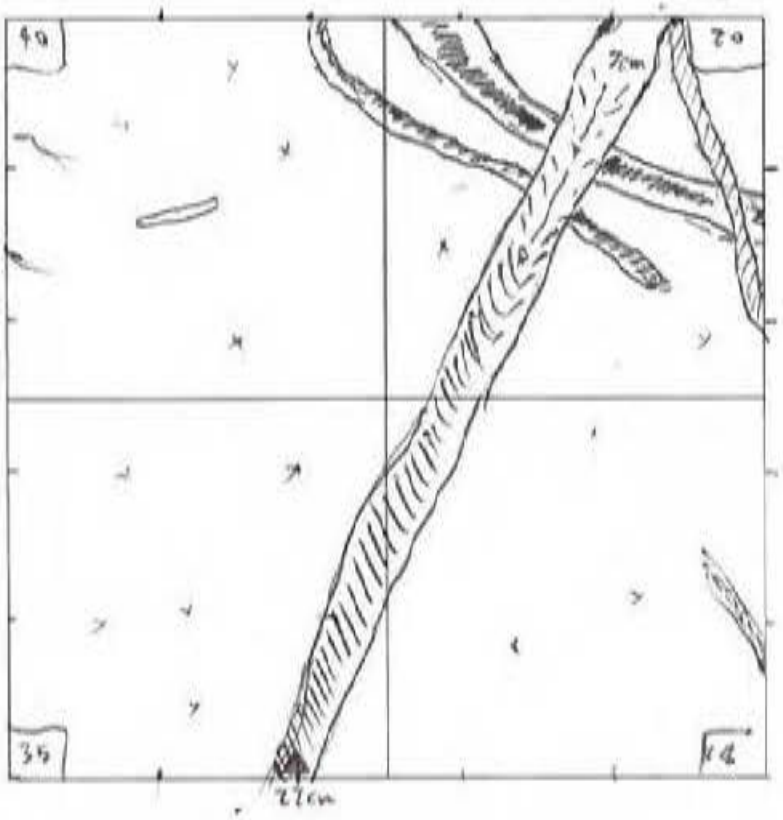
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		Tree roots - large	
2	100	A1 (A2) B Other		Tree roots - large	
	100	A1 (A2) B Other		Tree roots - large + small	
4	100	A1 (A2) B Other		Tree roots - large + small	
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silty sandy loam, lightly compact fine alluvial. heavily disturbed by farming and large eucalypt roots and insect activity soils dry very friable
A2	2	same as above, colours pale changing from a brown to darker brown some evidence of decomposed and living tree roots
	3	friable dark brown silty sandy chay alluvium same as above roots continue, disturbed landscape
	0	limit of excavation due to tree roots,

Description of material below B or the limit of excavations

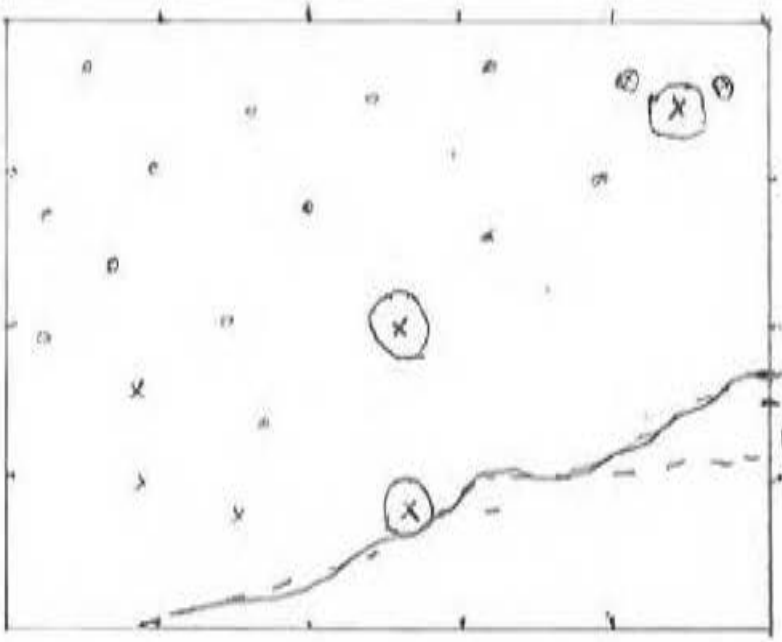
Plan



Spit drawn: 4

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Further excavation was halted to negate damage to intact eucalypt roots, no artefacts found.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT #** **PHOTO #**	22. 84
Excavators	AR, James & Dillon	Date 15/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

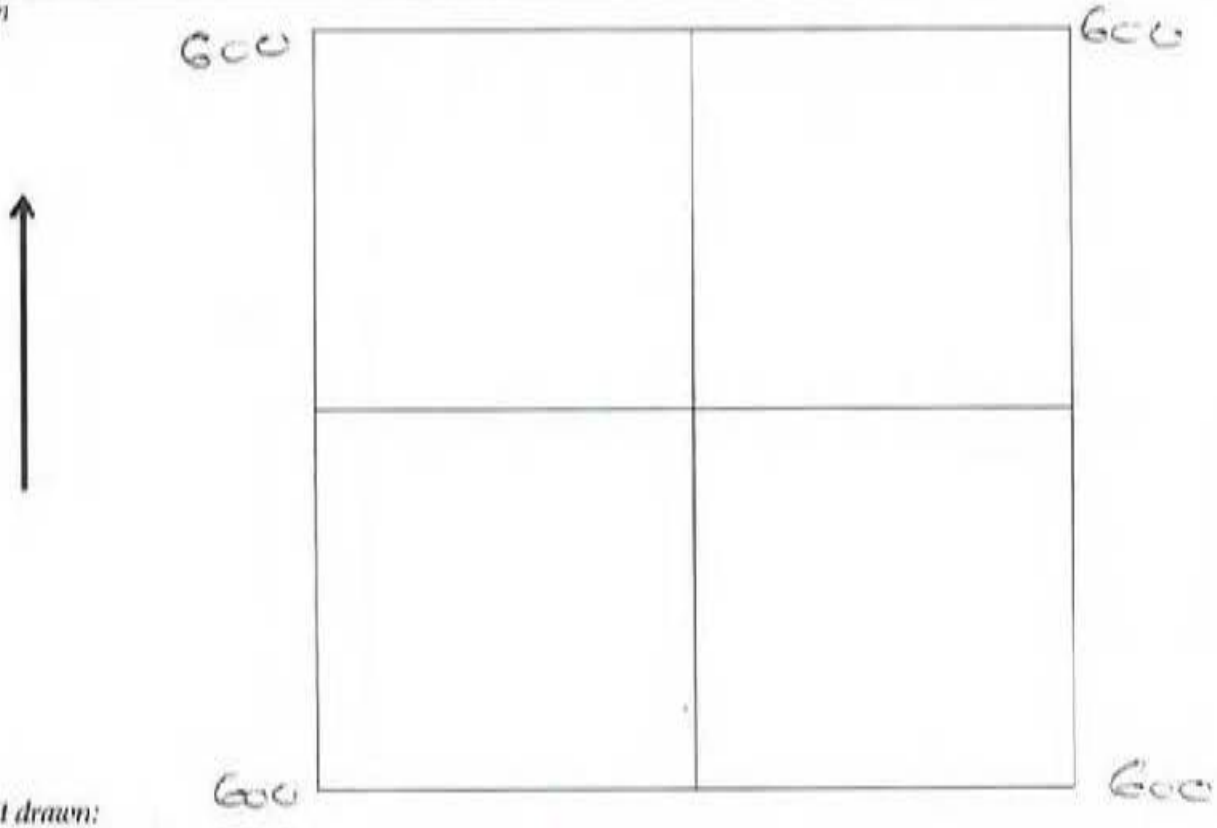
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6	100	A1 A2 (B) Other			
7		A1 A2 (B) Other			
Totals	600				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1+2	190mm thick mid brown sandy clayey silt. Plough soil, elec ckb B.
~~A2~~ B1	3 ~~4~~	200mm ckb. Soft, Pale orange grey clayey silt - elec ckb B2. occ. red fine iron bogs 10mm.
B2	4-6	240mm ckb. U. concave ~~pale~~ mid orange ~~sandy silty clay~~ grey sandy silty clay. exc. halted at 600mm.

Description of material below B or the limit of excavations

Plan

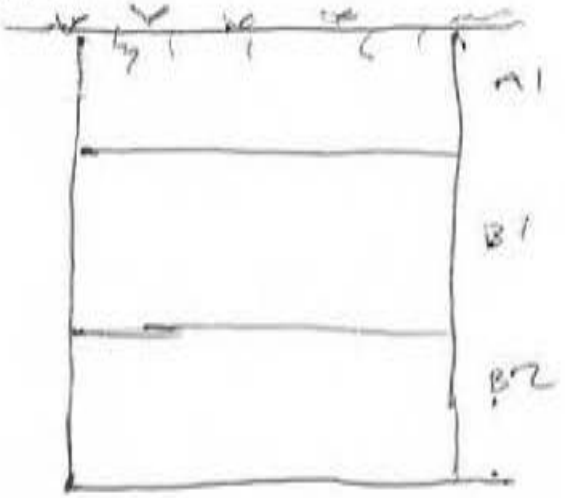


Spit drawn: END

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	85
Excavators	LTo + JF + AO	Date 15/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Wambrong Creek		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other			
2	100	A1 A2 B Other			
	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	90	A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	490				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Cropped and ploughed Alluvial flat. Creek 40m SE. organic humic layer
A1	1	Dark brown sandy loam moderately compact small amount of inclusions (<5%) a few fine roots, highly charred coals clear (20-30mm) boundary to B horizon at interface at approx 100mm in depth. Colour darkened by
A2 B1	2	Brown (slightly lighter than spit 1) sandy clay loam moderately compact. <5% inclusions occasional charcoal pieces, slight trace of bioturbation No organic humic layer
B1	3	As above
B1/B2	4	As above, developing a silty texture start of diffuse boundary into more clay dominated soils (B2).
B2	5	Silty clay (or fine sandy clay) gravel inclusions non evident. End of excavation at between 470 - 490mm in depth due to highly compact clay.

Description of material below B or the limit of excavations

Highly compact silty clay

Plan

485mm

420mm

N

490mm

420mm

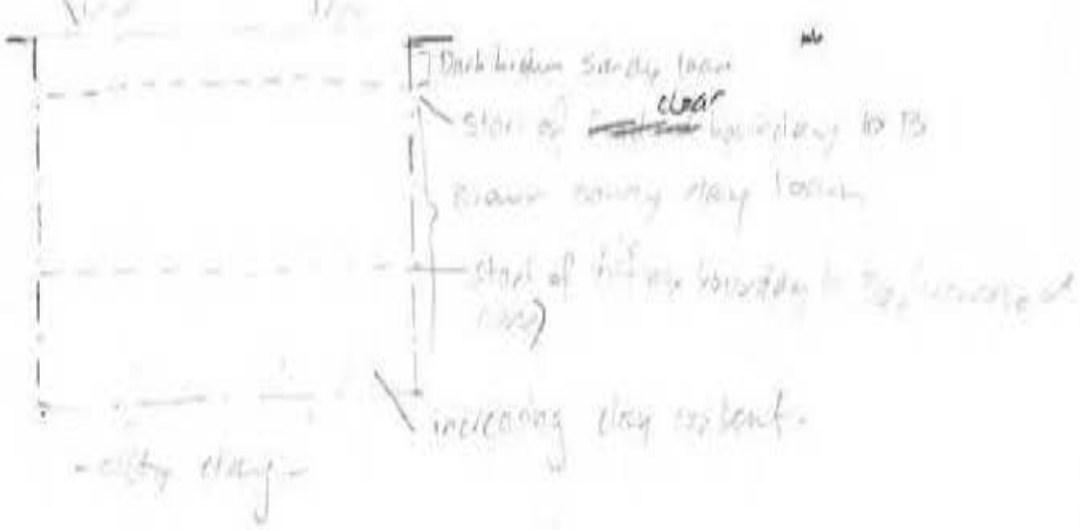
Spit drawn: end of excavation

Section Plan

Face: N

Scale: 1:10

10mm



Further descriptions and relationships to other TU

Not sterile clay when we finished excavation - still dark so it appears it was the topsoil/subsoil. Clear digging - no artefacts found (except one potential geonet) so unlikely to be any more at deeper spits.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	87 - Zone 2
Excavators	Sob Asinya Rebecca	Date 15/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / (Terrace) / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

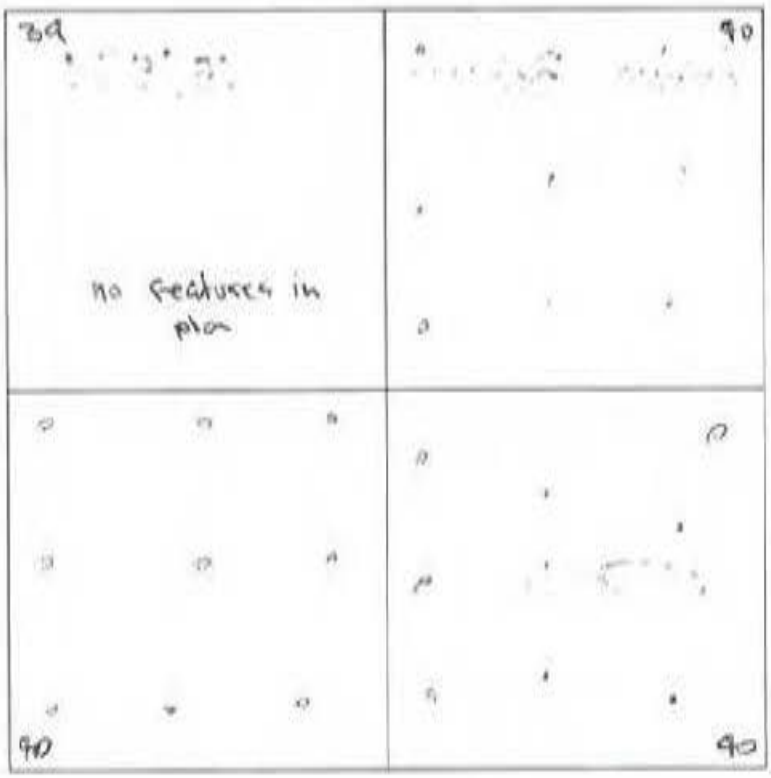
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
	100	A1 (A2) (B) Other			
4	100	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silty clay loam, lightly compact with some organics & (grass) vegetation heavily disturbed from plowing & erosion soil penetrated by insect activity
A2	2	silty sandy clay brown with less than 5% stone gravels, (seed) bioturbation from animal activity by insects, ants etc, very compact some fine tree roots
	3	silty sandy clay ants compact silty clay, some insect activity (ants) worms etc soil is dry compacted and probable disturbance from excavation
	4	limit of the excavation, very compact silty clay with some red and white gravels

Description of material below B or the limit of excavations

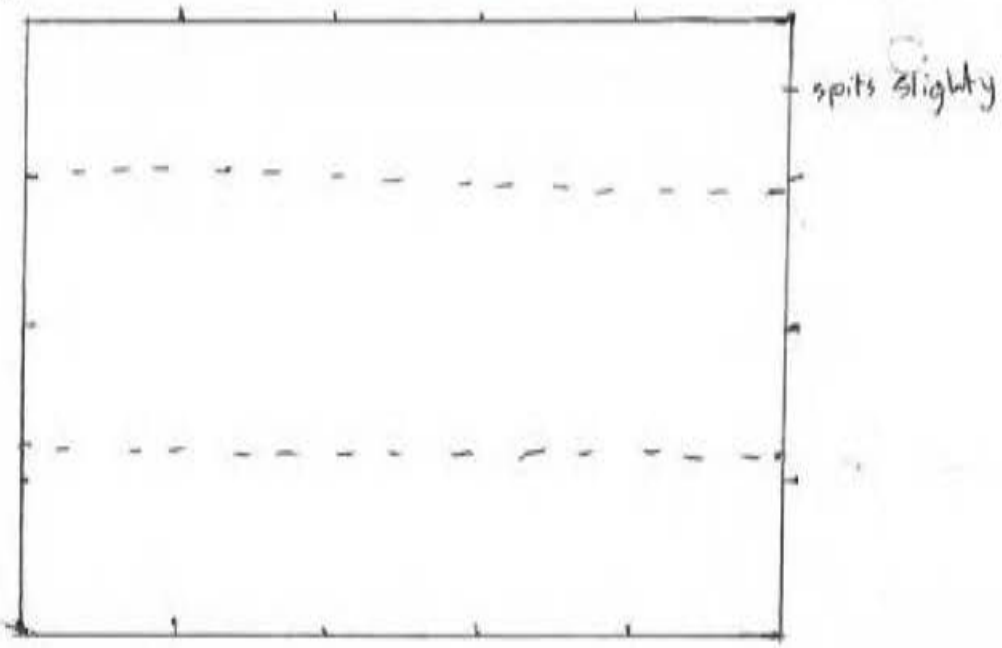
Plan



Spit drawn: 4

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	72, 90
Excavators	AP, James, Dillon	Date 15/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting						Northing						
Soil landscape													
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other												
Aspect	(N) E S W	Slope %											

EXCAVATION wet sieved (dry sieved)

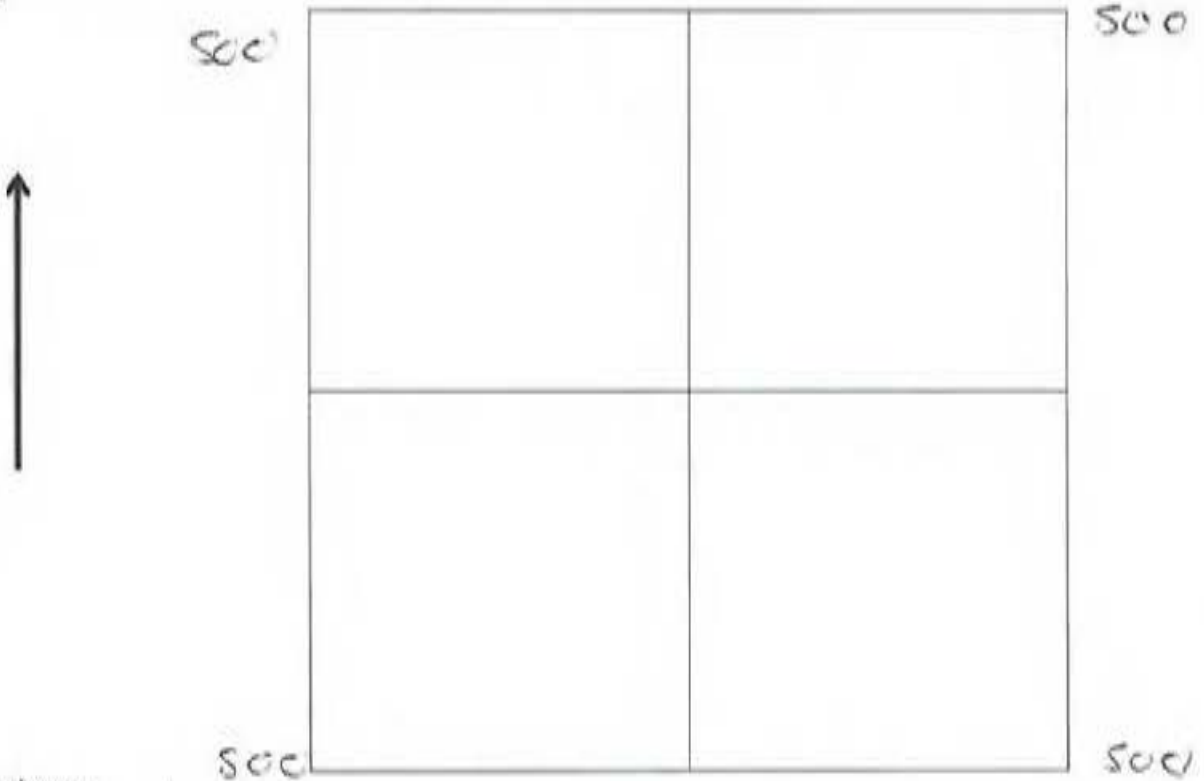
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Sparse Grass Cover
A1	1	100mm thick clayey sandy silt, light brown, soft, v. occas roots disturbance - plough soil clear transition.
A2	2	50mm thick med. compact ~~dense~~ brown clay silt, occas roots. Occas charcoal flecks. Mid clear transition
B1	3	150mm thick med. compact pale grey brown sandy silt, occas angular fragments & root and like stone clasts.
B2	4+5	Exc to 100m depth w/ pick & hand. DARK GREY BROWN silty clay (80% clay) w/ few fragments & root and like stone clasts.

Description of material below B or the limit of excavations

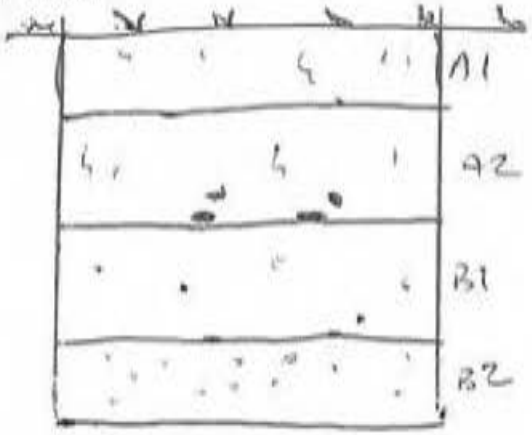
Plan



Spit drawn: excl.

Section Plan

Face: N
Scale: 1:10



• : CARBON
• : Rocks & red and white clay

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	92-Z4
Excavators	Sebastian Jarrawa Rodney	Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	Bethungra		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

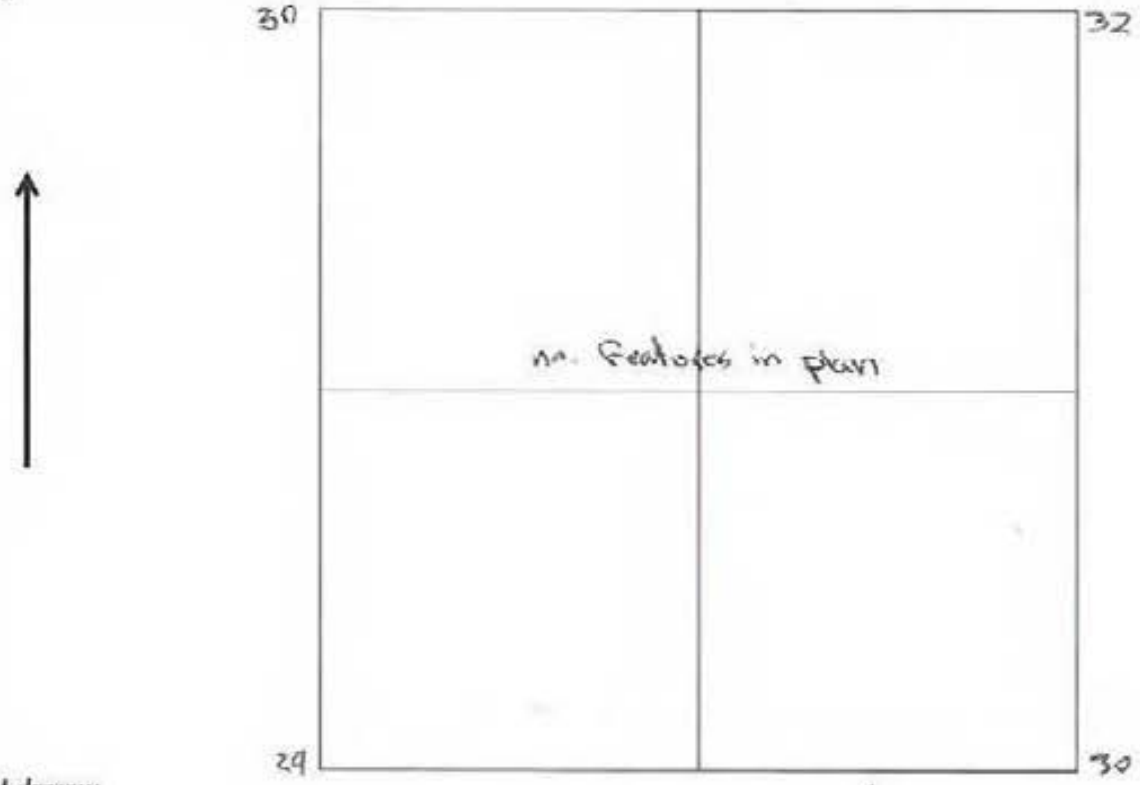
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) (B) Other		NA	0
2	100	A1 (A2) (B) Other		NA	0
	100	A1 A2 (B) Other		NA	0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	extremely Compact silty clay with fine gravels brown erosional soils heavily disturbed by dam work approx 10m to the South
A2	2	no clear changes to very Compact silty clay with gravels
	3	extremely Compact silty clay loam, disturbance from adjacent dam. ~~high~~ high clay content limit of excavation

Description of material below B or the limit of excavations

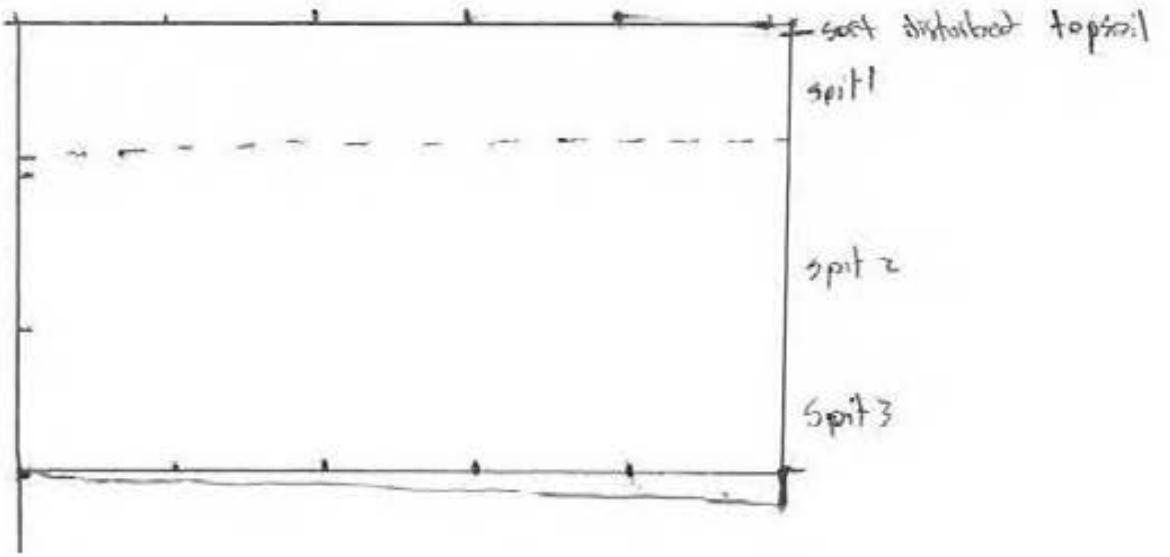
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	94
Excavators	LT	Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape	Bethungra		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	80	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	480				

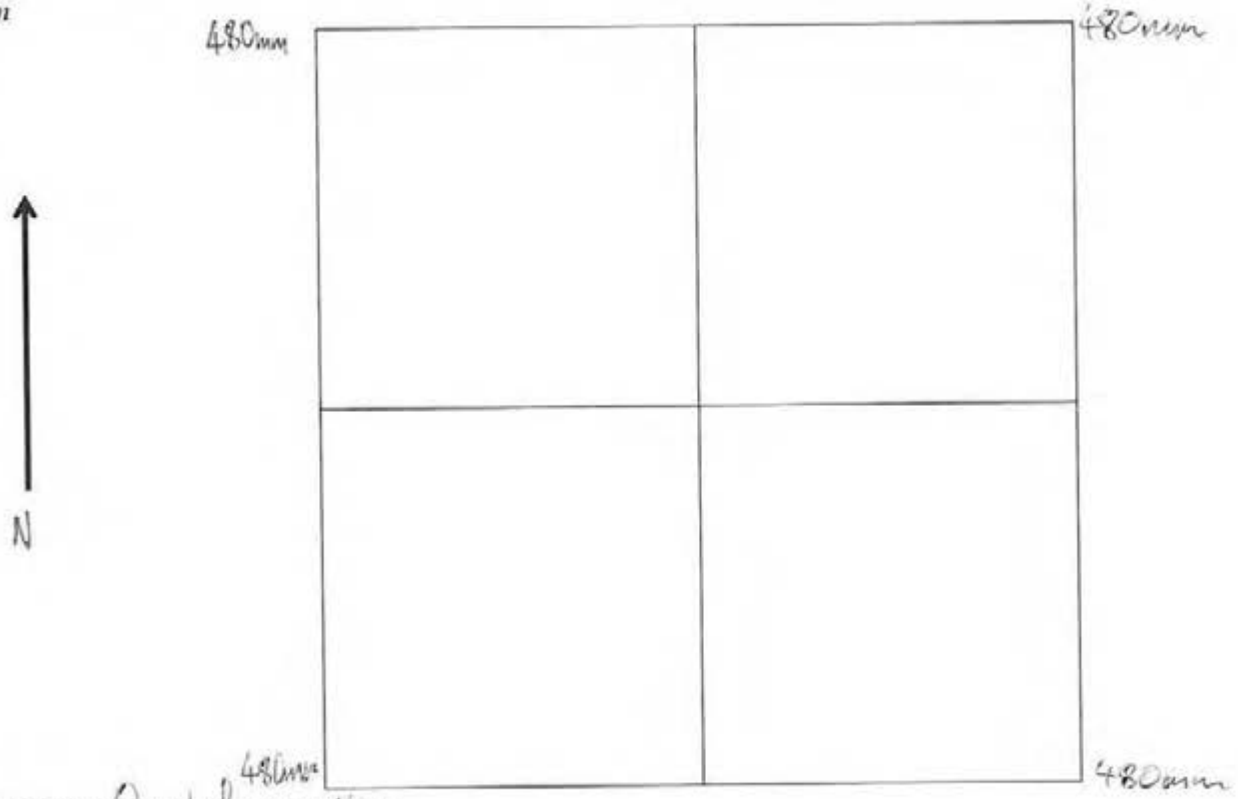
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Ploughed, cleared slope improved pastures (Fodder crops?)
A1	1 (0-100mm)	Dark grey brown sandy loam; Friable; Fine-coarse angular inclusions (quartz and deformed quartz (<10)) Evidence of bioturbation (roots, worm casts). Distinct change from A2 due to more inclusions and darker colour. Start of A2 (approx 100mm in depth (abrupt boundary))
A2	2 (100-200mm)	Loose Dark brown sandy loam, less clay + dark than A1 + less gravels. Comparable gravel to previous A1 A2. More compact than A1 (clay-silt) At 200mm start of [illegible] Gradual (10mm) boundary to B horizon below.
B	3	Light brown sandy clay with [illegible] of fine inclusions (mostly quartz fragments) becoming more clayey.
	4	As above, but lighter in colour, more compact and clay
	5	Very compact sandy clay. Very dry. Still quartz fragments throughout. Start of gradual boundary at 480mm in depth

Description of material below B or the limit of excavations

Very compact Sandy clay with quartz inclusions

Plan



Spit drawn: @ end of excavation.

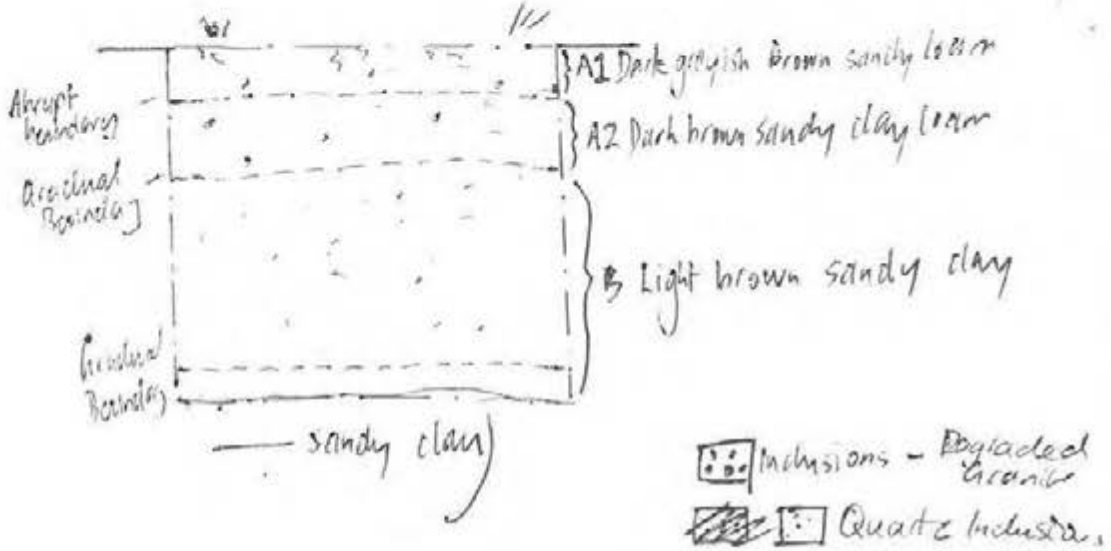
Section Plan

Face: N

Scale:

0 10cm

1:100



Further descriptions and relationships to other TU

No phosphorus (lol spelling?) in these pits, unlike other pits. Comparable to adjacent pit 95, except there is more quartz + potential quartz debitage

No obvious charcoal flecks

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	95
Excavators	JF, LTo, AO	Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

CPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Bathurst		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other			
2	100	A1 (A2) (B) Other			
	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

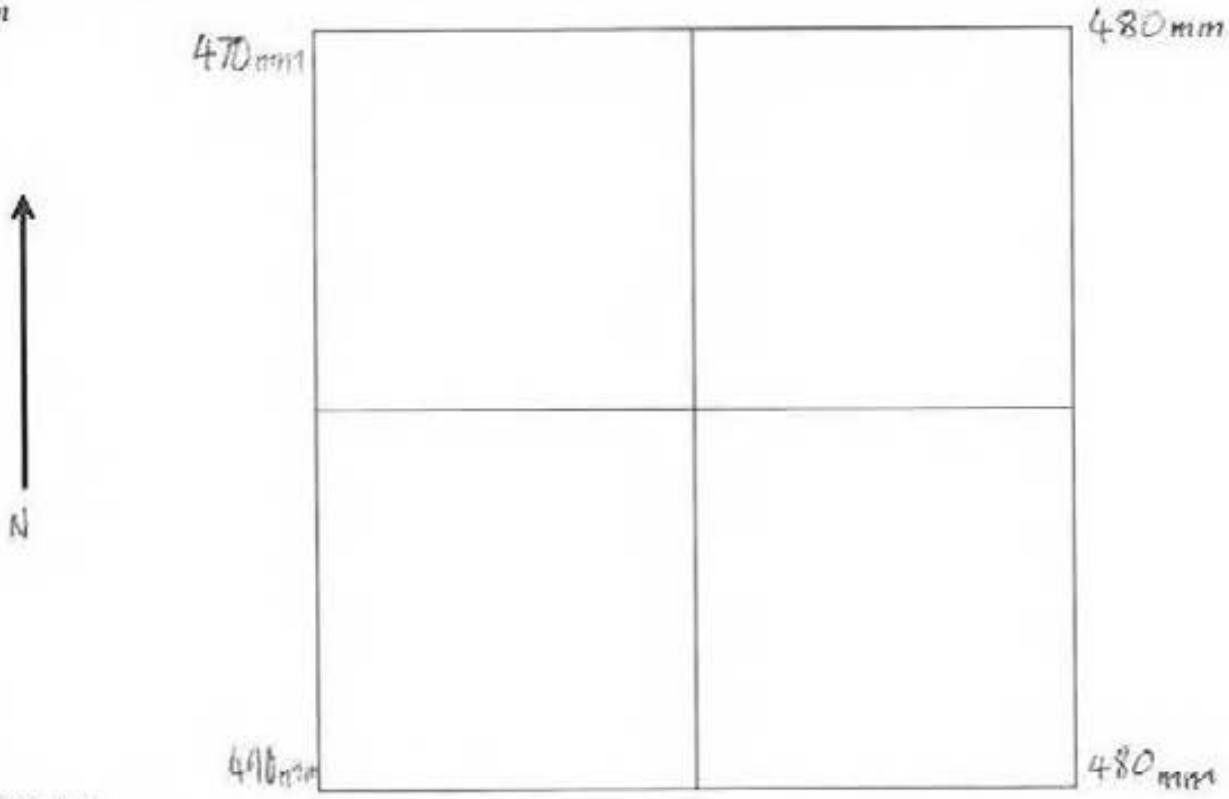
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the bioturbation.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Dense ~~stone~~ loam on exposed area. Mostly field with some quartz and granite coarse pebbles
A1	1 (0-100)	Dark grey-brown sandy loam. Friable. Fine/coarse gravel inclusions/quartz and occasional granite (<10%) Bioturbation + root activity. Disturbed and mixed soil. Base of A1 (described below) at 50mm in depth (Abrupt boundary)
A2	2 (50)	compact sandy clay loam, less dark grey than A1. Less root activity, root approx. with some amount of fragments/pebbles/charcoal, inclusions at approx 10mm in depth. Gradual (170mm) boundary to B horizon starting at 160mm
B	3	Light brown sandy clay/clay. Less inclusions 2% - still quartz inclusions - less granite. Variation in colour. Moderately compact - no roots
B	4	As above, lighter in colour, more compact.
B	5	Very compact sandy clay. Very dry. Less quartz than above spits. Start of gradual boundary (80mm) at approx 400mm in depth

Description of material below B or the limit of excavations

Very compact sandy clay

Plan

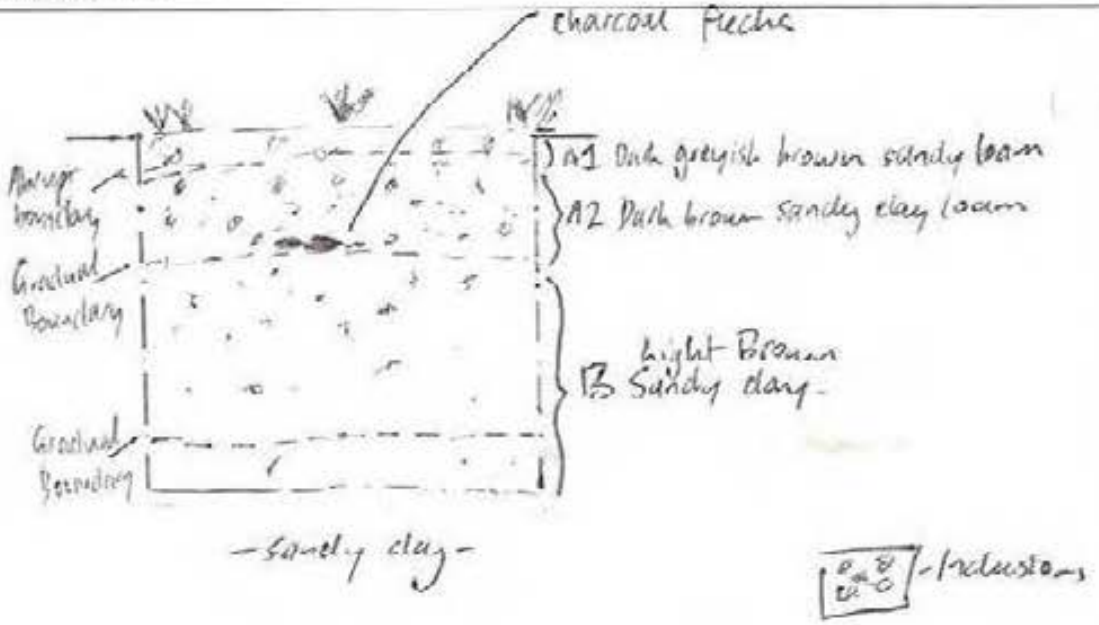


Spit drawn: @ End of excavation -

Section Plan

Face: N

Scale: 6 100mm (1:10)



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	96 (OFFSET)
Excavators	AO, JF & LTO	Date 17/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Bethungra		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 (B) Other			
2	100	A1 A2 (B) Other			
	100	A1 A2 (B) Other			
4	90	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	396mm				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Ex TU located under large tree, between tree roots near where surface artefacts were located. No grass / pasture
~~A1~~ B'	1	Light greyish-sandy clay. Topsoil is non existent. Quartz and other fragment inclusions throughout, (10%); Very compact; ~~and~~ No fine roots, very compact.
~~A2~~ B'	2	As above, occassional Coarse (5mm and above) roots from nearby tree, ~~start of Diffuse boundary to B2 horizon~~ Same inclusions
B'	3	As above, increasing clay content, more yellow in colour. ~~Start of~~ End of diffuse boundary to B2 horizon ~~start of~~ a different type of Sandy clay.
B'	4	~~Clay becoming~~ increasing in plasticity and compactness until dig finished.
B2		

Description of material below B or the limit of excavations

Sandy (clay) (Denser, greater plasticity than above)

Plan

360mm

350mm

390mm

380mm

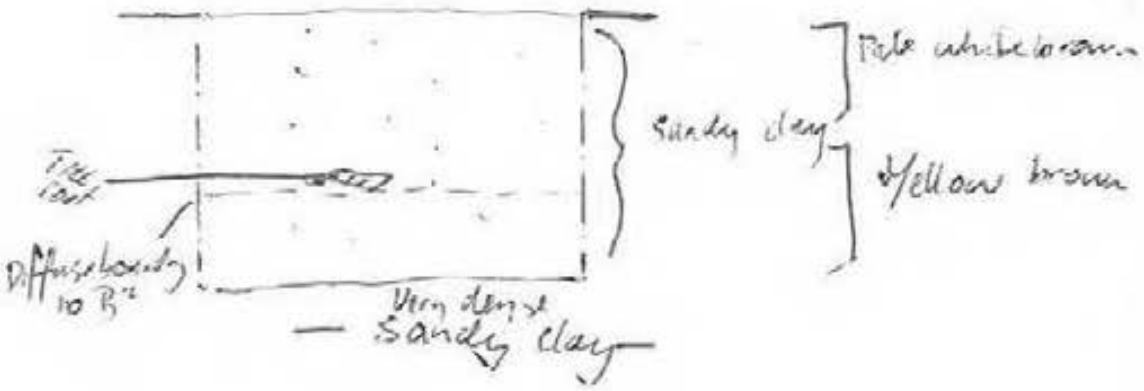
Spit drawn: end of excavation.

Section Plan

Face: N

Scale:

0 100mm



Further descriptions and relationships to other TU

Tree root disturbance - would have brought up/ moved parent material / clay.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	97 - Z 4
Excavators	Seb Jarrawa Rodney	Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

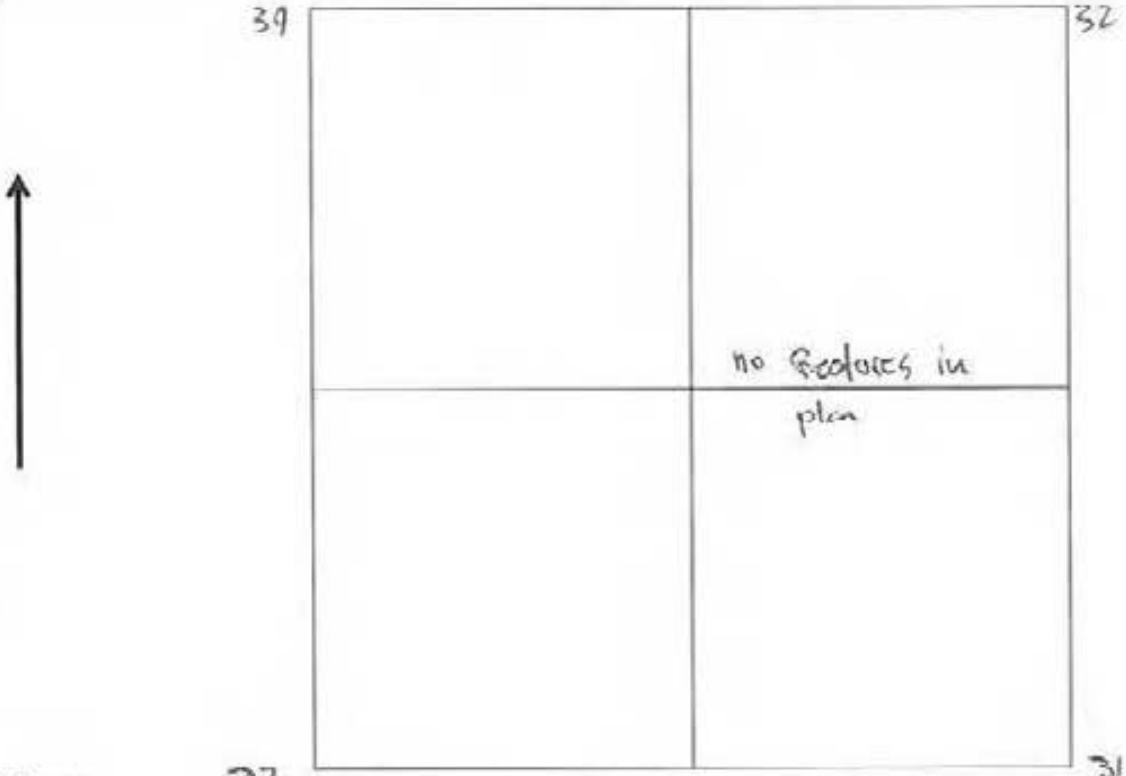
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
	100	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	reddish brown silty clay loam lightly compact, friable with some fine gravels heavily disturbed from agricultural activity. top soil
A2	2	brown silty topsoil, (agricultural) onto sterile white powdery, introduced phosphates and nitrates, as explained by the farmer on 16/5/19
	3	phosphate layer onto a sandy clay, dry, extremely compact
	4	cutting into base silty clay

Description of material below B or the limit of excavations

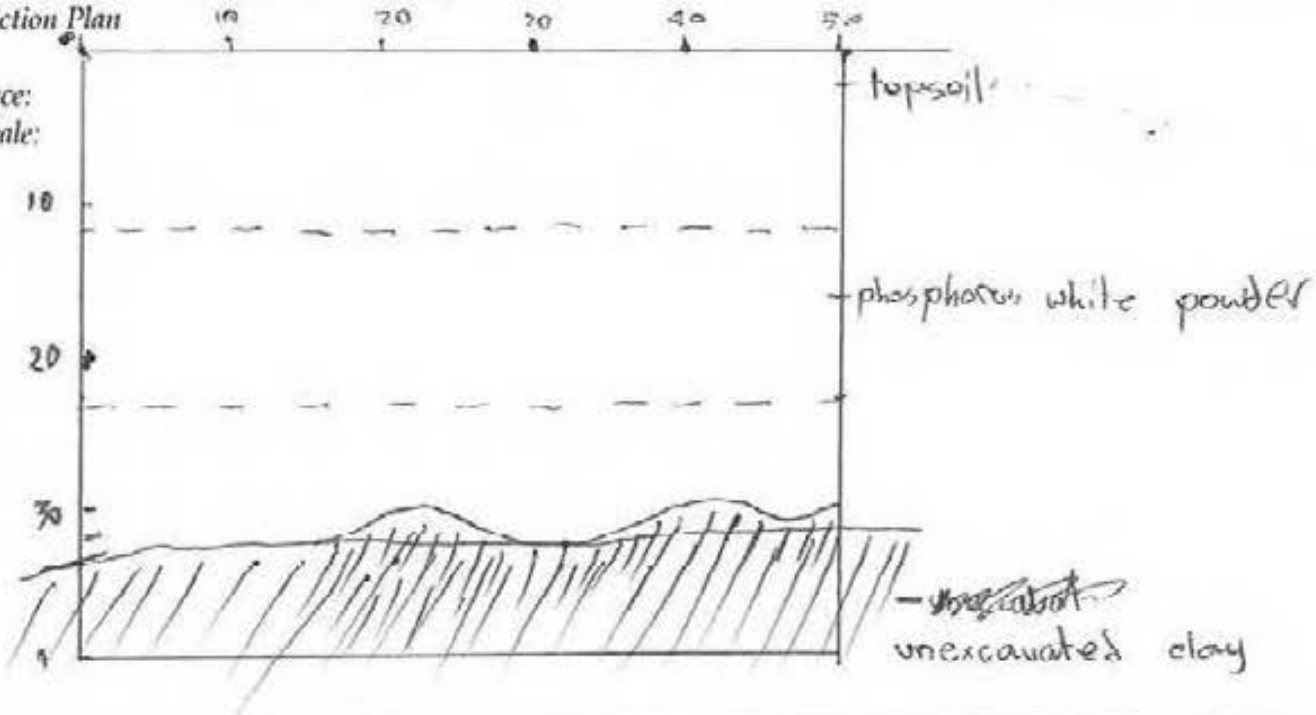
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

The farmer said he had conducted extensive land works and introduced foreign soils, heavily altered for agricultural land etc

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	2498
Excavators	Aelan, James, Dillon	Date 17/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 10	

EXCAVATION wet sieved (dry sieved)

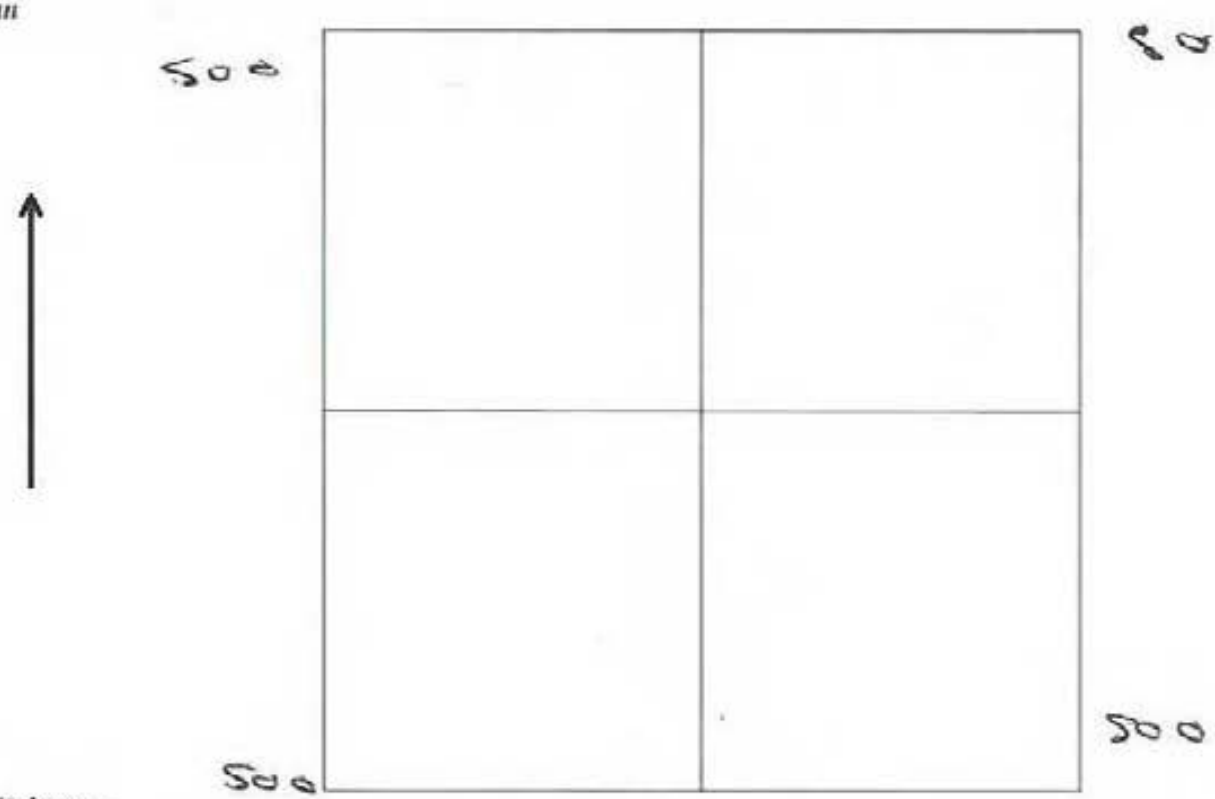
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	160	(A1) A2 B Other			
3	100	A1 A2 B (Other)			
4	100	A1 A2 B (Other)			
5	100	A1 A2 B (Other)			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Grass
A1		200mm mid grey brown sandy clay silt. Plough soil. Clear onto introduced deposit.
A2 one.		Bright white indurated introduced agricultural fill. Poss. transition at base w/ occa. manganese and clay lacks in silty sand, occa. fragile clay flecks.

Description of material below B or the limit of excavations

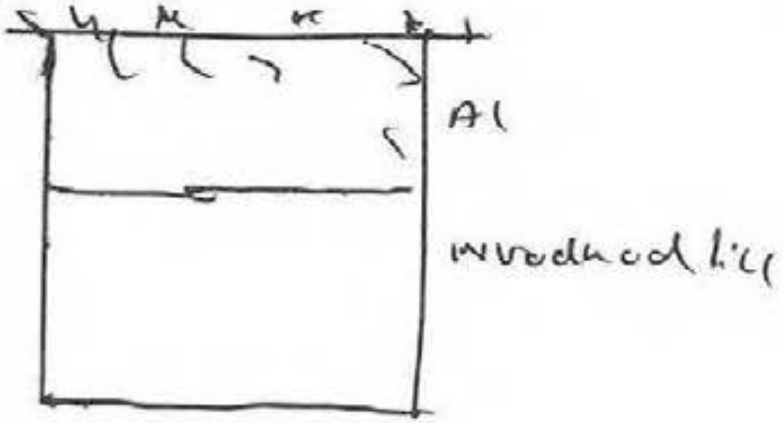
Plan



Spit drawn:

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	99
Excavators	LTo, JF + AO	Date 17/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	Bethungra	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION

wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) (B) Other			
	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other		Large broken flake	1
6	110	A1 A2 B Other			
7		A1 A2 B Other			
Totals					

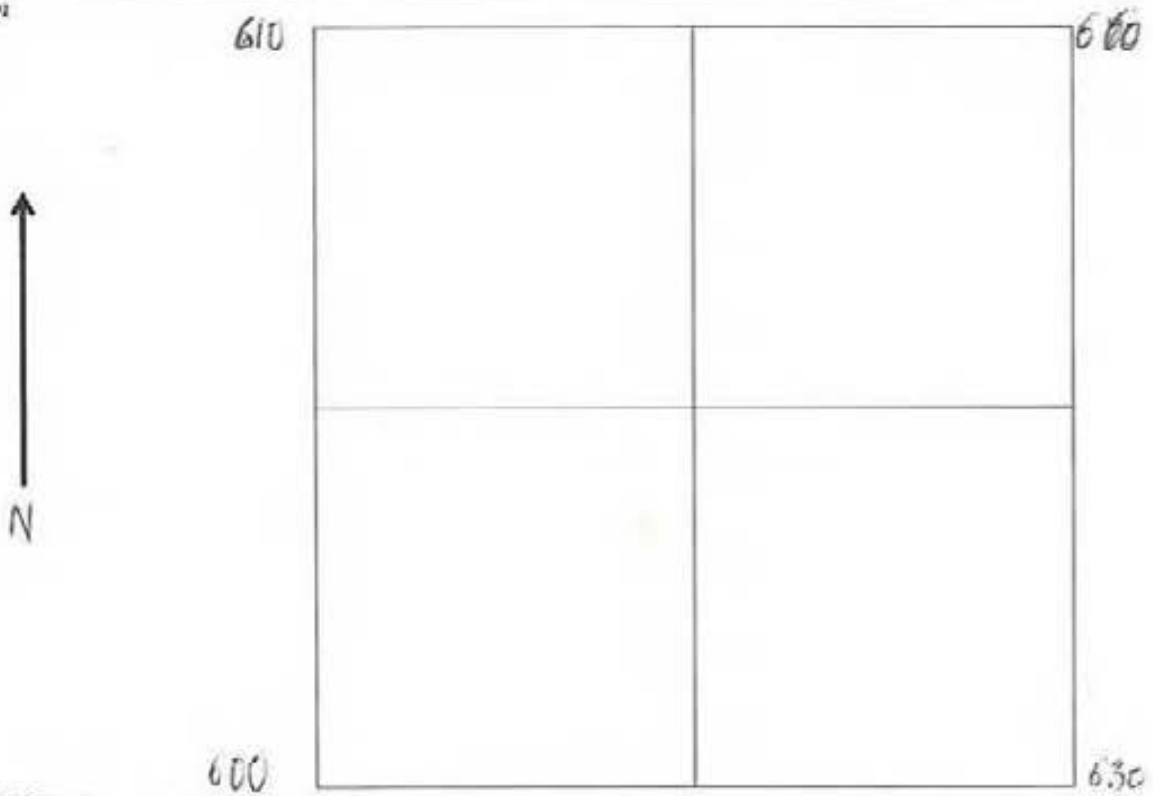
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. ~~Lower Slopes~~ Lower slope fodder crop approx 15m South of large tree with artefacts
A1	1	Dark brown sandy loam; extremely friable, (collapsing in trench). Fine root inclusions, quartz and dykelets of red Alluvial (Basalt) gravels to compact A2 ~~boundary~~ at 9-12cm. Approx 10% gravel (fine + medium) inclusions increasing
A2	2	~~Compaction~~ Brown sandy clay loam compact with approx 10% gravel fine + medium inclusions. Few roots. At 250mm there is a gradual (50mm) boundary to B horizon
B	3	Transitional spit from A2 to B, this is evidence through bleaching of colour (light yellowish brown) and increasing clay content
B	4	Light yellow/brown fine sandy clay. 10% inclusions (quartz + fe) Start of manganese.
B	5	Light yellow-brown sandy clay. 10% inclusions including quartz with manganese. Likely intact
B	6	As above, becomes increasingly compact. Clay still not ~~prominent~~ ~~enough to be a strong clay based unit~~ extremely prominent – very sandy

Description of material below B or the limit of excavations

Sandy clay, highly compact, with manganese.

Plan

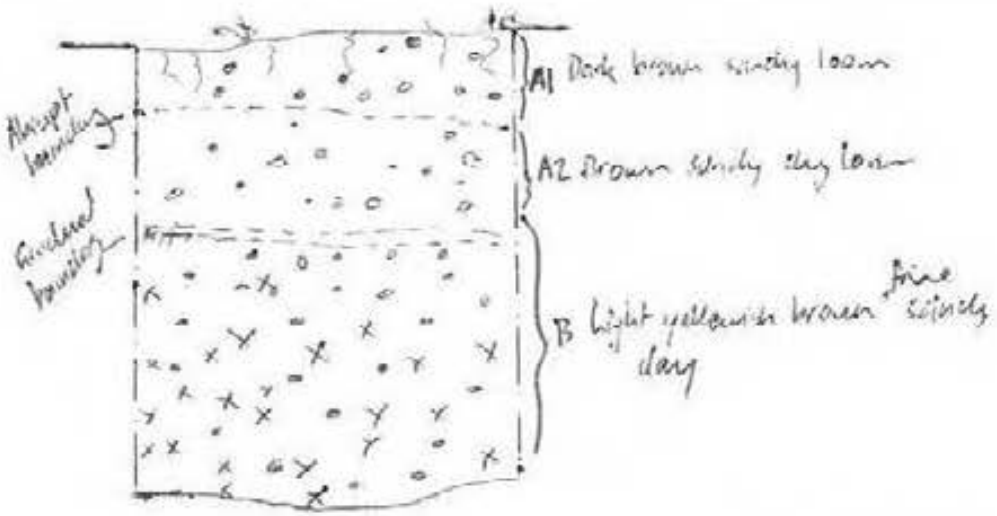


Spit drawn: end of excavation

Section Plan

Face: N

Scale:



Further descriptions and relationships to other TU

Manganese in the bottom 2 spits indicate that soils were very old. Highest (gravel beds) found in Spit 5 might indicate an old surface on which the archeological was sitting. Maybe being covered by run-off or introduced/improved pastures by the farmer.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT #** **PHOTO #**	100
Excavators		Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

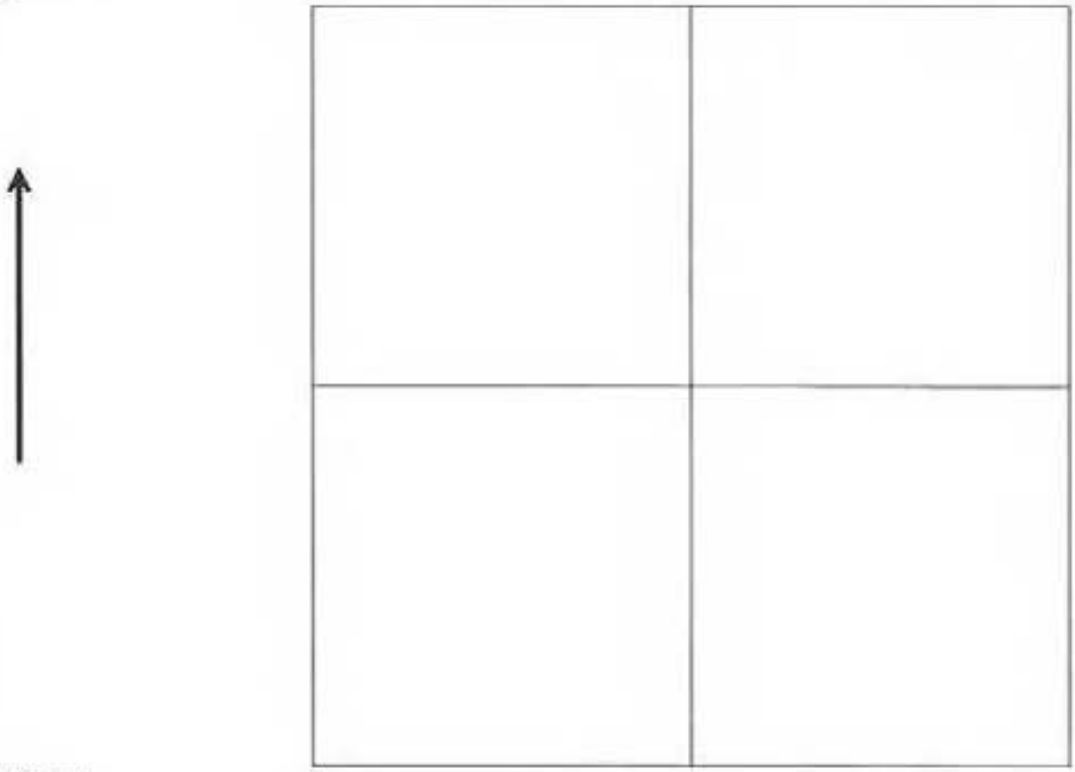
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		A1 A2 B Other			
2		A1 A2 B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Only 1 spit excavated and sieved as it was deemed to be in a channel of disturbance (See photos)

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 4 TU 101
Excavators	REBECCA VICTOR, HANNE & NOOSHIN (REGHAN?)	Date 17/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	POT. (x1) FURTHER ANALYSIS NEEDED.
Other evidence?	HISTORY EVIDENCE PLOUGHING & WHEAT FIELDS.
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	BETHUNGRA // GENTLE (LOWER) SLOPES V. CLOSE (1-2 m) FROM OLD BINGAMAL CREEK		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope %	1-2%

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-50mm	(A1) A2 B Other			Ø
2		A1 A2 (B) Other		# POT ARTEFACT COULD BE NATURALISED CHERT OR ARTEFACT. FURTHER ANALYSIS IS NEEDED	x1 (?)
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

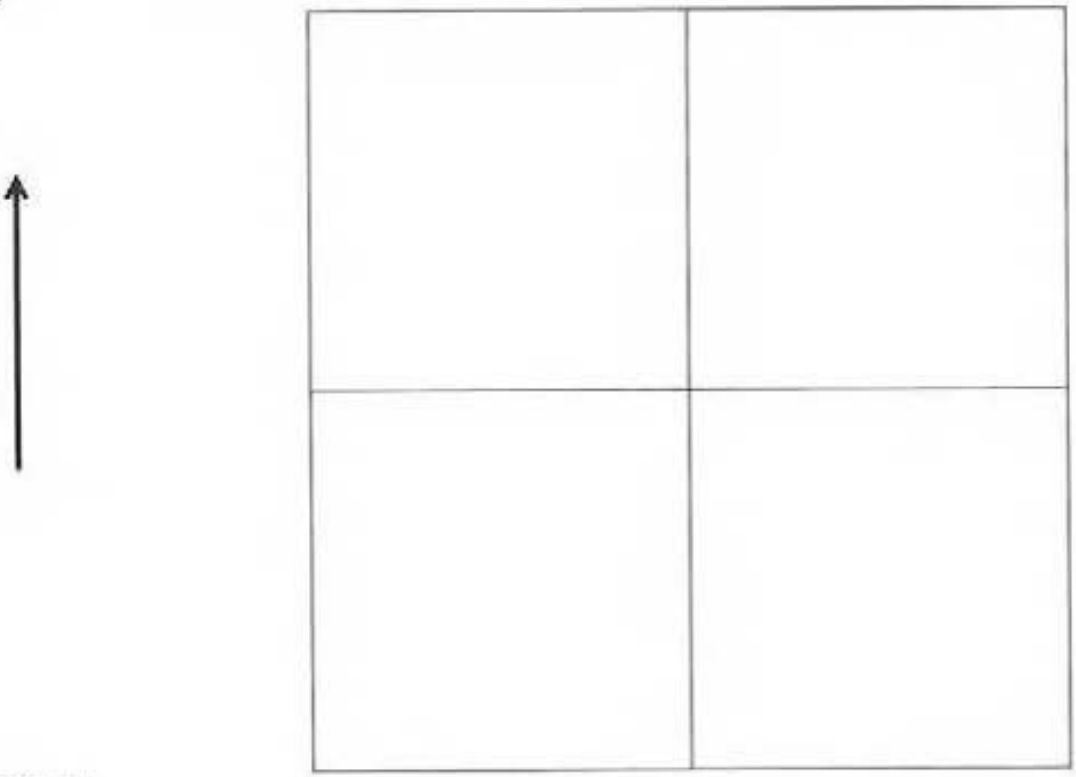
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata. compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
(A1)	0 0-50mm	SANDY SILT, FINE-MEDIUM GRAINED W/ MINOR ROOTS + ROOTLETS WITHIN FIRST 0-5CM. LIGHT BROWN + LOOSE COMPACTION.
A2 B (A2) B	0 (A2) 1	FINE/MEDIUM BIOTURBATION (upper 5cm) INTO LESS ORGANIC COMPONENT. LIGHTER BROWN W/ V. MINOR INCLUSIONS OF QUARTZ.
	(C) Spit (3) Base	TRANSITIONS AT 25-30CM TO PURE LIMITE FINE GRAINED (CALCRETE)(?) ABRUPT TRANSITION INTO V. COMPACT AND GREY/SANDY CLAY.

Description of material below B or the limit of excavations

Compact Sandy Clay.

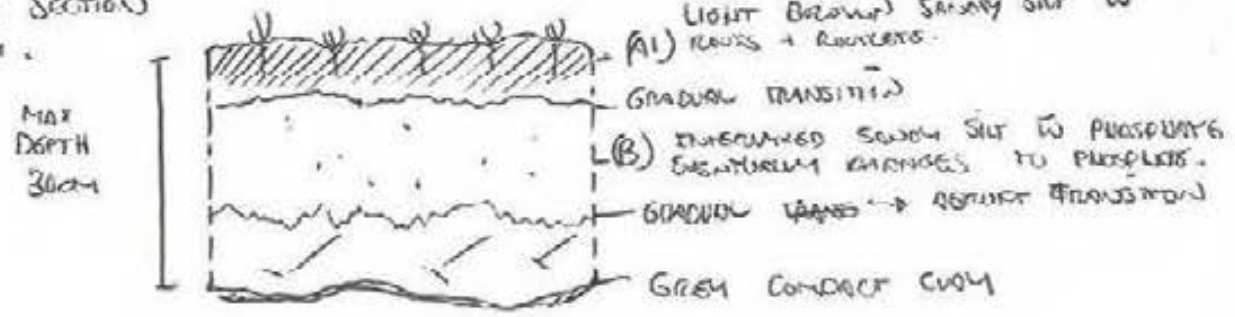
Plan



Spit drawn:

Section Plan

Face: (NORTHERN SECTION)
Scale: 1:10 cm.



KEY

 = WHEAT/ROOTS

 = PHOSPHATE SPECKS.

 = PHOSPHATE(?)

 = HUMIC COMPONENT

 = CLAY

Further descriptions and relationships to other TU

THIS PIT IS POSITIONED APPROX 3-5 METRES EAST OF AN ORIGINAL (NOW LEVELLED) ENAMERAL DEPRESSION/CREEK. WIDELY DISTURBED DUE TO ITS POSITION WITHIN PLOUGHED WHEAT FIELD.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	102 - Z4
Excavators	Seb Rodney Deccana	Date 16/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Bethungra		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

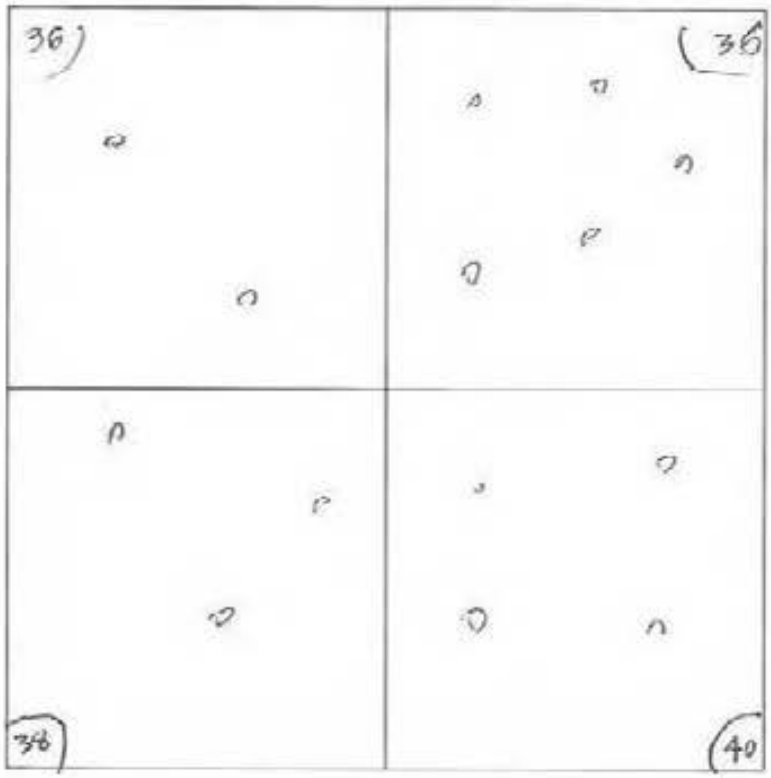
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other	Dark reddish sandy loam pH 6.5	NA	0
2	100	A1 (A2) B Other		NA	0
		A1 A2 (B) Other			0
4		A1 A2 (B) Other			0
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	sandy clay loam Compact, (topsoil,) ~~transitioning to soft white powdery~~ some grass roots, dry
A2	2	sandy clay loam as above onto white sandy powder - phosphates and nitrates according to conversations with the farmer (16/5/19
	3	nitrates onto base clay, extremely Compact sterile dry clay with some sandy gravels
	4	cut into the base clay sandy clay yellowish brown extremely compact, approx 5% quartz quartzite gravels.

Description of material below B or the limit of excavations

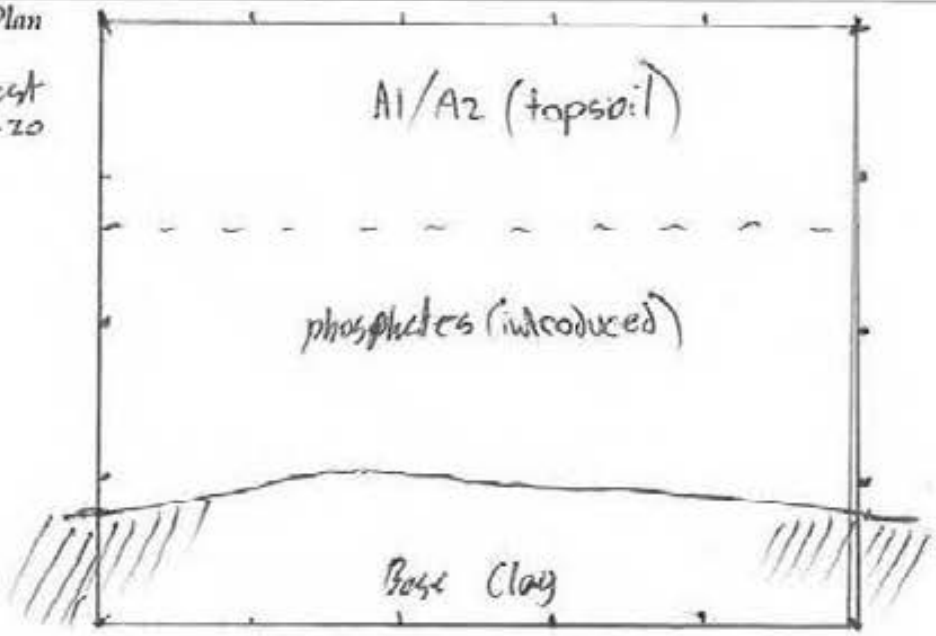
Plan



Spit drawn:

Section Plan

Face: west
Scale: 1 - 20



Further descriptions and relationships to other TU

topsoil diffuses into the phosphates created a gradual change in colour

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	24.103
Excavators	Adam, James, Dillon	Date 17.05.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	A1 A2 B (Other)			
4	100	A1 A2 B (Other)			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS.
A1		≈ 200mm at mid brown grey sandy clayey silty loam ploughsoil. Sub. occ. root disturb throughout. Clear onto INTRODUCED FILL.
A2 OTHER		BRIGHT WHITE AGRICULTURAL FERTILIZER, INDURATED. Clear onto yellow ORANGE CLAY at 400mm.

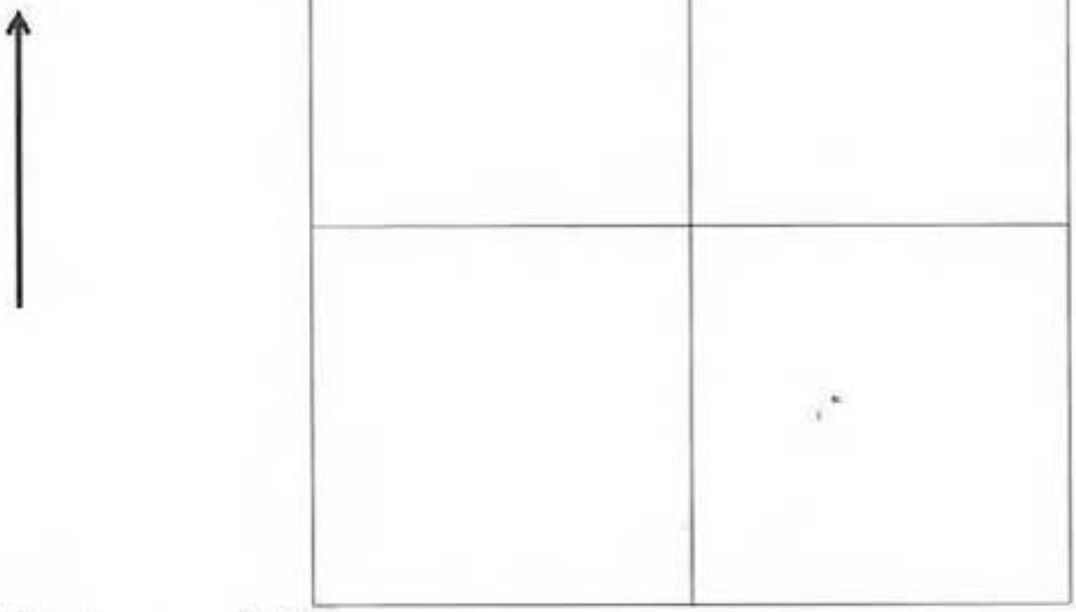
Description of material below B or the limit of excavations

yellow orange clay

Plan

400

400



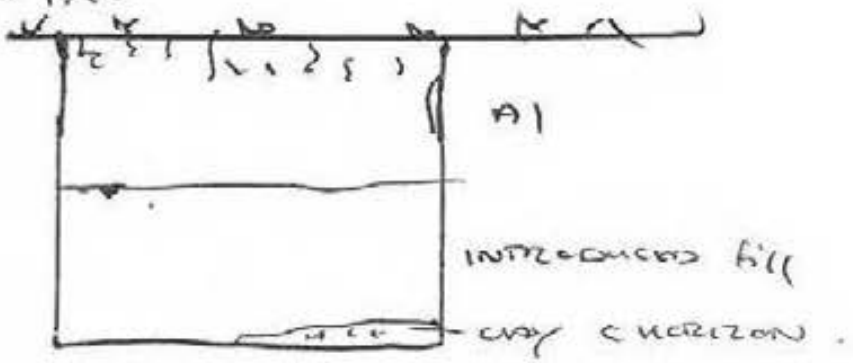
Spit drawn: 400

400

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	2000 4 TO: 104
Excavators	R. [illegible] VAGG, MARNIE & HANNAH	Date 17.5.2019	

SUMMARY OF EXCAVATION — FEGHAN

Total Count Aboriginal Objects	Ø
Other evidence?	NEAR PLOUGHING AND UNDISTURBED PACKAGES & NATURE
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting [illegible]	Northing [illegible]	
Soil landscape	BETHUNGRA II	PIT ON GENTLE SLOPE NEAR (ORIGINAL) DRAINAGE DEPRESSION.	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 2-3%	

EXCAVATION wet sieved dry sieved

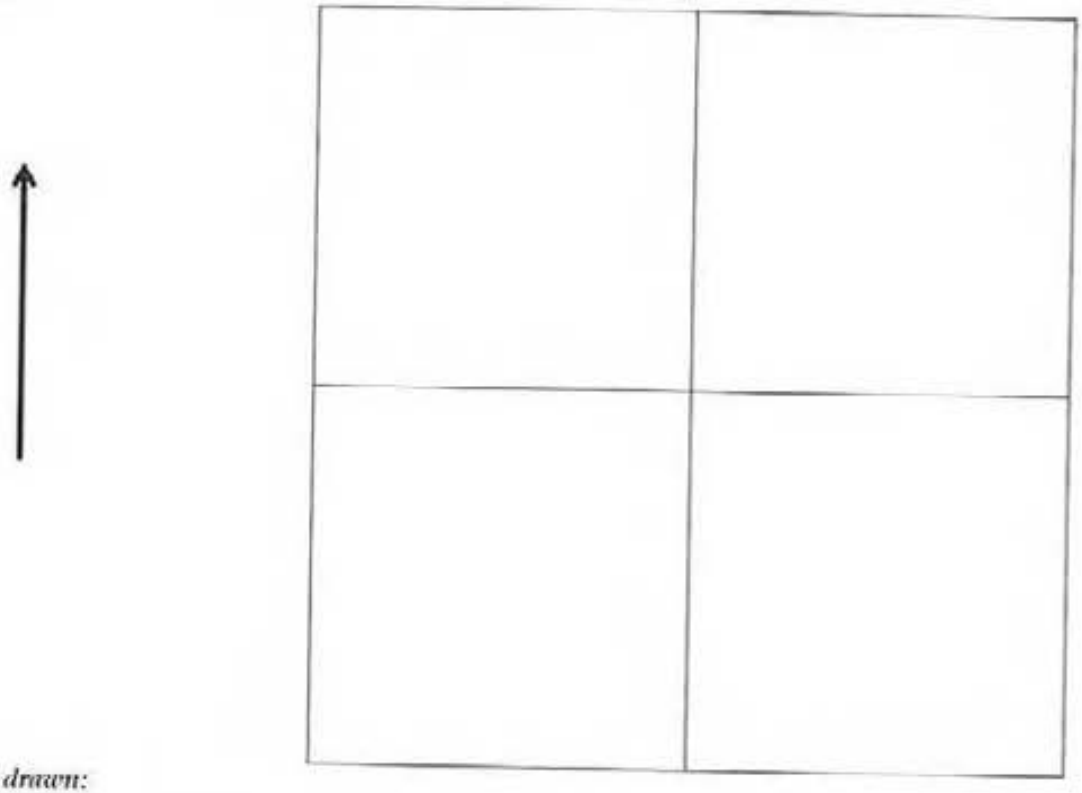
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-100	(A1) A2 B Other	(BETWEEN 0-100mm TO 150mm depending on Soil)		Ø
2	100-200	A1 A2 B (Other)	POSSIBLY INTRODUCED PHOSPHATE?		Ø
	200-300mm	A1 A2 (B) Other → (C)	c. BETWEEN 2.5 - 10YR 5/6		Ø
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. HEAVILY PLOUGHED IN PARTS FIELD.
(A1)		SANDY SILT MED-COARSE GRAINED SAND GRAINES WITHIN SILTY MATRIX. LIGHT BROWN IN COLOUR W FINER INCLUSIONS OF QUARTZ GRAVELS (<5%).
A2		TRANSITION IS ABRUPT @ 10-15cm ONTO PURE WHITE V. FINE GRAINED V. CEMENTED MATRIX. THIS IS POSSIBLY INTRODUCED PHOSPHATE (?) FOR WHEAT FARMING.
B		THIS SPIT IS A SANDY CLAY LOAM. VERY COMPACT GRITTY (MATERIAL) FINE TO MEDIUM SAND.
	(C)	TRANSITION INTO (C) IS ABRUPT GREY CLAY, FRIABLE & COMPACT. BECOMES SANDY CLAY AT BASE. V. FRIABLE W MED ROOTS WITHIN PACKAGE (REMOVED). (LIMIT OF EXCAVATION)

Description of material below B or the limit of excavations
GREY FRIABLE/COMPACT SANDY CLAY W EVIDENCE OF FEW ROOTS (2-3mm)
= LIMIT OF EXCAVATION

Plan

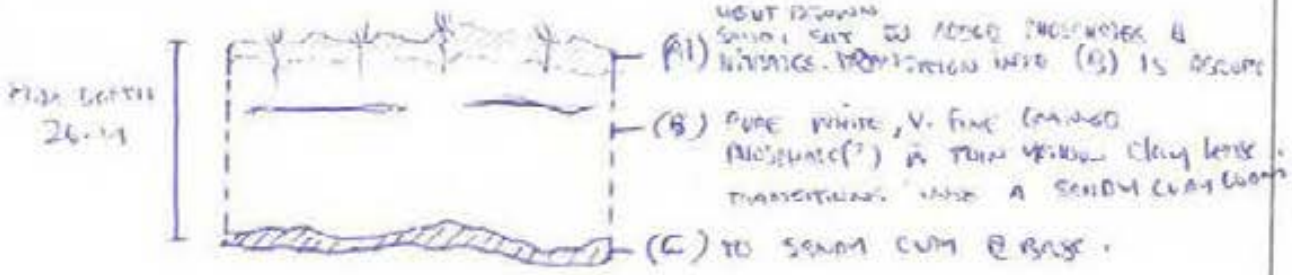


Spit drawn:

Section Plan

Face: ~~[illegible]~~ Eastern SECTION

Scale: 1:10



Key/ [Y] = WHITE CHALKS ; [wavy] = Compacted Sandy Clay ; [=] = THIN LENSES OF SANDY CLAY.

Further descriptions and relationships to other TU

- AT LOCATED V. CLOSE TO (NOW FILLED IN) EXCAVATED ~~EXCAVATED~~ EXCAVATION.
- AT WITHIN WIDER FIELD, GENTLE SLOPE AND CLOSE TO LARGE Overlying (GREY BOX) CONTAINING MANY ARTEFACTS AT BACK OF TREE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 4 TU: 105
Excavators	REBECCA VARTIO, MARNIE & NORMA FREEMAN	Date 17.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	HEAVY PLOUGHING + WHEAT FARMING
Worthy of expansion? How?	NO.
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting ☐☐/☐☐☐	Northing ☐☐/☐☐☐	
Soil landscape	BETHUNGRA // GENTLE LOWER SLOPE WITHIN A WHEAT FIELD		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope %	1-2%

EXCAVATION wet sieved dry sieved

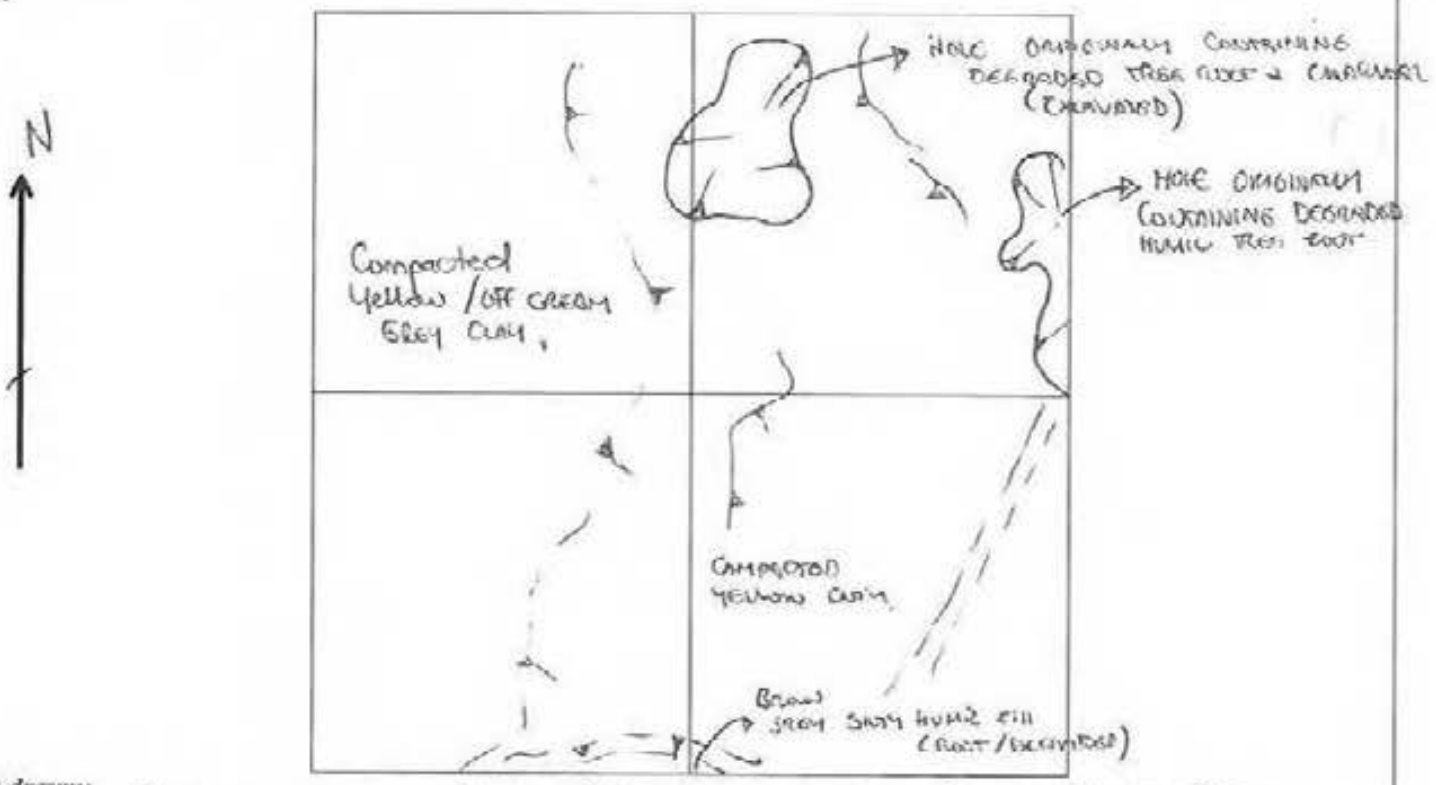
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-100mm	(A1) A2 B Other			Ø
2	100-200mm	(A1) A2 B Other			Ø
3	200-300	A1 A2 (B) Other		SMALL CRYSTAL QUARTZ COLLUM (NATURAL)	Ø
4	300-400	A1 A2 (B) Other			Ø
5	400-600	A1 A2 (B) Other (C)		V. MINOR AMOUNT QUARTZ GRAVELS	Ø
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
(A1)	Spit 1→2	DARK BROWN MOIST SANDY SILT W HUMIC COMPONENT. FINE GRAINED & WELL SORTED W MINOR COMPONENT NATIVE ROOTLETS. 1X1 LARGE PIECE CHARCOAL (@ 3cm x 5cm).
A2 (B)		EASTERN SIDE OF PIT CONTINUES AS SANDY SILT & DARK BROWN WHILST WESTERN SIDE IS PURE WHITE V. FINE GRAINED SILTY PODSOL? VERY AS AT APPROX 15-20cm THE HUMIC COMPONENT LESSENS AND FORMS VEINS = THIS TURNS OUT TO BE OLD DEGRADED TREE ROOTS. WITHIN NE CORNER ARE FRAGMENTS OF BURNT & PARTIALLY BURNT TREE STUMP/WOOD & CHARCOAL INTERMIXED W VERY OCCASIONAL SPECKS OF BURNT RED CLAY. AS VISIBLE IN SECTION AND BASE THIS PIT CONTAINS THE REMAINS OF OLD TREE THAT WAS BURNT.
(C)	Spit #1 & 5.	= MOTTLE YELLOW/GREY/CREAM SANDY CLAY. DAMP & VERY COMPACT WITH HUMIC CONCENTRATIONS WHERE TREE ROOTS WAS DEGRADED.

Description of material below B or the limit of excavations

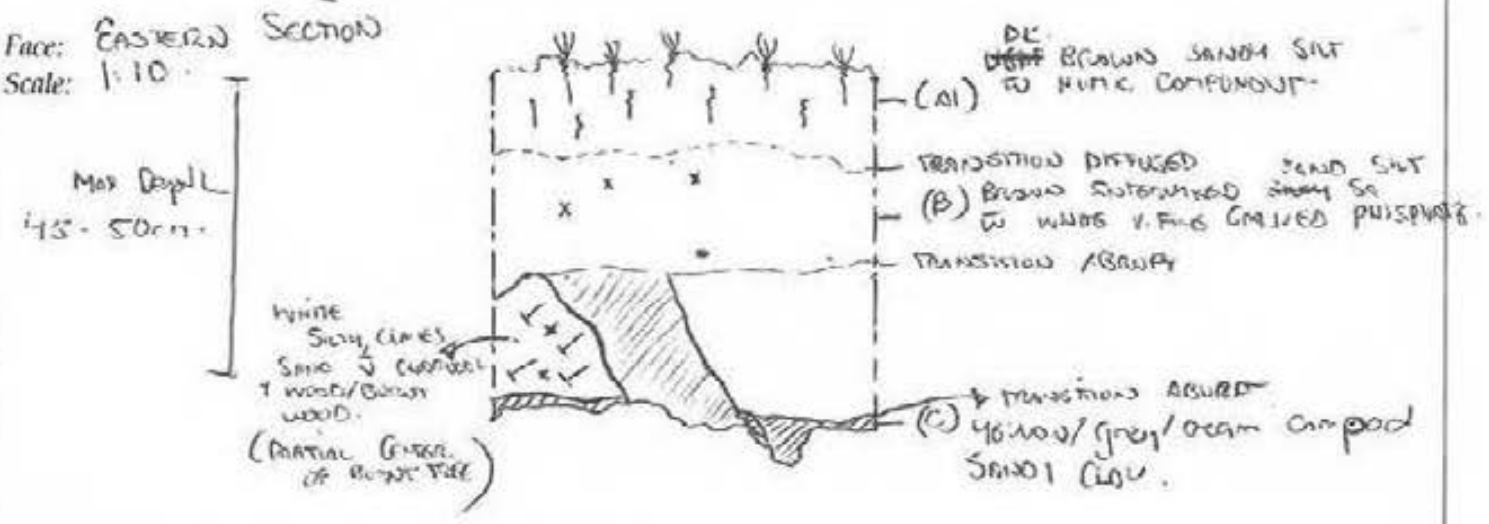
Plan



Spit drawn: # PLEASE NOTE – SMALL DEPRESSIONS NOTED EXCAVATED TO 50CM DEPTH SO INCASE ARTEFACTS LOWERS WITHIN THIS AREA.

Section Plan

Face: EASTERN SECTION
Scale: 1:10



Key / [xx] = CHARCOAL FLECKS [≈] = CLAY. [≈] = GRAVEL & NODULES

Further descriptions and relationships to other TU

#DE

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	106-24
Excavators	Seb Jeffares Rodney	Date 17/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	Bethungra		
Landform	Creek Bank / Terrace / Flat / ~~Slope~~ / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

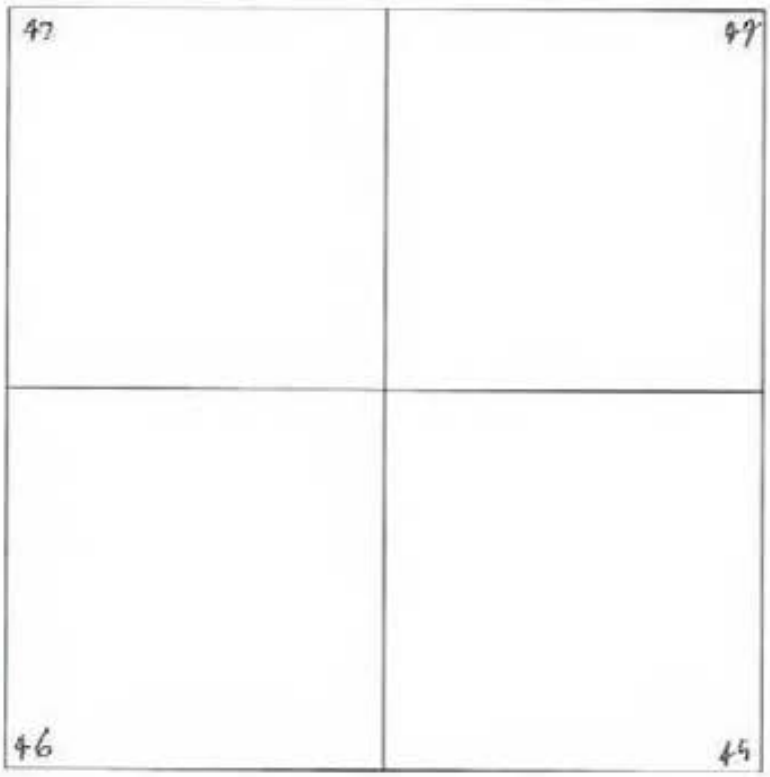
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		1 flaked artefact	1
2	100	A1 (A2) B Other		0	
3	100	A1 (A2) B Other		0	
4	100	A1 (A2) B Other		0	
5	60	A1 A2 (B) Other		0	
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	~~clay loam~~ Sandy clay loam, brown, friable 5% very fine roots, heavily disturbed
A2	2	Sandy clay loam, brown friable diffusing to a pale white powder, fine gravels and quartz fragments onto
	3	white powdery sandy clay with some fine gravels, few fine roots
	4	white silty sandy clay with some coarse gravels, heavily disturbed by farmer for agricultural activities.
B	5	onto base sandy clay, very compact with some ironstone quartz quartzite gravels.

Description of material below B or the limit of excavations

Plan

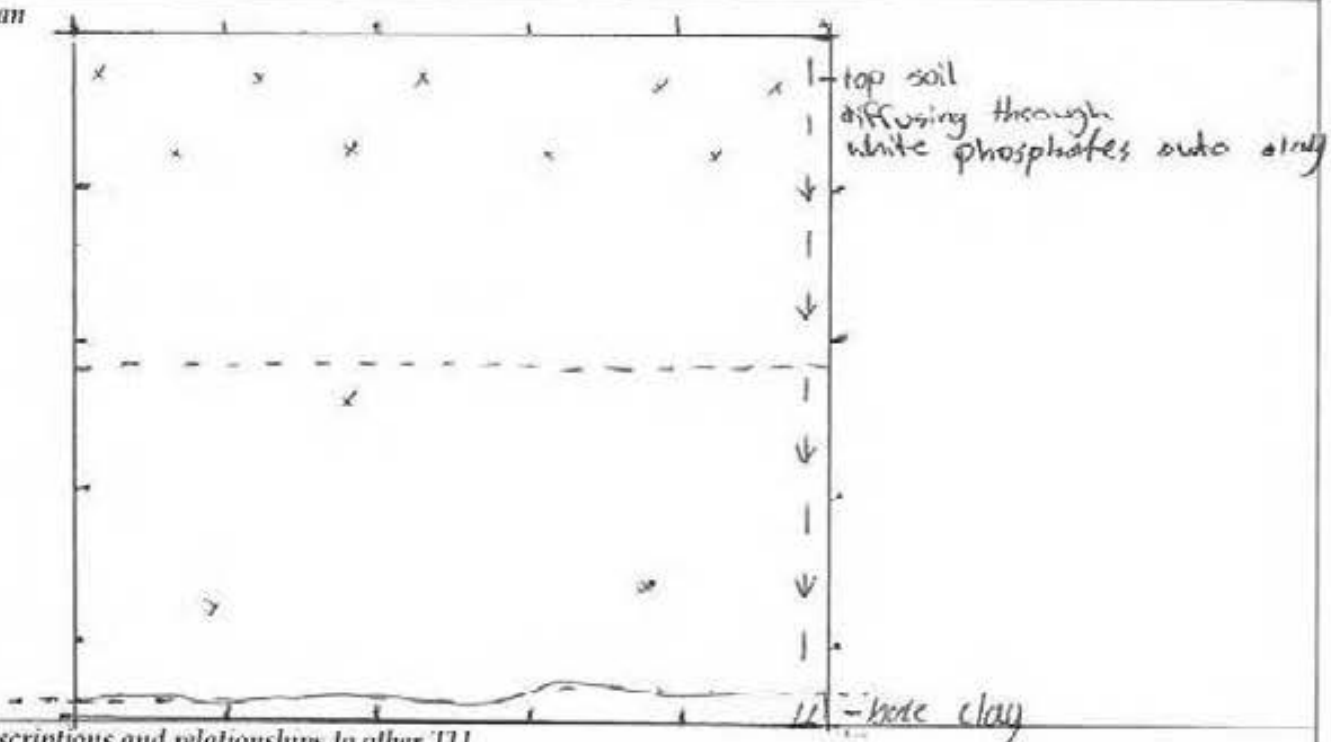


Spit drawn:

Section Plan

Face:

Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	24.107
Excavators	ADAM, JAMES DILLON	Date 17/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 10	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	(A1) A2 B Other			
4	100	A1 A2 B (Other)			
5	100	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

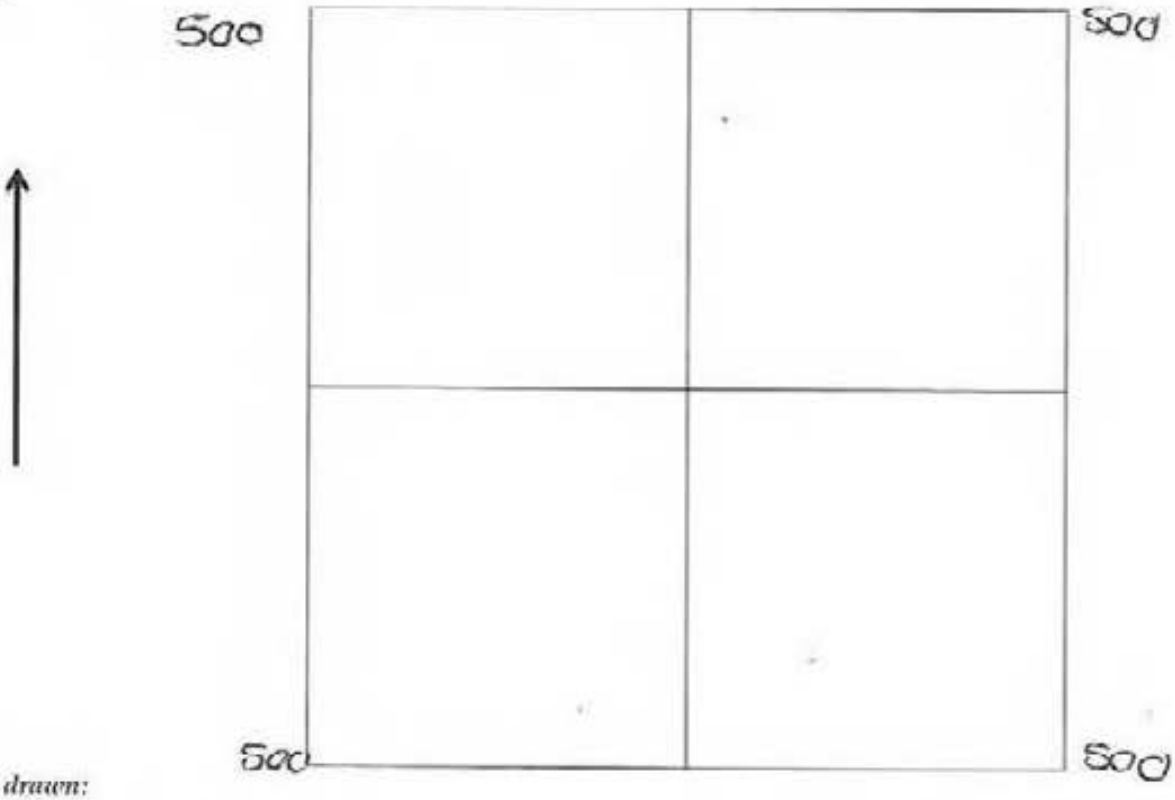
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1-3 300 mm	100mm thick mid grey brown SANDY CLAYEY SILT PLOUGHSOIL, SOFT. GRASS ON TOP W/ DECR. ROOT DISTURBANCE. MERGING ONTO A GREYER MORE CLAYEY SOIL W/ COMMON LARGE SUB ANGULAR FERRUGINOUS (BIOTURBATION).
~~A2~~	4 ONLY	CLEAR ONTO 100mm OF BRIGHT WHITE POWDERY COMPACTED FERRUGINOUS.
	5 B	THIS IS CLEAR ONTO A DARK SILTY CLAY. MID GREY W/ COMMON RED CLAY MOTTLING INCREASING WITH DEPTH. 500mm OF V. COMPACT NO ARTEFACTS. EXC. HALTED AT

Description of material below B or the limit of excavations

silty clay.

Plan

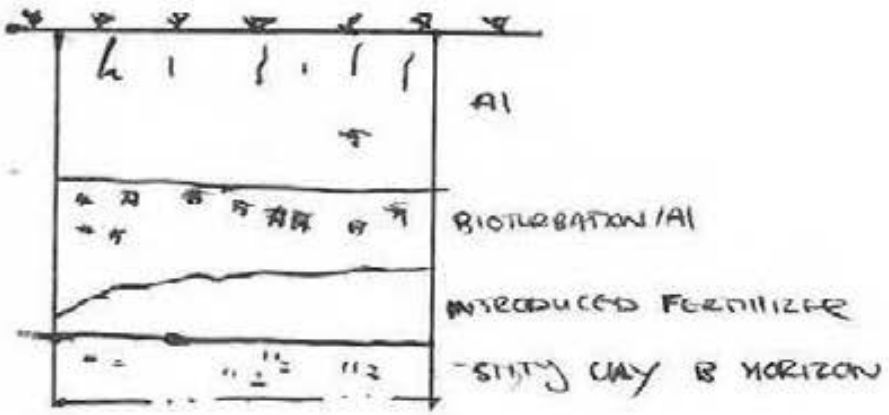


Spit drawn:

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 4 108
Excavators	Rowan Vitetta & ADAM	Date 16.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	HEAVY PLOUGHING/FARMING + ADDED FERTILIZERS & PHOSPHATES
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting [ ][ ][ ][/][ ][ ]	Northing [ ][/][ ][ ][ ][ ][ ]	
Soil landscape	BETWEEN // LOWER EASTERN SLOPES OF A GENTLE HILL ON GRANITE OUTCROPS.		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 1-2%	

EXCAVATION wet sieved dry sieved

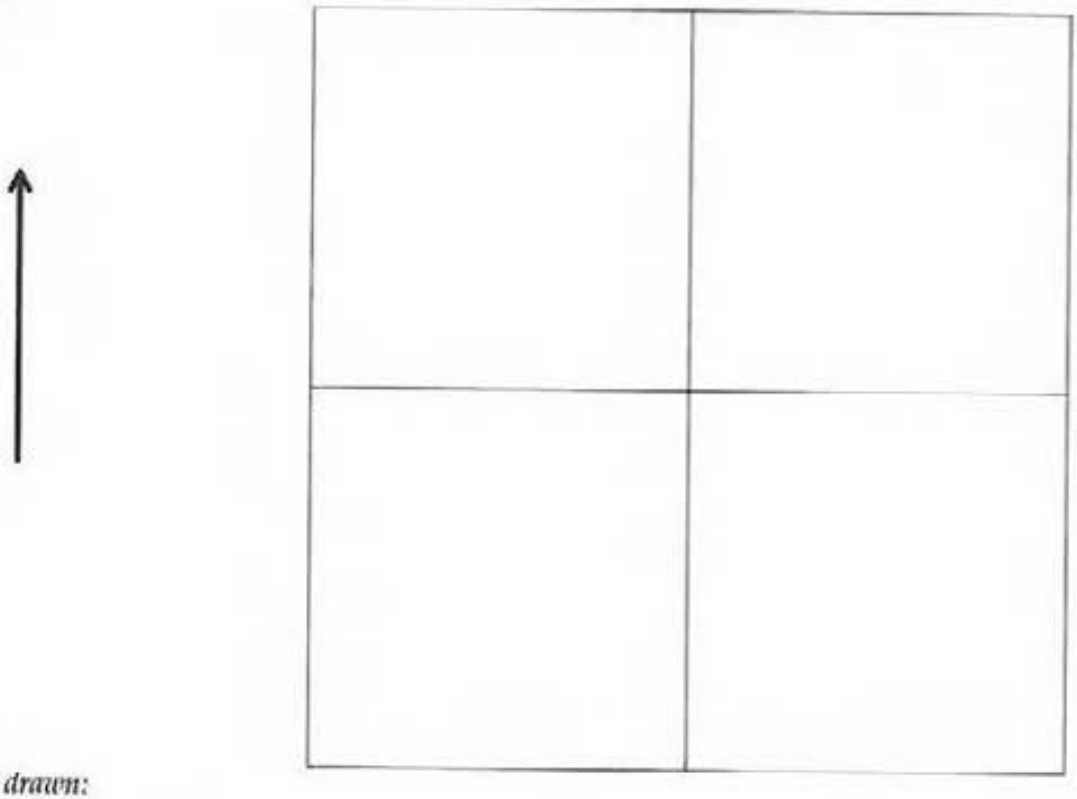
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-100	(A1) A2 B Other			Ø
2	100-200	(A1) A2 B Other			Ø
3	200-300	A1 A2 B Other	} ANOMALY (?).		Ø
4	300-400	A1 A2 B Other			Ø
5	400 ~~450~~ 500	(A1) A2 B (Other)			Ø
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. DISCUSSED FIELD WITH LANDOWNER GRAHAM ATOP SURFACE. LIGHT BROWN, DAMP
(A1)	1-2	SANDY SILTY, LOOSE + FINE AND MEDIUM GRAINED - HIGH ORGANIC CONTENT OF BROADCASTED FERTILIZERS, NITRATES AND PHOSPHATES. HIGHLY DISTURBED FIELD.
~~A2~~	3)4	PALE WHITE, CLAYEY V. FINE GRAINED POWDER (PROBABLY PHOSPHATE/NITRATE AS PER CONVERSATION W OWNER 16.5.2019 ~~He~~ HE HAD COMMENCED THAT HE HAS ADDED LARGE AMOUNTS OF THIS TO HIS FIELD IN ORDER TO INCREASE NUTRIENT WITHIN SOIL.
	(1-5)	@ APPROX 411-450CM THIS ABRUPTLY CHANGES INTO A YELLOW, SANDY CLAY, V. COMPACT AND DRY CONTAINING LARGE INCLUSIONS OF GRAVELS. V FRIABLE. = LIMIT OF EX.

Description of material below B or the limit of excavations

Plan

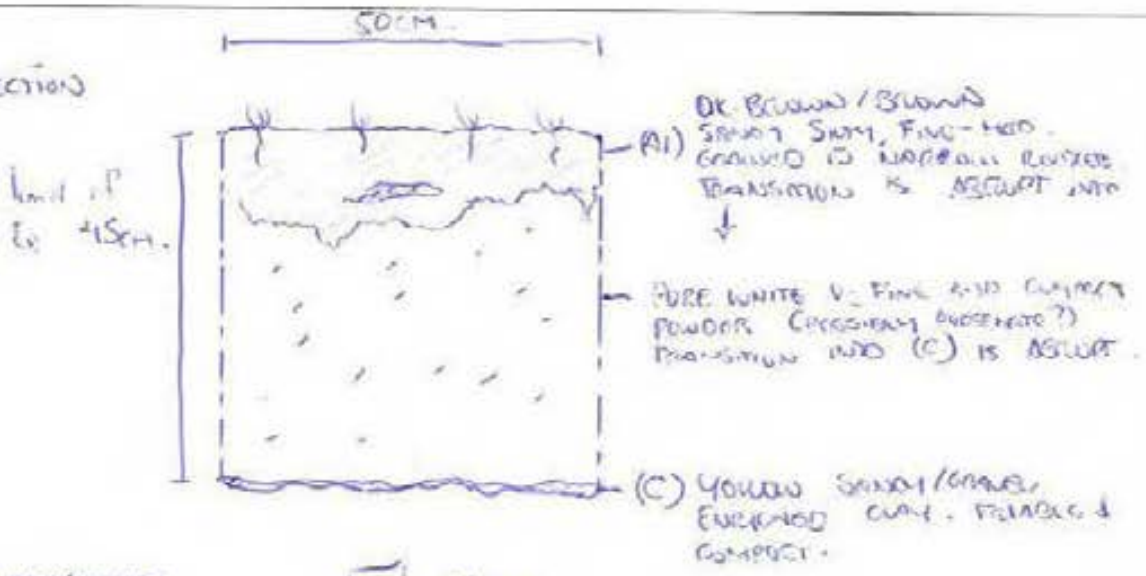


Spit drawn:

Section Plan

Face: NORTHERN SECTION

Scale:



KEY: = ROOTS/ROOTLETS. = DK. BROWN SILTY SAND TO MEDIUM. = YELLOW FRIABLE/COMPACT CLAY.

Further descriptions and relationships to other TU

PIT WITHIN HEAVILY PLOUGHED FIELD. ASHLEY HERMES (*spelling) COMMENTED THAT HE HAD DUMPED LARGE AMOUNT OF MANURE & PHOSPHATE WITHIN THIS AREA OF THE FIELD. THE WHITE POWDER SUBJECT COULD HIGHLY LIKELY BE THIS.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	109 – Zone 4
Excavators	Seb + Jessawa Rodney	Date 17/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			0
2		A1 (A2) B Other			0
3		A1 (A2) B Other			0
4		A1 (A2) B Other			0
5		A1 A2 (B) Other			0
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	sandy clay loam, coarse sand grains, bioturbation from roots, plowing and other agricultural activities.
A2	2	diffusing to a sandy clay loam slightly lighter brown, Compact and very few gross roots similar agricultural activity, absence of artefacts
	3	white silty sandy clay, introduced phosphates and nitrates by the farmer
	4	very compact sandy clay, yellowish brown. Heavily disturbed diffuse change, more clay appearing, same gravel inclusions. ironstone nodules (porous) 5%
	5	very compact yellowish brown dark sandy clay – dry limit of excavation (Base

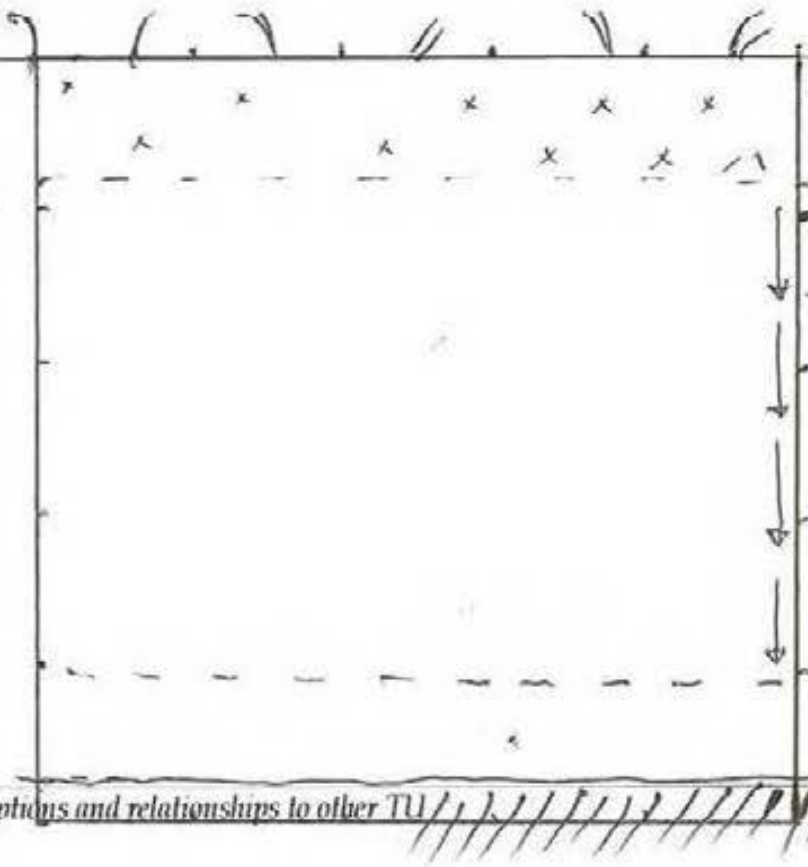
Description of material below B or the limit of excavations

Plan

Spit drawn: 5

Section Plan

Face: north
Scale: 1-20
key -
roots x



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 4 TU. 112
Excavators	ROSS VARTY, MARNIE & JESSE EXCAVATION	Date 16/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	LAND CLEARING // FARMING // PIT POSITIONED WITHIN DEPRESSION (DEPRESSION WORKED FROM EW)
Worthy of expansion? How?	NO – NOT DESIRED & WITHIN EPHEMERAL CREEK (NOW LEVELLED)
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	BETHUNGRA // LOWER SLOPES ON UNDULATING LANDSCAPE. CALCAREOUS AUSTRAL GRASSLAND ~~SUBSOILS~~ WITHIN SHEET DEPOSITIONS		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E)–(S) W	Slope % 2–3 %	

EXCAVATION

wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0–100mm	(A1) A2 B Other		NATURAL GRAVELS	Ø
2	100mm–150	(A1) A2 (B) Other (GRADUAL CHANGE)	(10YR 3/3 (B))		Ø
3	150–300mm	A1 A2 (B) Other	ALLUVIAL + COLLUVIAL SOILS (Clay & Silts) W/ FINE GRAVELS.		Ø
4	300–400	A1 A2 (B) Other			Ø
5	400–500	A1 A2 B Other			Ø
6	500–600	A1 A2 B Other			Ø
7	600–700	A1 A2 B Other			Ø
Totals	700–800				Ø

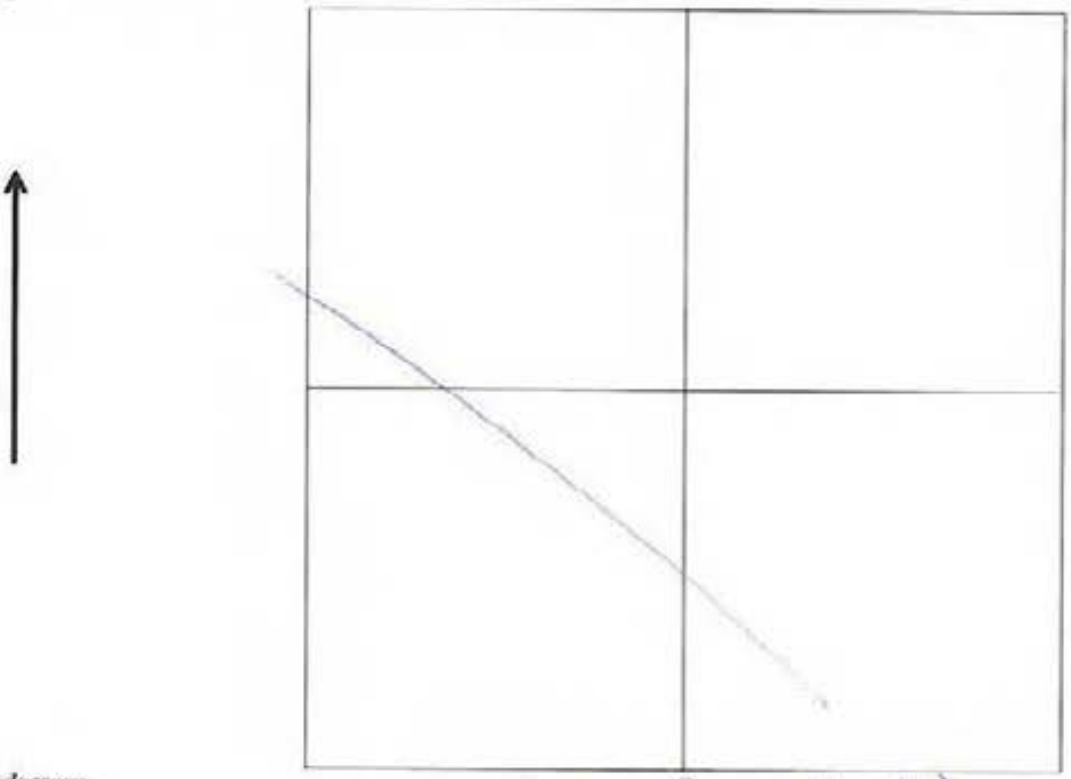
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. HEAVILY GRAZED FIELD (WHEAT) THAT HAS RECENTLY BEEN GRADED.
A1	1→2 DEFINED	DARK BROWN/GREY CLAYEY SANDY SILT. LARGE CONTENT OF FINE + MEDIUM GRAINED IN LOOSE MOIST CONSISTENT, FRIABLE (MINERALS, PEBBLES + PEBBLES WITHIN THIS HORIZON).
~~A2~~ (A1)	2–3 DIFFUSED	LIGHT GREY/GREY CLAYEY SILTY SAND. COARSE MEDIUM GRAINED & LOOSE. FRIABLE. (DRY). WITHIN THIS HORIZON ARE SMALL LENSES & POCKETS OF WHITE COARSE GRAINED SAND THAT LESSEN WITH DEPTH.
(B)	3–4 GRADUAL	MATRIX GRADUALLY REMAINS A SANDY CLAY W/ MINOR INCLUSIONS OF V. FINE TO COARSE GRAINED / SINGLE + AGGREGATIONS (5–10%) THROUGHOUT + INCREASING TO DEPTH. MINOR INCLUSIONS OF QUARTZ GRAVELS (1–3%).
4→8		CLAY AT BASE IS DARK GREY WITH SOME ORGANIC STAINING BELOW THIS SUPERFICIAL CLAY LOAM IS A MIXTURE OF COLLUVIAL & ALLUVIAL GRAVELS, CLAY, SILTS & SANDS. THIS IS EVIDENCE OF THE AREAS ORIGINAL EPHEMERAL CREEK (PIT POSITIONED DIRECTLY WITHIN THIS ORIGINAL CREEK THAT WAS SINCE BEEN LEVELLED AND THEN INFILLED FOR FARMING OF WHEAT.

Description of material below B or the limit of excavations

ALLUVIAL & COLLUVIAL SILTY CLAYEY SANDS. MOTTLED GREY/BROWN WITH SILTY CLAY CONCENTRATIONS IN THIN LENSES & POCKETS.

Plan

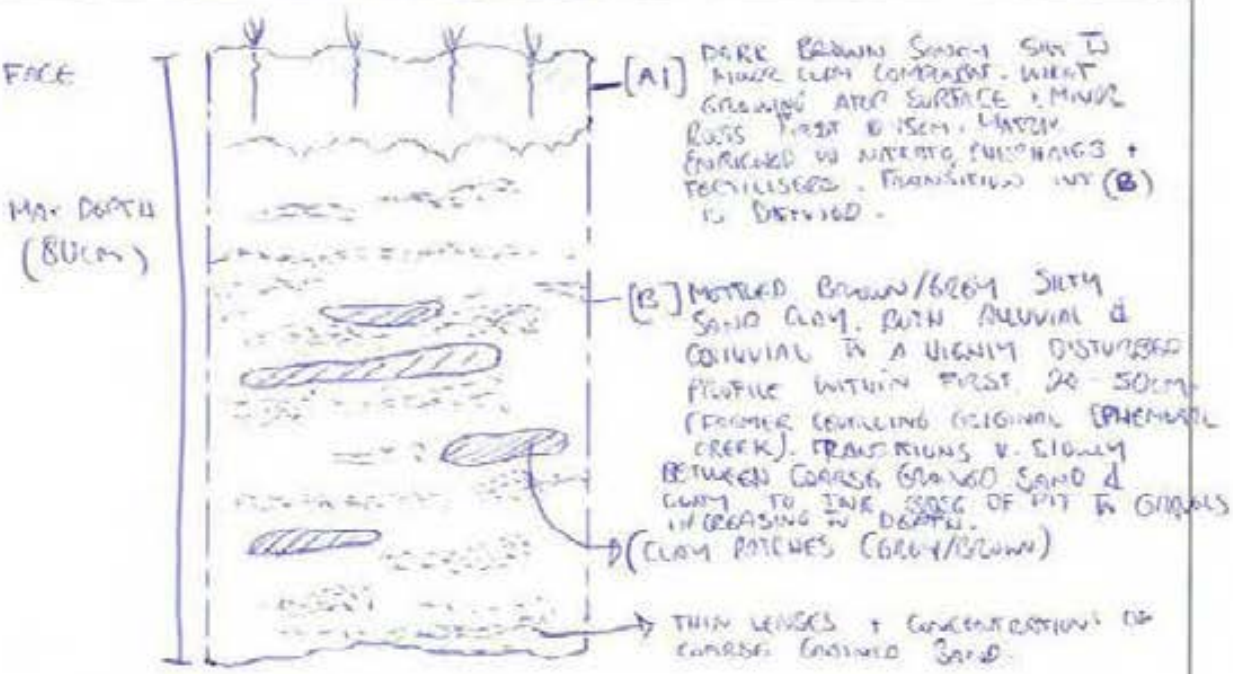


Spit drawn:

Farm (Spread wider).

Section Plan

Face: NORTHERN FACE
Scale: 1. 10



Further descriptions and relationships to other TU (TALKED TO FREEMAN ON 10.5.2019)

THIS PIT IS POSITIONED ATOP AN OLD EPHEMERAL CREEK. AS DISCUSSED WITH THE LAND OWNER, ASHLEY MERMIES (?) [illegible] THIS AREA WAS A STEEPLY BANKED EPHEMERAL CREEK THAT HE MACHINE BULLDOZED AND LEVELLED IN ORDER TO UTILIZE AREA BETTER FOR CROP FARMING AND TO AVOID SEASONAL FLOODING WITHIN THE FIELD.
THE RUN-OFF HAS NOW BEEN DIVERTED WITH NEWLY MADE SURFACE RUN-OFF CHANNELS AND AS SUCH DOES NOT FLOOD.
ALTHOUGH HEAVILY ALTERED, A SLIGHT depression is visible on the surface.

PIT 115 WAS ABANDONED DUE TO PIT 117 @ 80CM STILL CONTAINING TWO ALLUVIAL/COLLUVIAL HORIZONS AT BASE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 17 TU: 116
Excavators	NOAH FRENCH, KATY FREEMAN, ROBERT WARD	Date	13.5.19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	Other Evidence of Farming/clearing + ON NEW TO DIRT ROAD.
Worthy of expansion? How?	
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting ☐☐☒☐☐☐	Northing ☐☐☒☐☐☐	
Soil landscape	FRANKLIN // LOWER FLATS WITHIN SWAMPS		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope % ~~2~~ >1%.	

EXCAVATION wet sieved dry sieved

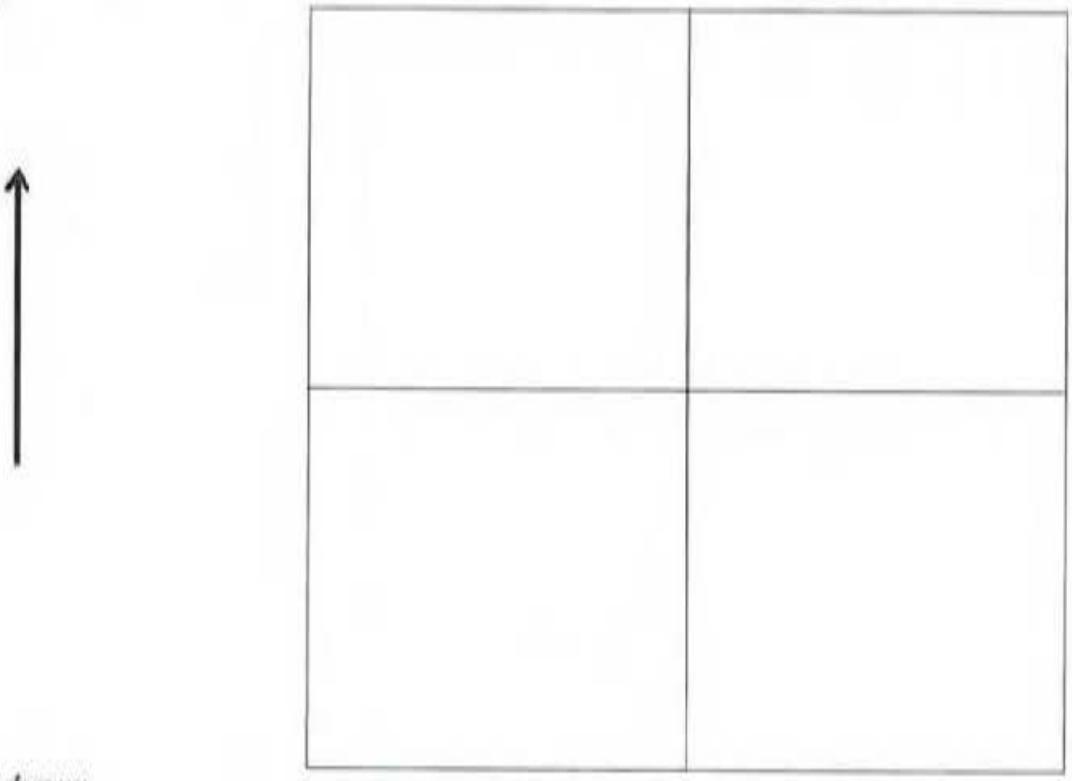
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 – 100cm	(A) A1 A2 B Other			Ø
2	100 – 200	(A) A1 A2 (B) Other			Ø
3	200 – 300	A1 A2 (B) Other			Ø
4	300 – 400	A1 A2 (B) Other (C)			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SMALL GRASSES ATOP SURFACE. AT CLOSE TO SPINEY RUSH BUSHES.
A1	(A)	DARK BROWN ~~SILTY~~ ~~CLAY~~ CLAYEY SILT, FINE GRAINED + DRY & V. COMPACT. MINOR INCLUSIONS OF NARROW ROOTLETS + FINE GRAINED QUARTZ (<3%).
Spits 0 – 1		EVIDENCE OF BIOTURBATION (WORMS) WITHIN LOWER, HUMIC COMPONENT ENCOUNTERED.
A2		Approximately 11 – 15cm TRANSITIONS ABRUPTLY INTO B HORIZON.
	(B)	DRY, V. COMPACT CLAYEY SILT. WITH REDDISH BROWN & V. FINE GRAINED TO MINOR COMPONENTS OF SMALL QUARTZ FRAGMENTS.
Spit 2 – (B)		FRAGMENTS INTO SILTY CLAY AT BASE OF SPIT 4.
	(C)	V. Compact & Sticky. REDDISH BROWN TO MINOR INCLUSIONS OF MANGANESE NODULES THROUGHOUT. (<10%).
Spit 4		LIMIT OF EXCAVATION TO EMERGENCE OF CLAY.

Description of material below B or the limit of excavations
TEST PIT WITH SWAMPS FULL OF ~~SILT~~ SPINEY RUSH BUSHES.

Plan

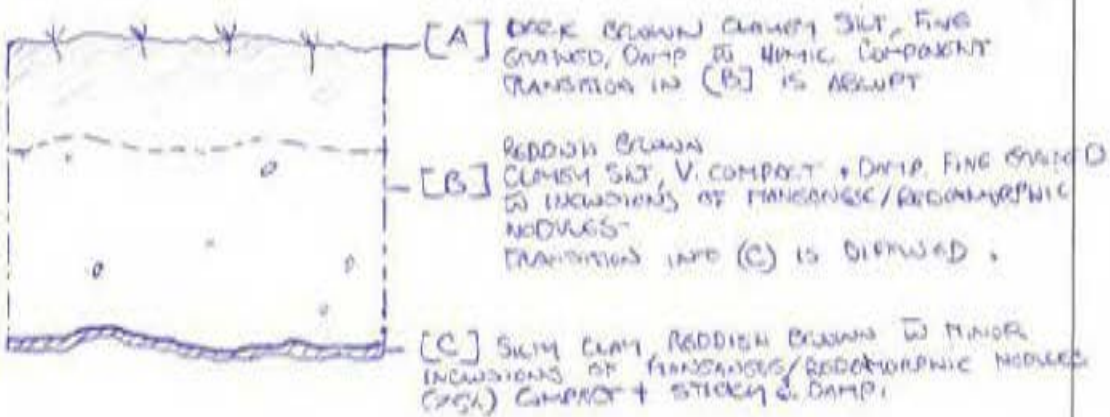


Spit drawn:

Section Plan N

Face: NORTH SECTION

Scale: 1:10



KEY = GRASSES + ROOTS = RHIZOMORPHIC NODULES

= HUMIC COMPONENT = CLAY.

Further descriptions and relationships to other TU

TEST PIT LOCATED ON AND NEXT TO A DIRT ROAD. LOOSE COMPACT CLAYEY SILT WITH SMALL GRASSES GROWING ON SURFACE. THIS PIT IS NOT IN DIRECT AREA WHERE CANOLA IS BEING FARMED.

* AT AROUND 15 cm CLAYEY SILT, REDDISH BROWN. V. DAMP AND COMPACT/STICKY. AT 25-30cm MANGANESE NODULES BEGIN TO EMERGE (1-2mm THICKNESS) (<5%) BUT INCREASING IN DEPTH.

THIS PIT APPEARS TO BE SUBJECT TO A LOT OF WATER POOLING DUE TO SPINEY RUSH GROWING CLOSE TO PIT, DAMP PATCHES OF MOSS AND LOWER LYING GROUND AT BASE OF SLOPES.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7 TU: 117
Excavators	NORMA HENRY, KEITH HENRY & REBECCA VARLEY (ARTEFACT RESEARCH)	Date 13.5.19 → 14.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	HEAVY LAND CLEARING & FARMING OF CANOLA.
Worthy of expansion? How?	NO.
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting [ ][ ][ ][ ][ ][ ]	Northing	[ ][ ][ ][ ][ ][ ][ ]
Soil landscape	FRAMPTON // PIT AT LOWER LEVEL OF GRADE. STONS CLOSE TO MARGINS. TO SPREAD EVEN DEPTHS.		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 1%	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
	(Spade)	(A)			
1	0–150m	A1 A2 B Other		DIFFUSED TRANSITION	Ø
2	150→200mm	A1 A2 (B) Other			Ø
	200–300m	A1 A2 (B) Other			Ø
4	300–400	A1 A2 (B) Other (C)		DIFFUSED TRANSITION.	Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

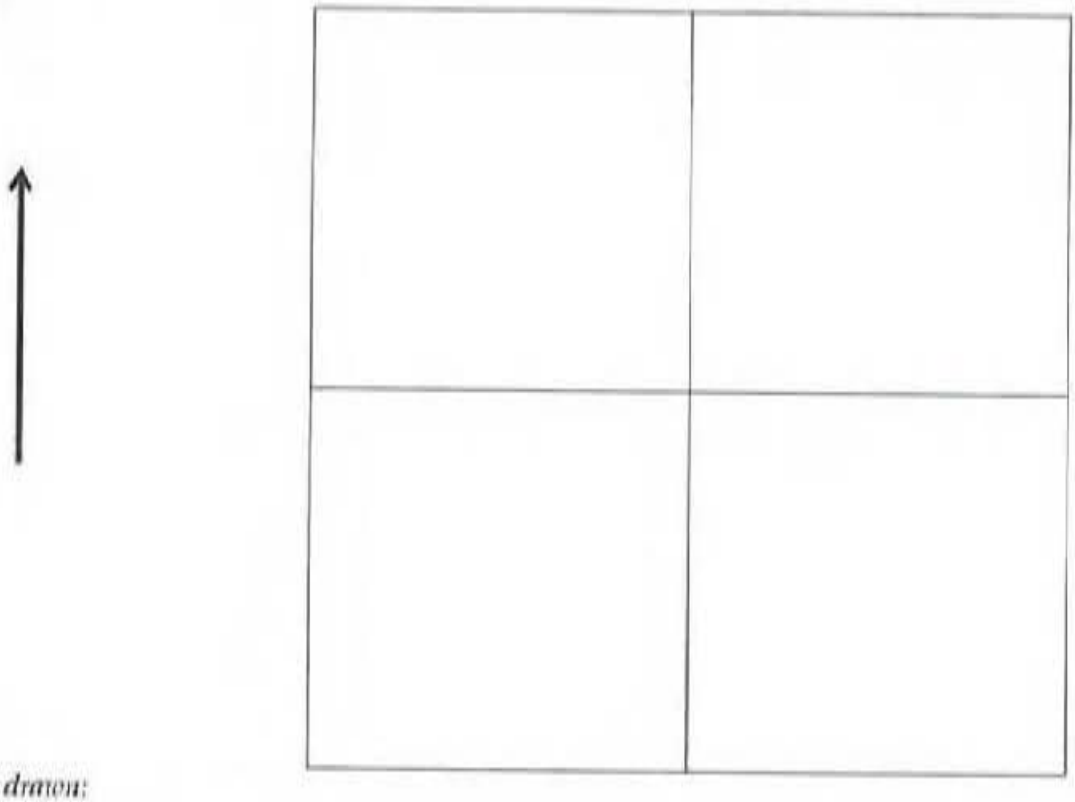
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Suface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. PIT WITHIN CANOLA FIELDS – SMALL AMOUNT CANOLA GROWING ATOP THE SURFACE.
A1	(A)	HUMIC, SILTY MATRIX TO HIGH CLAY COMPONENT. SMALL NATIVE ROOTES (CANOLA) THRU (ROOTED TO DEPTH. STRONG ORGANIC FINE GRAINED, MOIST AND LOOSE. W EVIDENCE OF BIOTURBATION. TRANSITION INTO (B) IS DIFFUSED.
A2	(B)	SILTY CLAYEY SOIL W INCLUSIONS OF MANGANESE/FERROMAGNESIC NODULES (5mm) + V. SMALL FRAGMENTS >1mm OF GRANITE (>1%). REDDISH BROWN. SMALL INCLUSIONS OF QUARTZ. FRAGMENTS (<3%).
	(C)	TRANSITION INTO SILTY CLAY IS DIFFUSED. GR. COMPACTION INCREASES W depth & MOISTURE INCREASES SLIGHTLY W depth. AT BASE FERROMAGNESIC NODULES INCREASE + DECOMPOSED FINE FRAGMENTS OF GRANITE.

Description of material below B or the limit of excavations

SILTY CLAY AT BASE OF PIT. Compact & sticky W large concentration of degraded granite fragments + ~~ferromagnesic nodules~~ (30%).

Plan

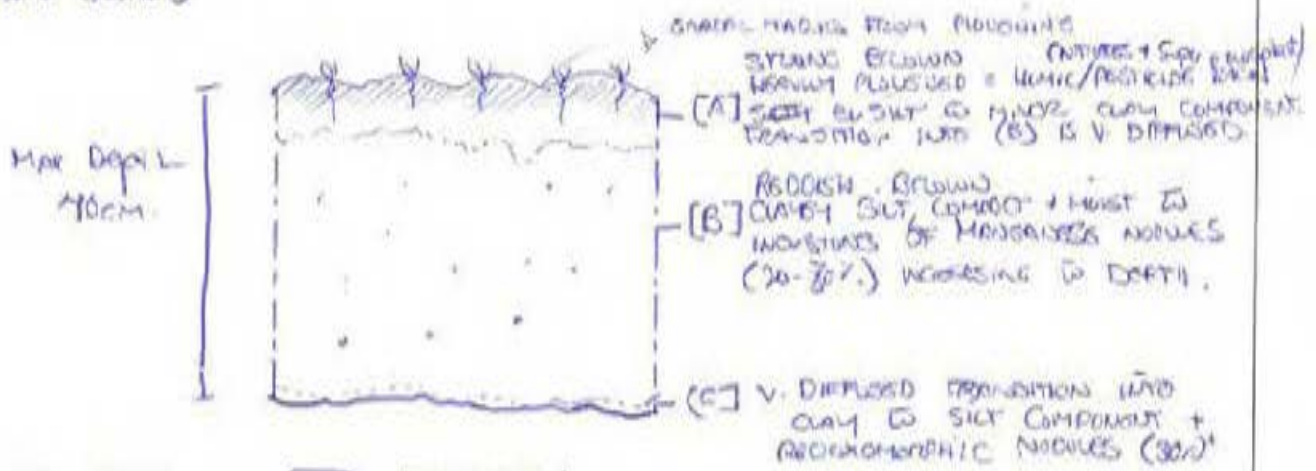


Spit drawn:

Section Plan ↑N

Face: NORTHERN SECTION

Scale: 1:20



Further descriptions and relationships to other TU

THIS PIT FOLLOWS SAME TRENDS AS PIT 120. DUE TO THIS PITS PROXIMITY TO VISIBLE PLOUGHED CANOLA FIELD, EVIDENCE OF grading crop surface + HUMIC COMPONENT (probably NITRATES, SURFACE PRECIPITATE etc.). IT IS probable THAT AREA WAS HEAVILY CROPPED & DUE TO LONG PERIOD OF FARMING WITHIN AREA HAS RESULTED IT ANY POTENTIAL SITES BEING DESTROYED (?)

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27, 118
Excavators	Mr James Diller	Date 10/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other			
2	100	A1 (A2) (B) Other			
	80	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		(10cm) Moist silty clay, DARK Grey Brown. Clear to A2.
A2		Moist silty clay, DARK GREY WITH Root Disturbance. Down to 160m. Clear.
B		Mid range clay. Bioturbation.

Description of material below B or the limit of excavations

Plan

280

280

280

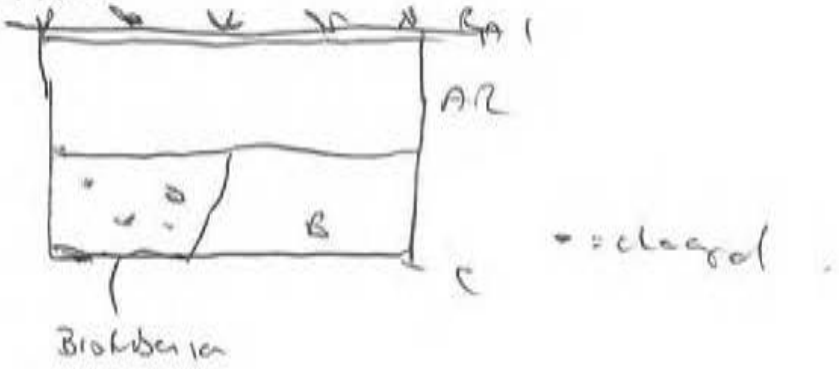
280

Spit drawn: end -

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	119 - 7
Excavators	Rob Aeyoma	Date	13/5/19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	Twins range		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

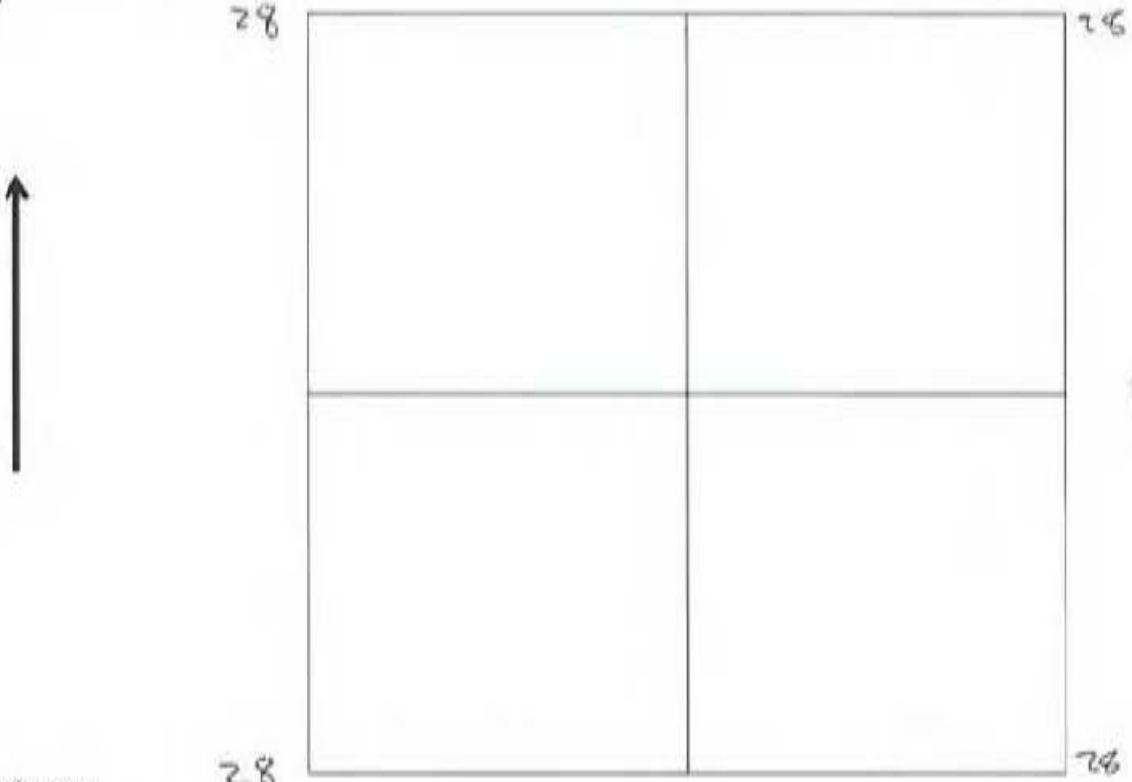
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			0
2	100	A1 (A2) B Other			0
		A1 A2 (B) Other			0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomanile.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	Reddish brown silty clay loam, thin topsoil of darker silt approx 7-9 cm deep 5% ironstone gravel lightly compact
A2	2	red silty clay, lightly compact, moist/Damp) very fine silt fine ironstone gravel bioturbation insects and disturbance associated with
	3	red silty clay into base clay with small ironstone pebbles signs of bioturbation include insect activity livestock movement plowing

Description of material below B or the limit of excavations

Plan

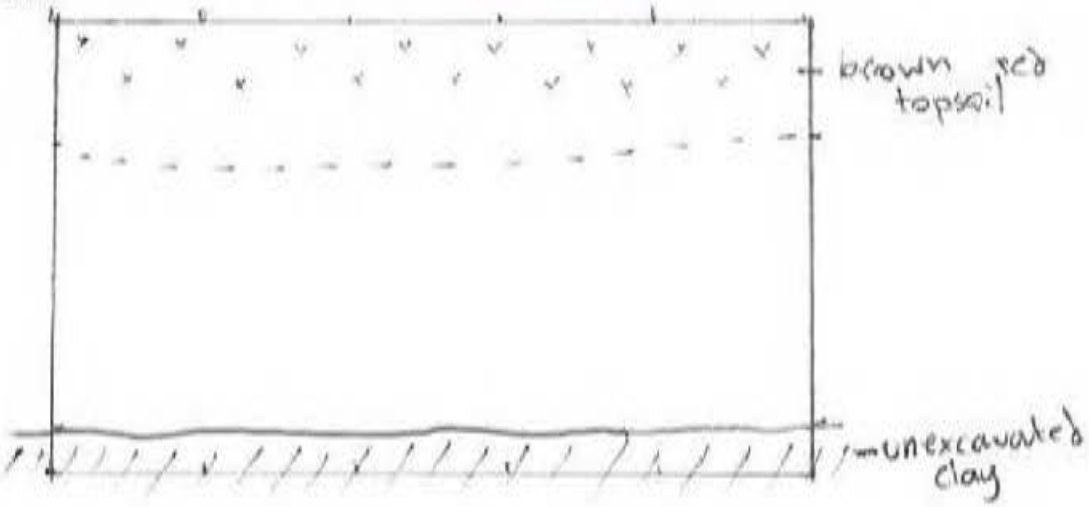


no feature in plan

Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

close to water table, and constant plowing removes any possible features intact

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7, TU. 120
Excavators	BRAD, MARNIE, SARAH	Date 13/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	FRAMPTON		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other — PLOUGHED FIELD.		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

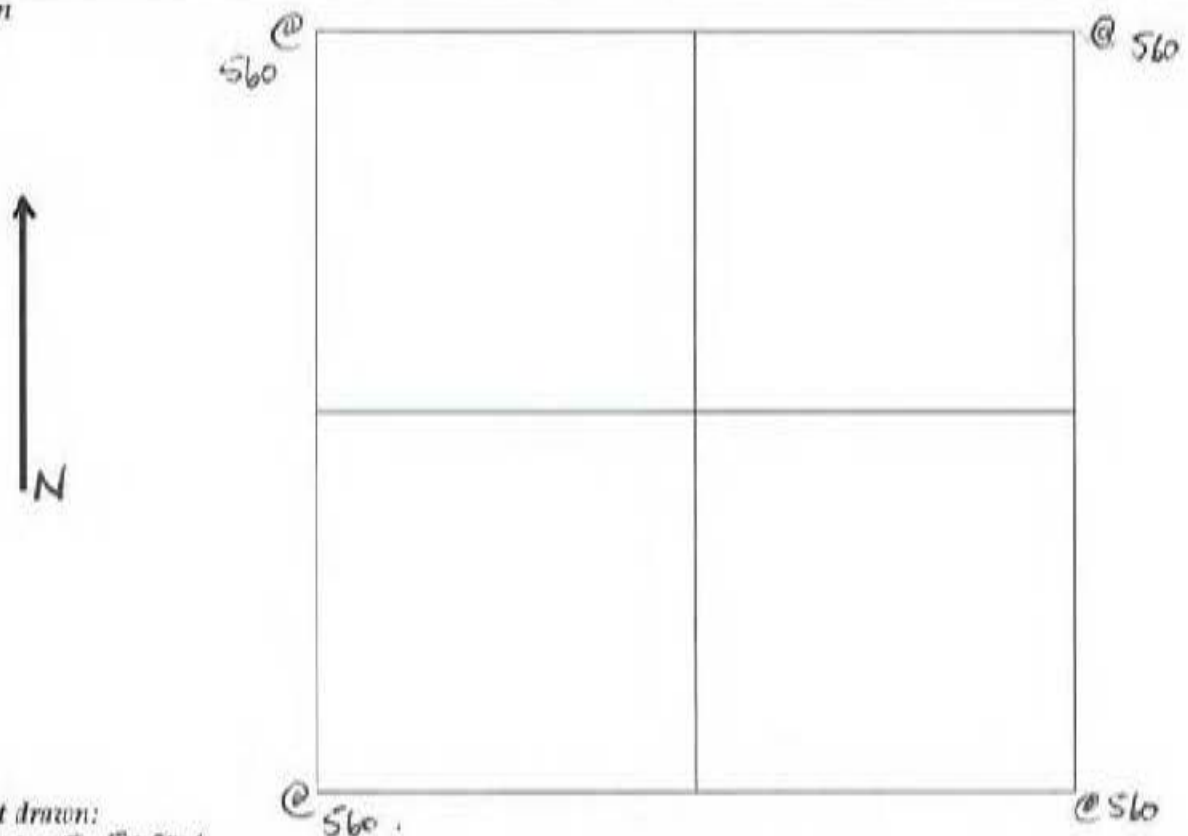
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	~~A1~~ A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A
3	100	A1 A2 (B) Other			N/A
4	100	A1 A2 (B) Other			N/A
5	100	A1 A2 (B) Other			N/A
6	60	A1 A2 (B) Other			N/A
7		A1 A2 B Other			
Totals	560				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	SPIT 1	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = moderate grass and some crop cover. Mid brown to orangey-brown silty clay loam Soft, but compact Root inclusions c. 25% top 3-4cm. Below this, very few root inclusions c. 2% Fine to very fine ? charcoal inclusions c. 2% & rare medium-sized charcoal inclusions. Some charcoal flecking. Clear to gradual horizon change to browny-orange/red compact silty clay loam, with higher clay content @ c. 14-18cm depth.
A1 B	↓	
A2 B	SPIT 2	See above, change in deposit occurs across this spit to a soft but compact silty clay loam (depending on the higher clay content than above. Fine to medium charcoal inclusions c. 5-10%, Rare charcoal and finding very fine root inclusions c. 1-2%. Mottled dark brown and brown-orange/red.
B	SPIT 3	As above, a mid orange/red silty clay loam, with clear horizon change to darker red silty clay loam, with higher clay content. Compact but soft @ the 26-30cm depth root inclusions c. 2-3%. Fine to medium charcoal inclusions c. 2-5%.
B	SPIT 4	As spit 3 above, a darker red silty clay loam, with a high clay content, soft but compact. No root or inclusions. Mottled Fine to medium charcoal inclusions c. 2%. Clay content increasing with depth.
B	SPIT 5	As spit 4 above. Increasing clay content to depth. Fine to medium charcoal inclusions c. <2%.
Description of material below B or the limit of excavations		
B-	SPIT 6	As spit 4 & 5 above. Charcoal (fine to medium) c. 1%. Very high clay content @ c. 50cm depth, fine to coarse gravel, dark clay Manganese and ironstone gravels c. 10%

BASE = Yellow slightly silty, & high clay content. Soft but compact chalk and clay @ c. 10% fine to

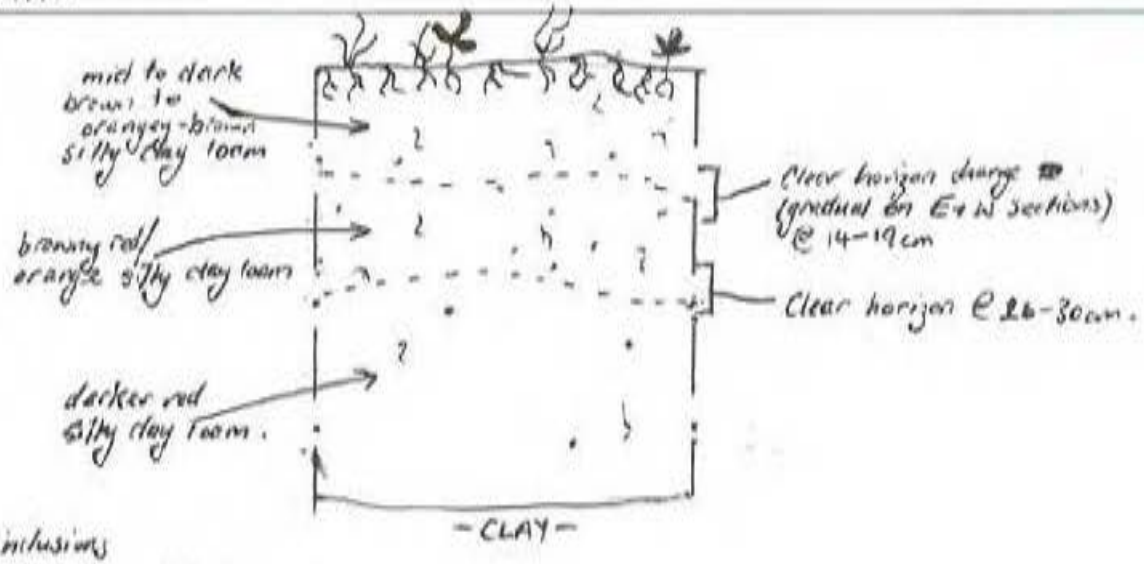
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:



KEY:
? fine root inclusions
• fine to medium charcoal inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27, 121
Excavators	AV, Jones, Diller	Date 13/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other			
	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	20	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		2 Cm brn brn sdy dy loam / clear bdy A2
A2		Grey brown dy loam / clear bdy B -
B1		pale grey clay loam -
B2		red sandy clay -

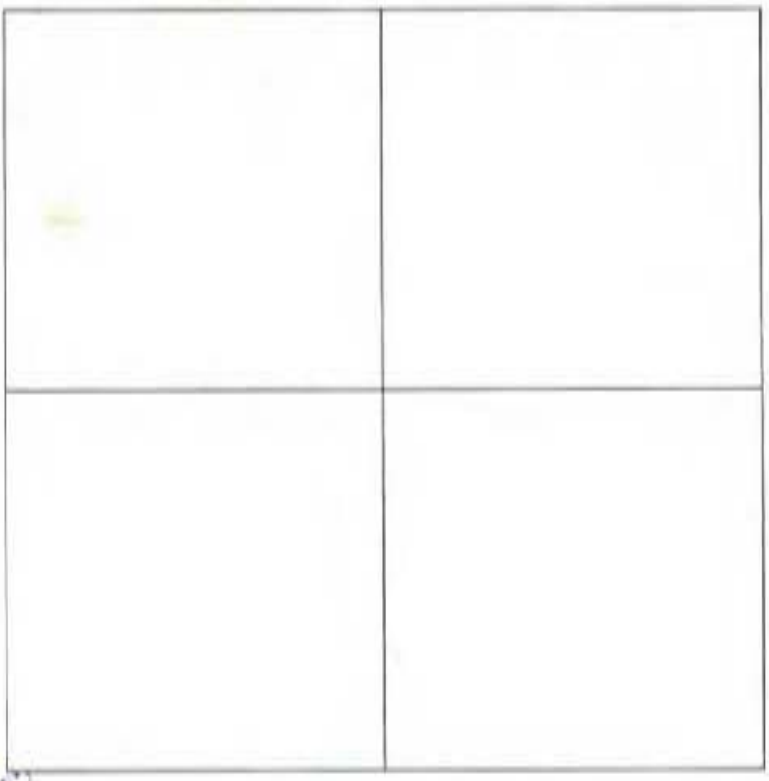
Description of material below B or the limit of excavations

Bright dark red clay

Plan

420

420



420

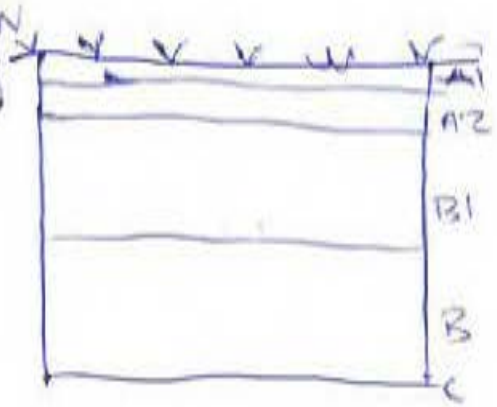
440

Spit drawn: End of Cut.

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	122, 27
Excavators	Acinya, sebastian, Rebecca	Date 13/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	~~plowed area has stones~~
Worthy of expansion? How?	no
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

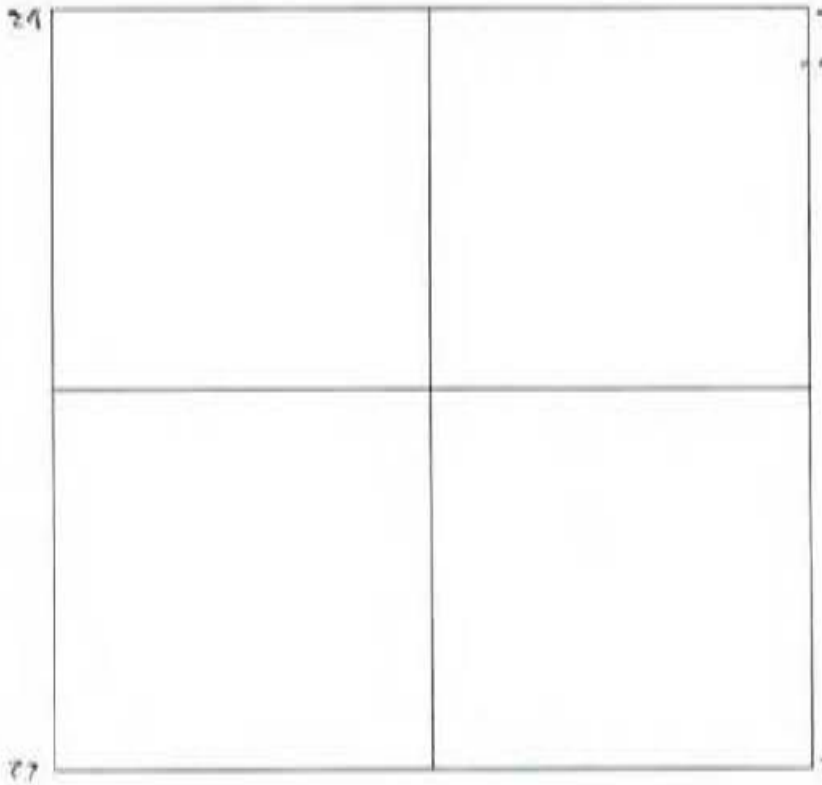
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		NA	0
2	100	A1 (A2) B Other		NA	0
	100	A1 (A2) B Other		NA	0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silty clay loam reddish brown, disturbed from plowing, small ironstone pebbles onto a silty clay, pinkish red, lightly compacted, Friable
A2	2	silty clay, pinkish red lightly compacted plow soil some small ironstone gravel bioturbation from ants, worms, insect activity
	3	base clay, Alluvial red clay no features in plan

Description of material below B or the limit of excavations

Plan

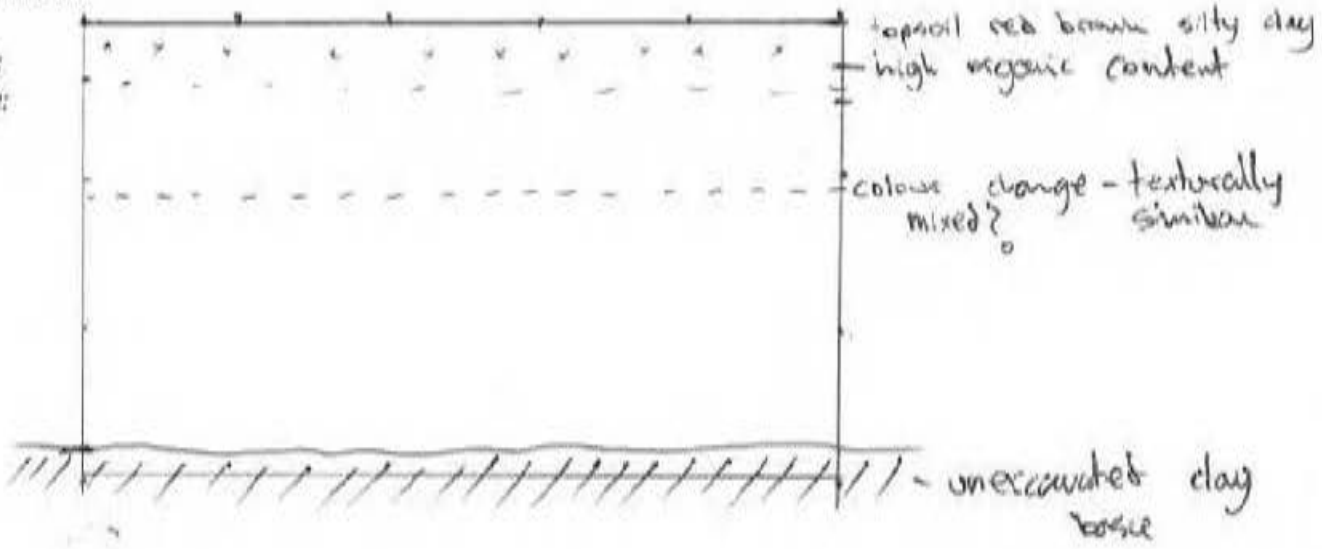


no features in plan

Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Changes in colour between top and A2 subsoil may be caused by additives to the soil rather than naturally occuring soil changes possibly from farming

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	123-27
Excavators	Lee with Jessah	Date 10/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamp / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

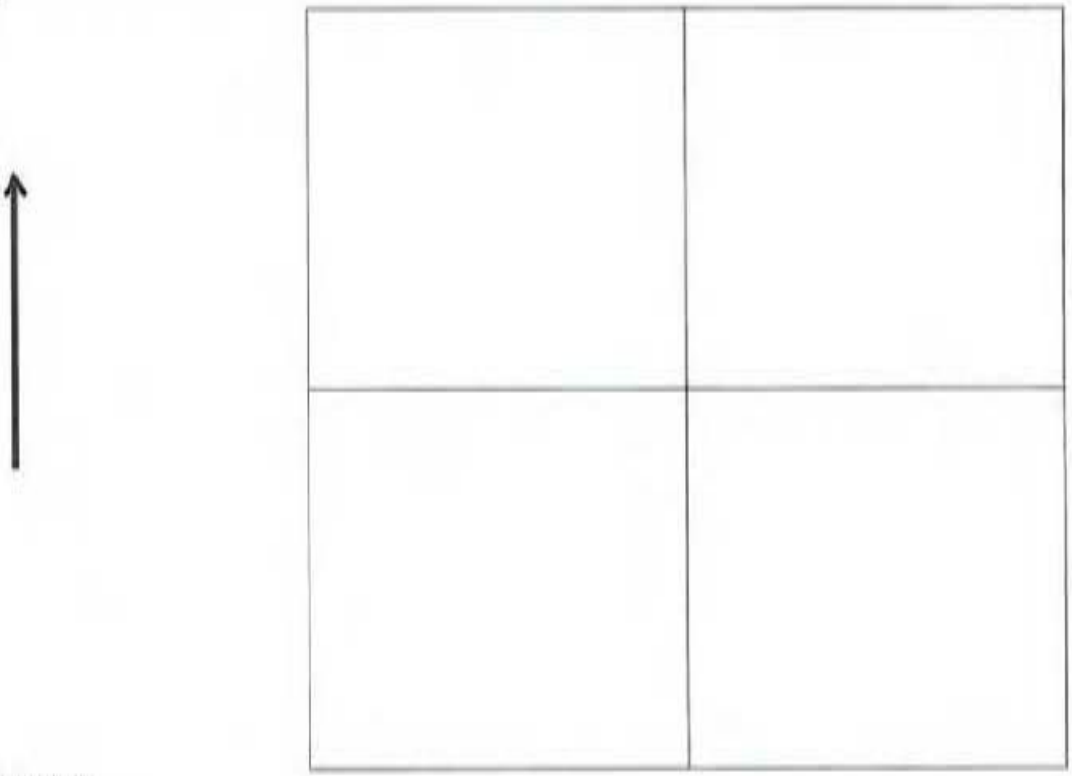
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	200	A1 (A2) B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. plowed field, disturbed soil profile
A1 A2	1	red silty clay loam, disturbed from plowing, low bioturbation from crop rotation, worms, some small ironstone pebbles, moist
A2	2	silty clay loam, lightly compacted, low bioturbation from crop rotation, some worms, canola
	3	to base clay

Description of material below B or the limit of excavations

Plan

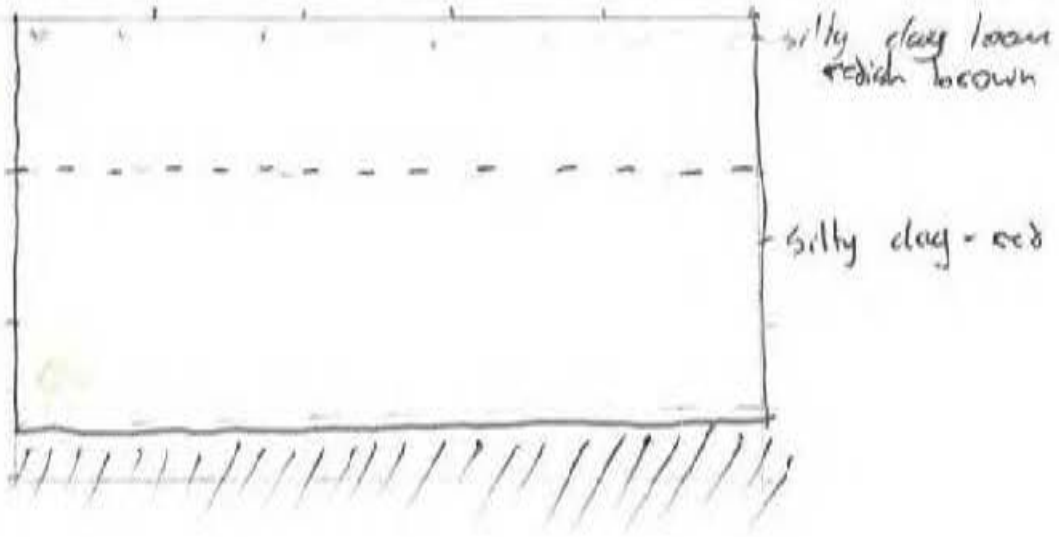


no features in plan

Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	ZONE 7, TU. 124
Excavators	BRAD, MARNIE, SARAH.	Date 13/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A.
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	FRAMPTON		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other (PLOUGHED FIELD)		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	~~A~~ A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A
3	100.	A1 A2 (B) Other			N/A
4	100 (max)	A1 A2 (B) Other			N/A.
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400 (max)				

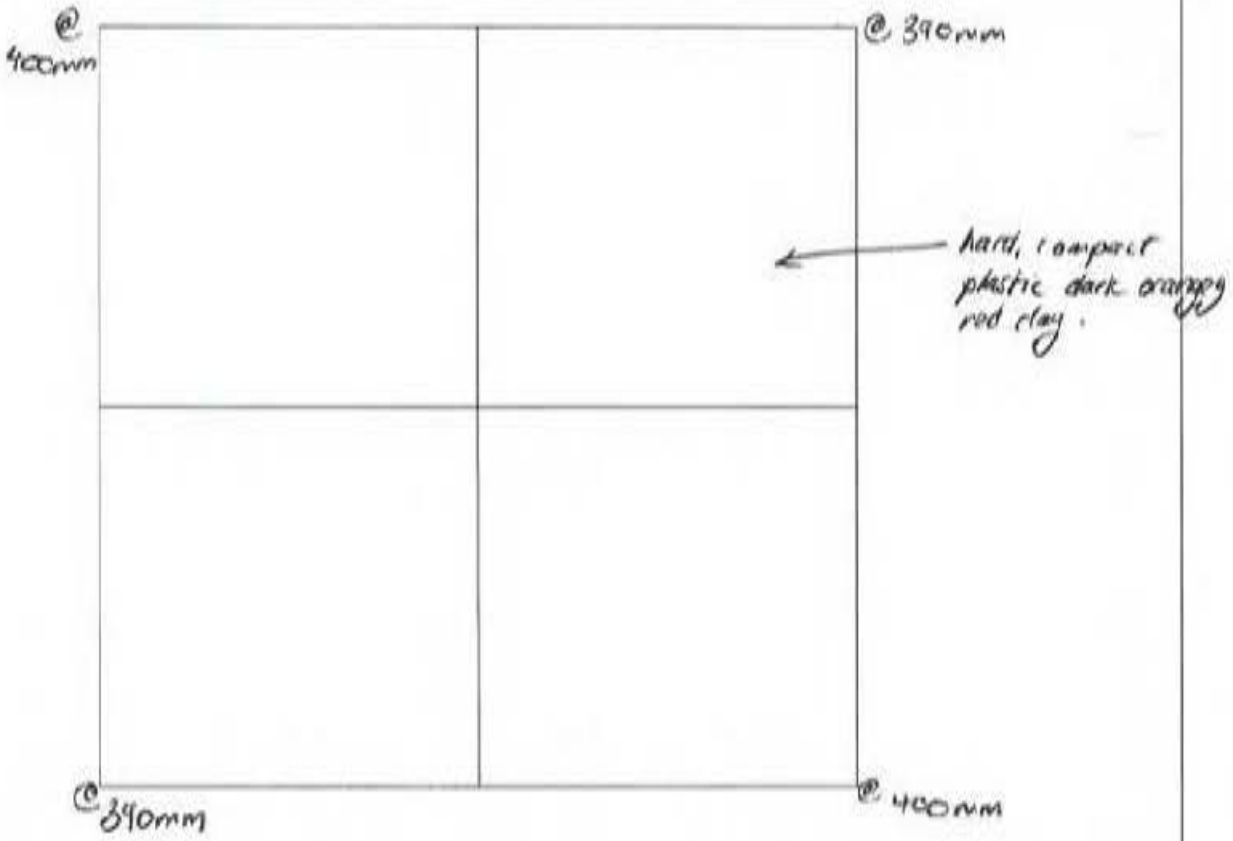
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	SPIT 1	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = occasional/sparse dead grass + burrs. Ploughed field. A dark brown, soft, silty clay loam. Uniform in colour + texture. (fine charcoal inclusions c. 1% + some charcoal flecking)
A/B	SPIT 2	A soft compact reddish/orangey-brown silty clay loam, slightly higher clay content than above. Clear horizon change from dark brown silty clay loam above, c. 10–15 cm depth. Fine charcoal inclusions c. 1% or less. Some v. fine charcoal flecking.
B	SPIT 3	Soft compact reddish/orangey silty clay loam, as above. Slightly higher clay content than above. Fine/very fine charcoal inclusions c. 1% or less.
B	SPIT 4	As above in spit 3, but slightly higher clay content and slightly more compact. Very infrequent charcoal flecking. Abrupt horizon change to a dark orangey-red, plastic, and slightly silty, compact clay. @ c. 33–34 cm depth. No charcoal flecking.

Description of material below B or the limit of excavations

BASE = compact, hard, dark orangey-red plastic, and very slightly silty clay, mottled in spots with a v. few small. yellowy-grey silty sand. No inclusions.

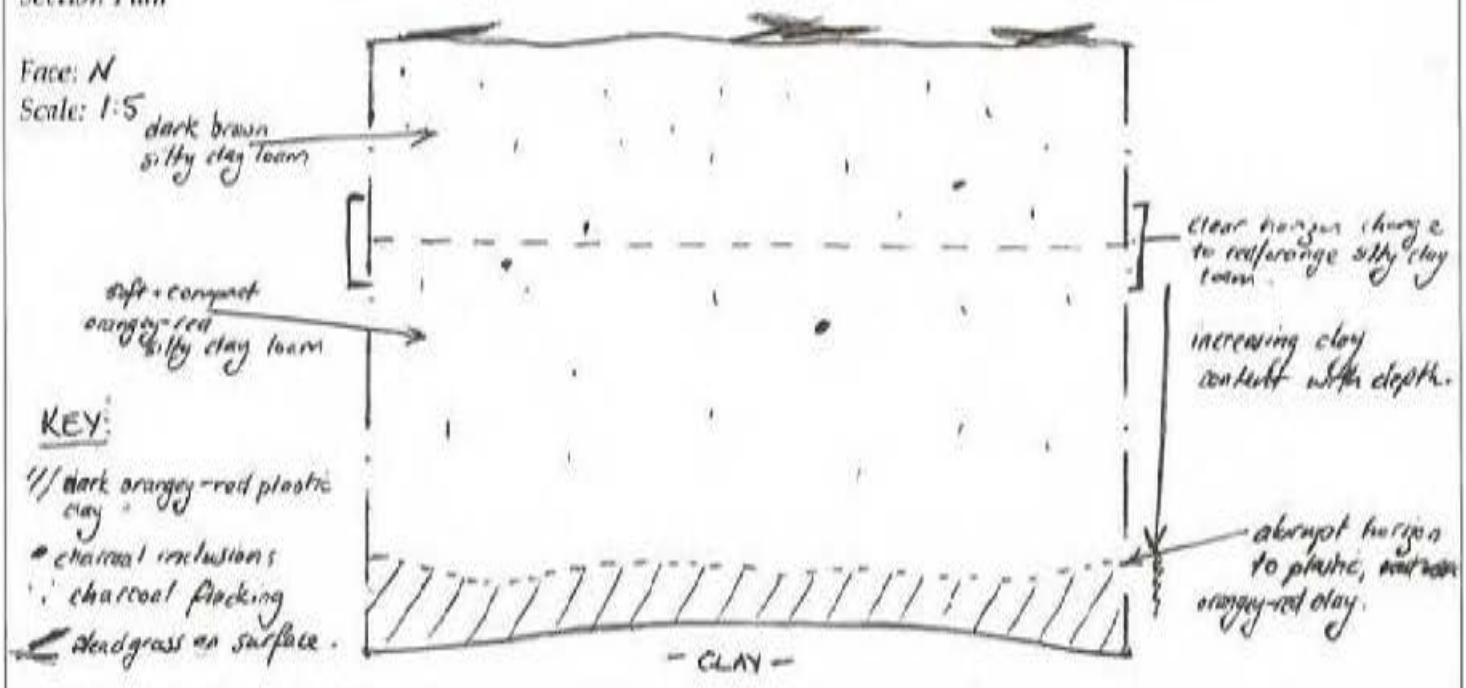
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	125 / 27
Excavators	Arinya Sebastian Rebecca	Date 13/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

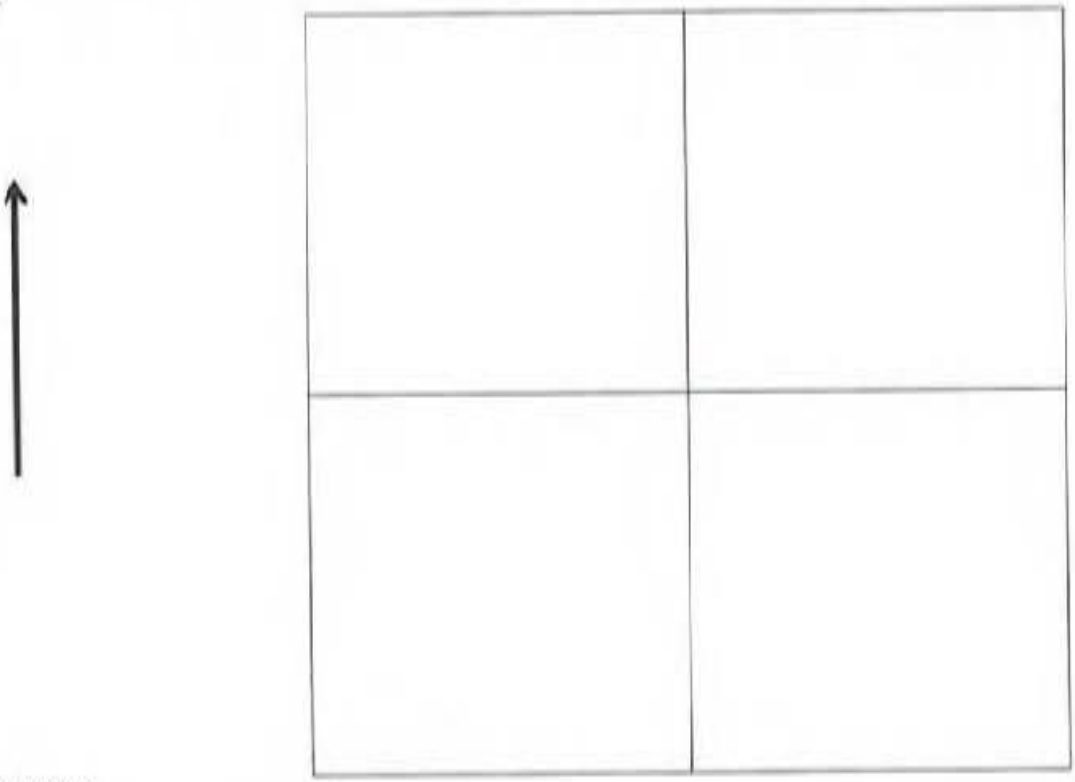
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		✓	0
2	100	A1 (A2) B Other		✓	0
3	80	A1 A2 (B) Other		✓	0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silty clay loam, reddish brown topsoil 30mm – 60mm to red silty clay permeated by Bullrush and grass roots, worms. there is some colour bleeding between the two layers. to a reddish pink
A2	2	silty clay, reddish brown with grass roots, bullrush bioturbation. Soil is moist, lightly compact, area has been plowed and sits close on the water table.
	3	base clay, red waxy texture same bioturbation as upper soils. Sterile no artefacts

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	126-27
Excavators	Seb Rebecca	Date 13/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

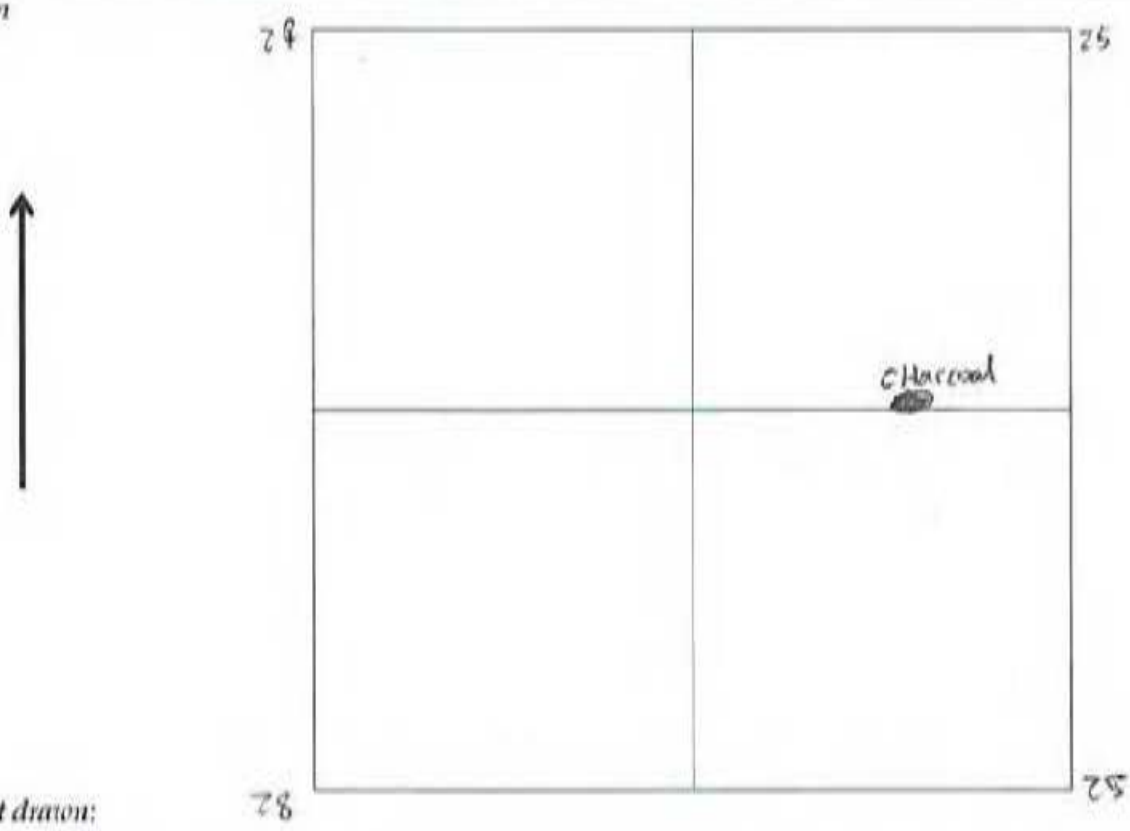
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
	70	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	redish brown silty clay loam topsoil about 6cm thick onto (B) mottled silty clay small ironstone pebbles, moderately through ploughing
A2	2	(B) silty clay damp and lightly compacted, some ironstone pebbles with charcoal inclusions.
	3	base clay, red compact

Description of material below B or the limit of excavations

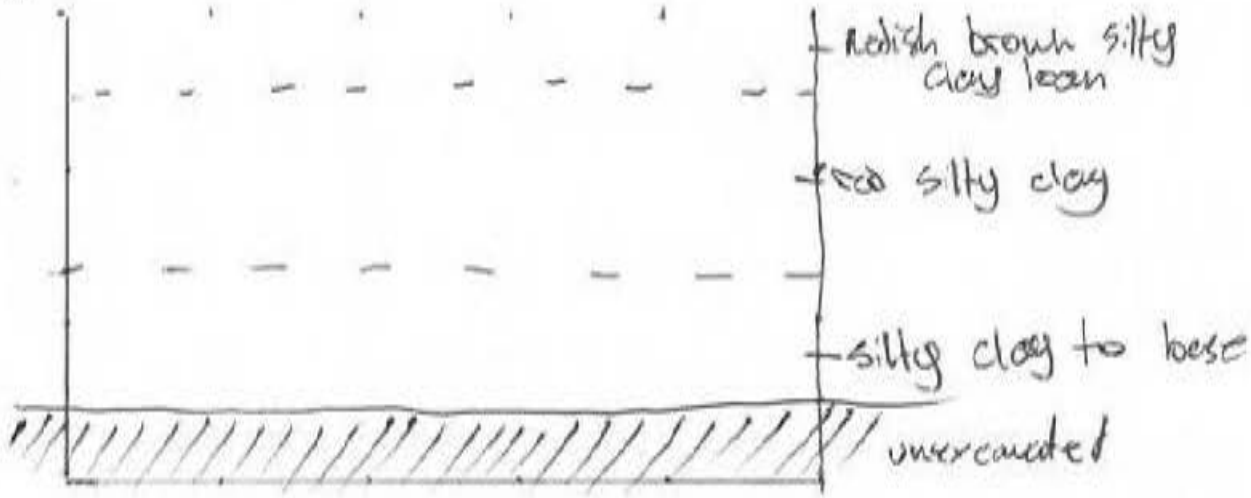
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7 TU. 127
Excavators	BRAD, MARNIE, SARAH.	Date 13/5/2019	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	0
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	FRAMPTON ploughed field		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
0-10 1	100	~~A1~~ A2 (B) Other			N/A
10-20 2	100	A1 A2 (B) Other			N/A
20-30 3	100	A1 A2 (B) Other			N/A
30-40 4	100	A1 A2 (B) Other			N/A
5	50 (MAX)	A1 A2 (B) Other		A half (ish) spit to check ME are 'clay enough' to stop. ↳ deposit noticeably more clayey/ plastic in final half spit	N/A.
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	450 (MAX)				

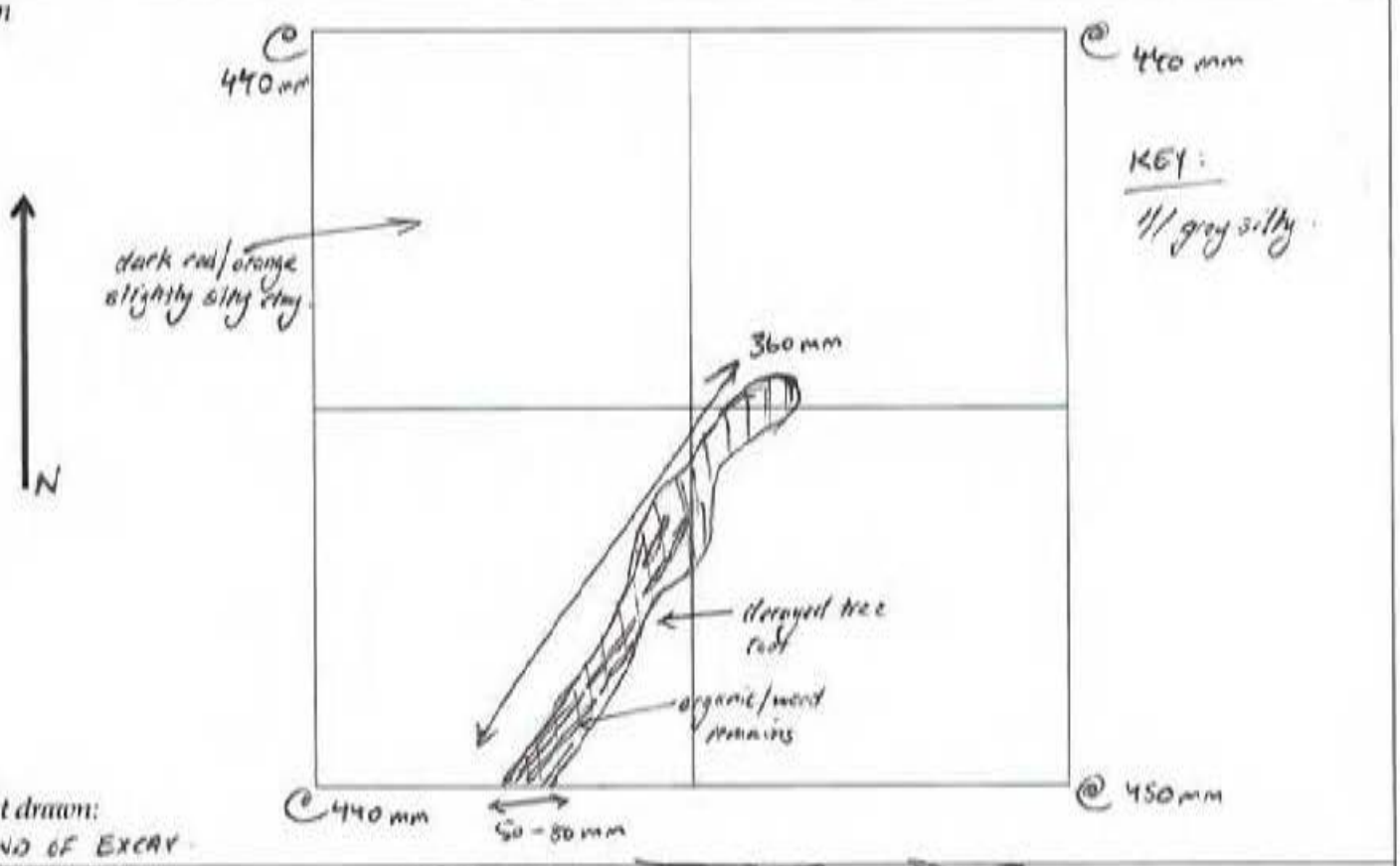
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = occasional/sparse litter of dried grass leaves and burrs. Ploughed. to black.
A(B) B	SPIT 1	BELOW is dark brown silty clay loam (quite a high clay content). Compact but soft. Fine to medium gravel-size ironstone inclusions c. 1%. Some charcoal flecking. (Closer to ploughed horizon change to and a browny-orange, compact but soft silty clay (c. 8-18cm BGS in the E + S sections. ~~to horizon~~ c. 10-24cm BGS in South pit
M B	SPIT 2	1. Horizon change continues in SPIT 2. change to browny-orange silty clay. Fine to medium gravel-size charcoal inclusions c. 2%. Some charcoal flecking. Increasingly orange/red and increasing clay content with depth. As above
B	SPIT 3	On S side of TU, horizon change described above continues. Hefty a ~~dark~~ orange/red silty clay. Increasingly compact + increasing clay content with depth. Some charcoal flecking and fine charcoal inclusions as above. c. 1-2% Marked increase in clay content of deposit c. 27-30cm
B	SPIT 4	As spit 3 above; increasingly plastic (increasing clay content), increasingly compact - but still pretty soft. clear horizon
B	SPIT 5	A compact but soft, slightly silty dark red/orange plastic clay. Some charcoal flecking, and fine charcoal inclusions c. 1%. A decayed tree root present in base of TU, indicated by a mid grey silty patch with organic remains (strips of decaying wood) throughout.

Description of material below B or the limit of excavations

BASE OF TU. = as described in spit 5 above.

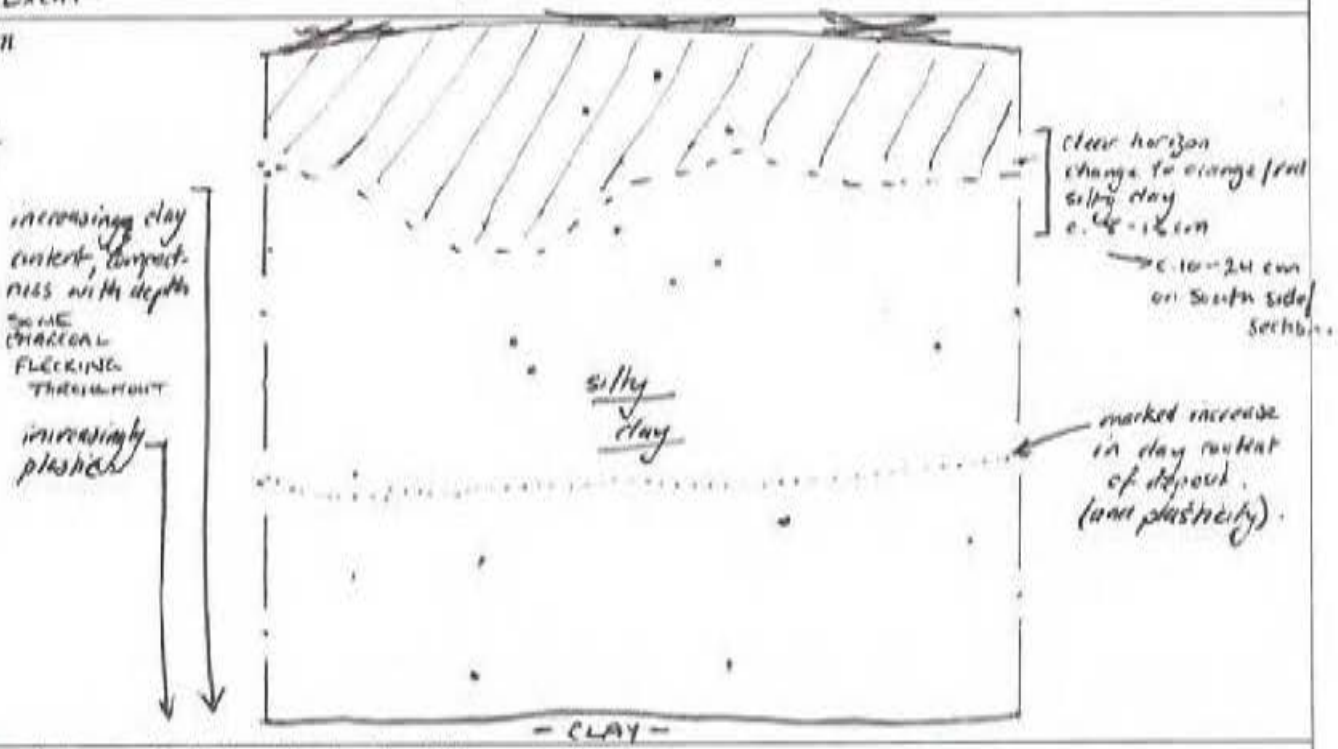
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5



Further descriptions and relationships to other TU

KEY:

grey. dark brown silty clay loam (high clay content), changing @ 8 - 13cm (10 - 24 on south side) to red/orange silty clay.

"." charcoal inclusions.

dead grass etc. on surface.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7, TU. 128
Excavators	BRAD, RODNEY, SARAH	Date	10/5/2019 + 13/5/19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	FRAMPTON		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

Ploughed + sown field.

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other (≈1cm)			N/A
2	100	A1 A2 (B) Other			N/A
	100	A1 A2 (B) Other			N/A
4	100	A1 A2 (B) Other			N/A
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400				

SOIL DESCRIPTION

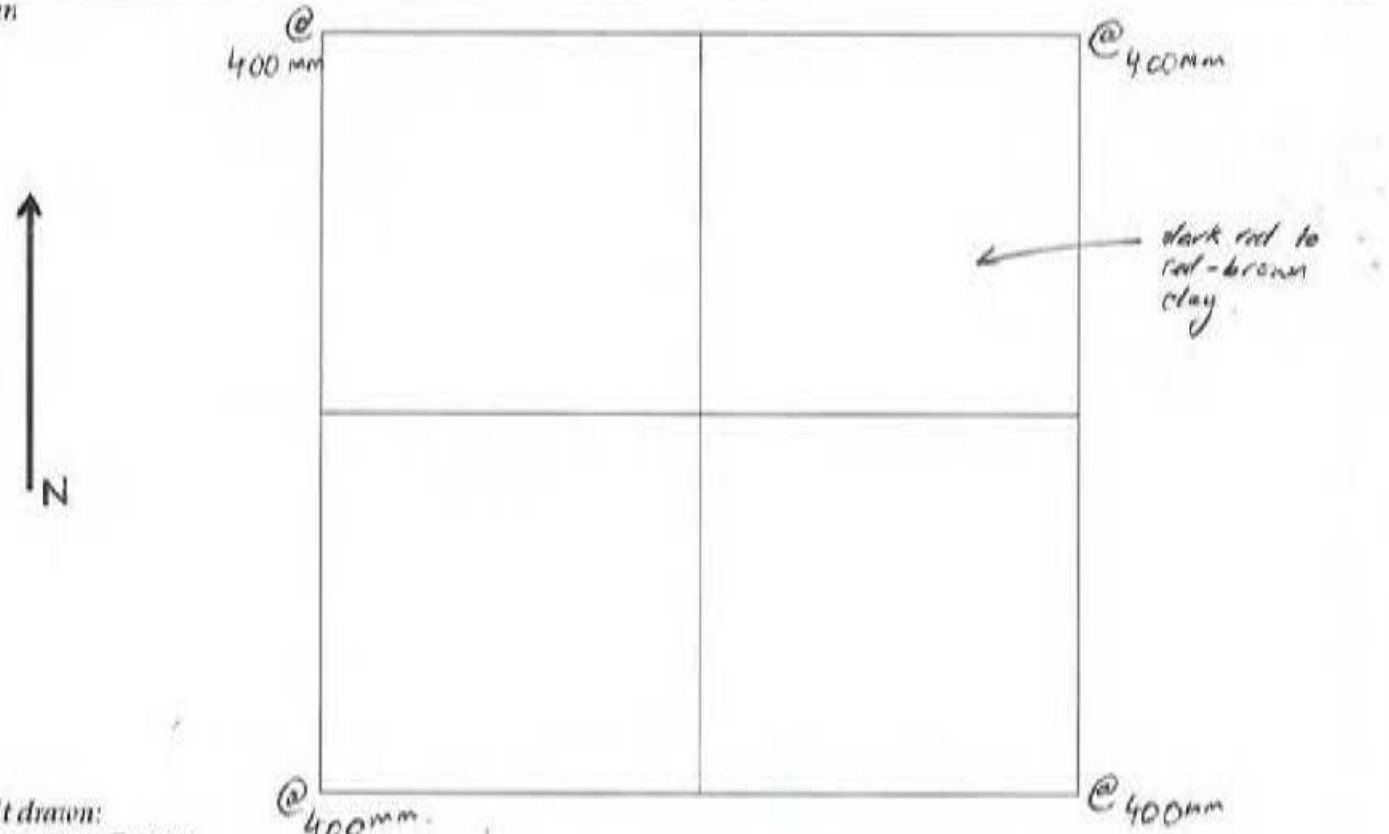
Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = Spoil to material worst root, sparse vegetation. A1 = ≈1cm ~~black~~ deep, a mid - dark brown, soft, fine silty loam, fine humic component.
A1	SPIT 1	Below this: a soft ~~humic~~ mid brown to grey-brown silty clay loam, root inclusions c. 10%. fine - very fine
B	c1-3cm	Abrupt horizon change to a soft but compact dark orange/brown silty clay loam to silty clay (higher clay content than above. Root inclusions very fine root inclusions c. 2%. Fine gradual - sign. charcoal inclusions c. 1-2%. Very fine charcoal flecking frequent throughout.
A2 B	SPIT1	
B	SPIT 2	Abrupt to clear horizon change to a mid-dark orange/brown silty clay ~~becoming dark brown~~ stiff/soft. At c. 10-13cm depth. Compact but still soft. Very fine root inclusions c. 1-2%. Fine - medium grained - sign. charcoal inclusions c. 5%. Very fine charcoal flecking throughout (v. frequent).
B	SPIT 3	As above, charcoal flecking less frequent and charcoal inclusions (fine) now absent. Very fine root inclusions c. 1%. ~~Increasing~~ Compact but soft silty clay, increasing clay content and increasingly darker in colour with depth (diffuse horizon).
B.	SPIT 4	As Spit 3 above, increasingly claygy and dark ~~brown~~ colour. Charcoal inclusions ~~and~~ charcoal flecking still present, but less frequent V. fine root inclusions c 1%. No artefacts

Description of material below B or the limit of excavations

BASE = dark ~~orange~~ red to brown - brown, compact plastic clay. Slightly silty & ~~fine~~ slightly friable.

→ (more red than brown...)

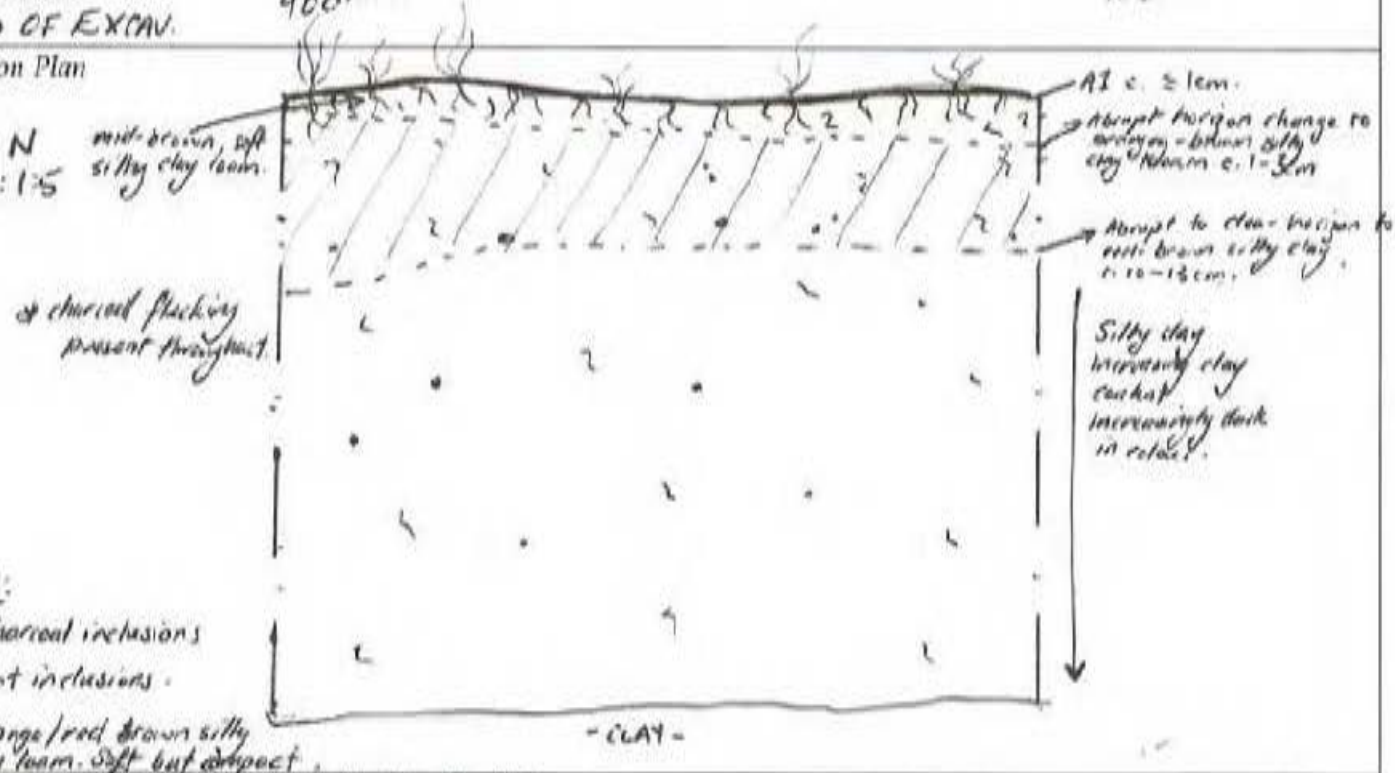
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27, 129
Excavators	AP, James, Dillon	Date 13/03/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other			
2	100	A1 A2 B Other			
	100	A1 A2 B Other			
4	20	A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

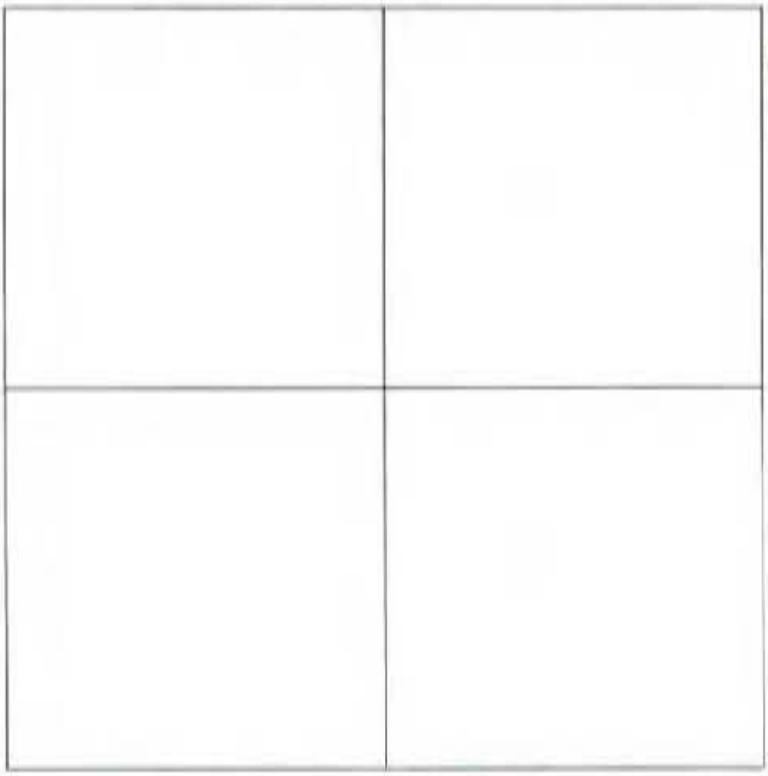
Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Grass
A1	1	20cm mid brn moist mid brown sandy clay loam clear ch A2
A2	1,2	mid brown grey clay loam, clear ch B 160cm.
B	1	light orange sandy clay.

Description of material below B or the limit of excavations

mid orange clay.

Plan

320



320

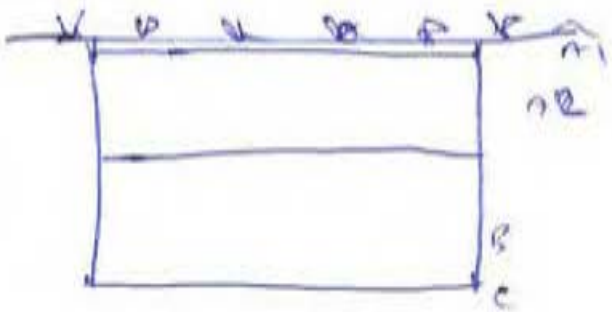
320

Spit drawn: GND

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Z7, 130
Excavators	AP, Jake, Dilica	Date	13/5/19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other			
2	100	A1 A2 B Other			
	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		Dark brown = mid brown sandy clay loam, clear over A2.
A2		mid grey brown clay loam clear over B at 140cm
B		Pale yellow white sandy clay. Some mottled variation to C.

Description of material below B or the limit of excavations

ORANGE CLAY

Plan

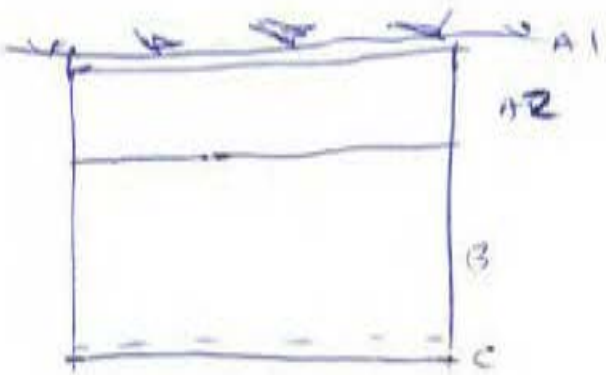
400 900

380 900

Spit drawn: END

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

SHEET 1/2

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27/B1
Excavators	AG, James, DILLON	Date 13/05/18	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other			
2	100	A1 (A2) B Other			
	100	A1 (A3) (B) Other			
4	100	A1 A2 B (Other)			
5	100	A1 A2 B (Other)			
6	100	A1 A2 B (Other)			
7		A1 A2 B Other			
Totals					

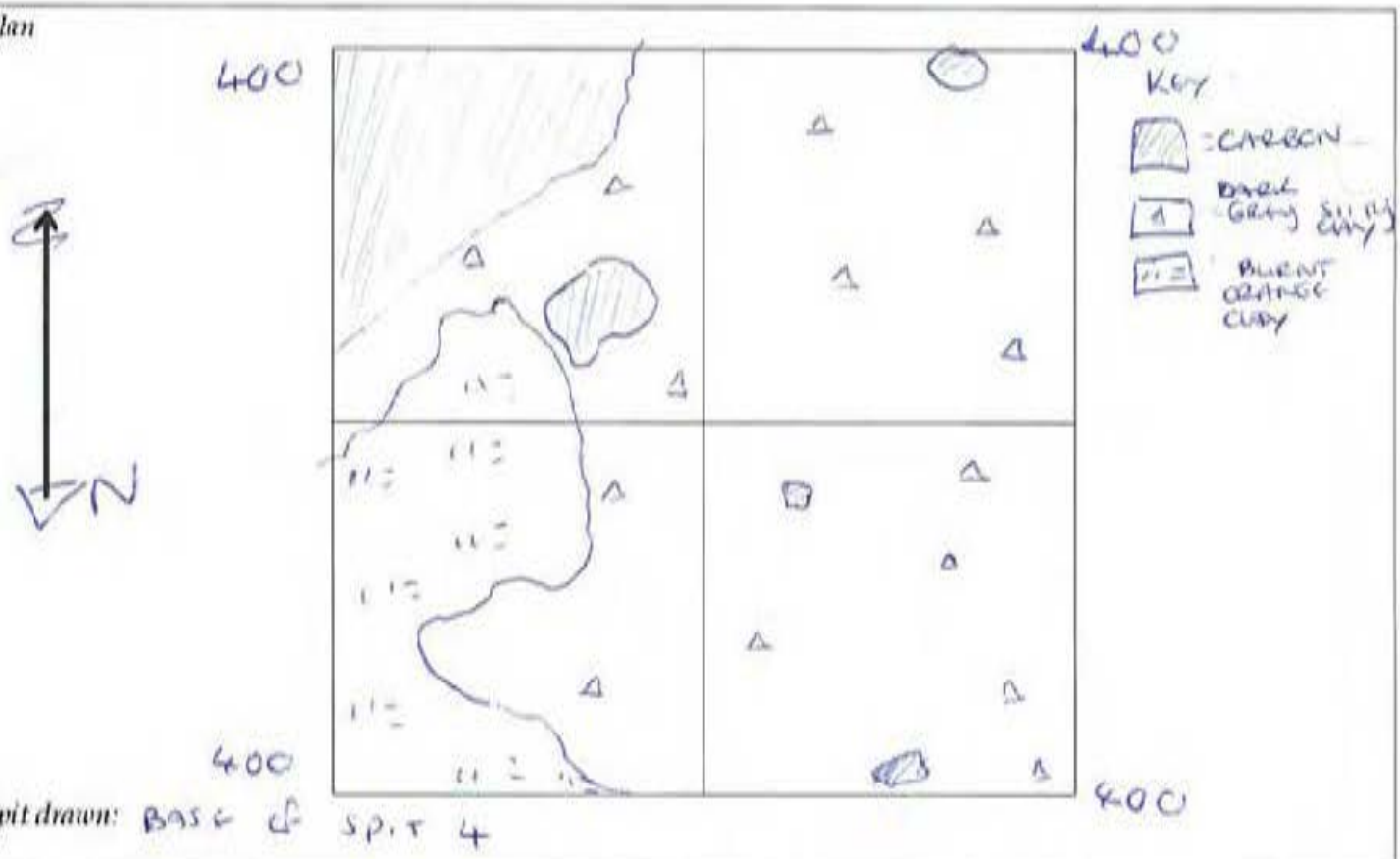
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Canola.
A1	1	(20cm) of mid brown sandy loam, clear onto pale grey silty clay (A2).
A2	1+2+3	Pale grey silty clay ~~loam~~. clear onto orange C horizon clay at 220cm. (120cm thick). Extensive disturbance ~~to~~ in NE corner from Bioturbation. All is grey silty clay w/ orange mottling, occa. charcoal pieces.

Description of material below B or the limit of excavations

ORANGE CLAY

Plan



Spit drawn: BASE OF SPIT 4

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27, 131
Excavators	AP, Jones, Dillon	Date 13/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

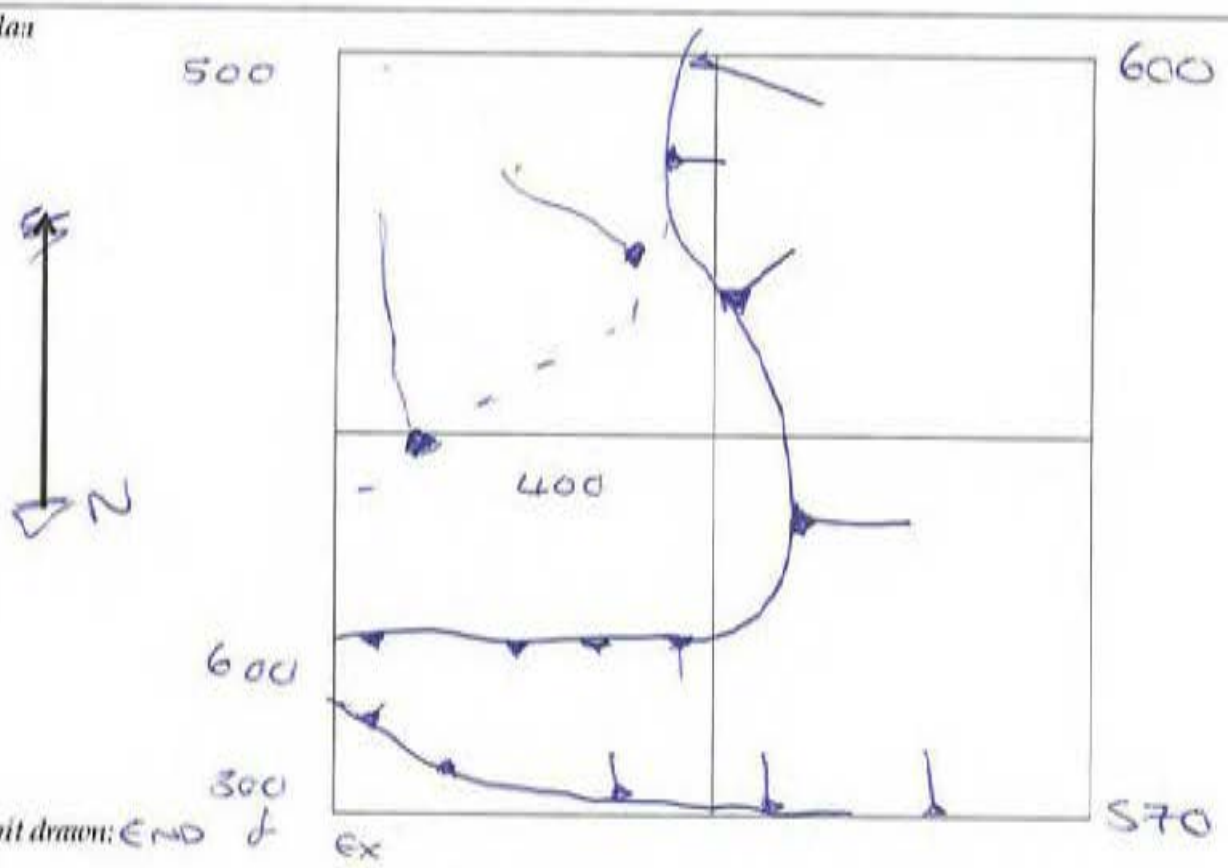
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		A1 A2 B Other			
2		A1 A2 B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

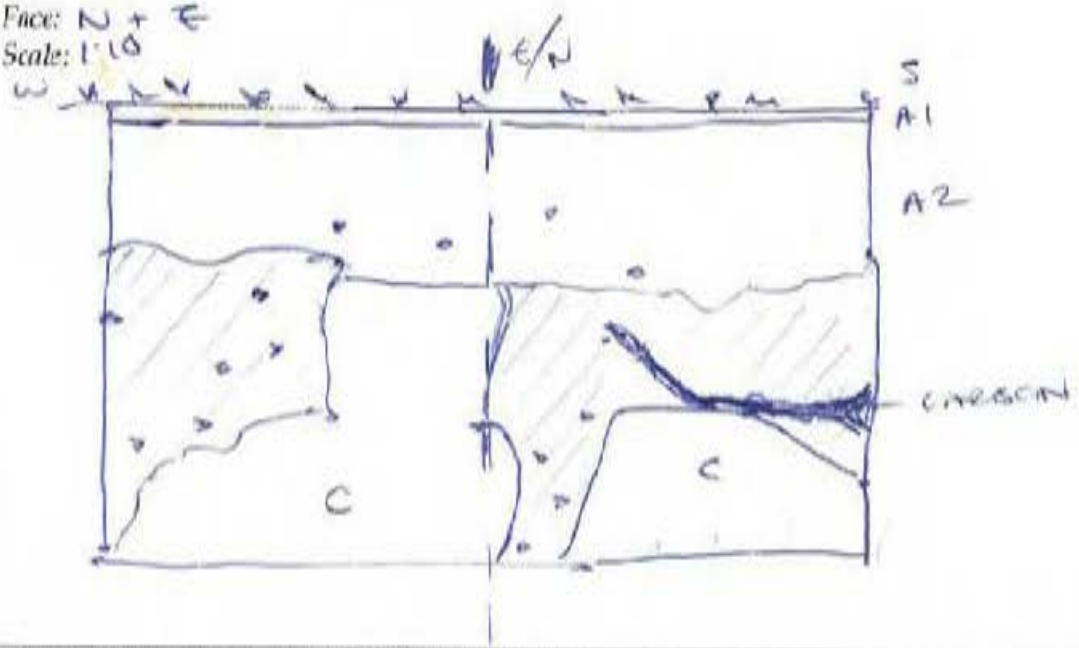
Description of material below B or the limit of excavations

Plan



Section Plan

Face: N + E
Scale: 1:10



● = CARBON

/// = GREY SILTY CLAY WITH CERTAIN MOTTLING BIOTURBATION

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7 TU: 132.
Excavators	KERRI FREEMAN, ~~Heritage Advisor~~ NORMA SPEECHLEY Volunteer	Date 13.9.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	HEAVY LAND CLEARING & PLOUGHING WITHIN CANOLA FIELDS.
Worthy of expansion? How?	NO.
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape	FRAMING LANDSCAPE ~~Hilltop~~ valley.		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 1-2%.	

EXCAVATION wet sieved dry sieved

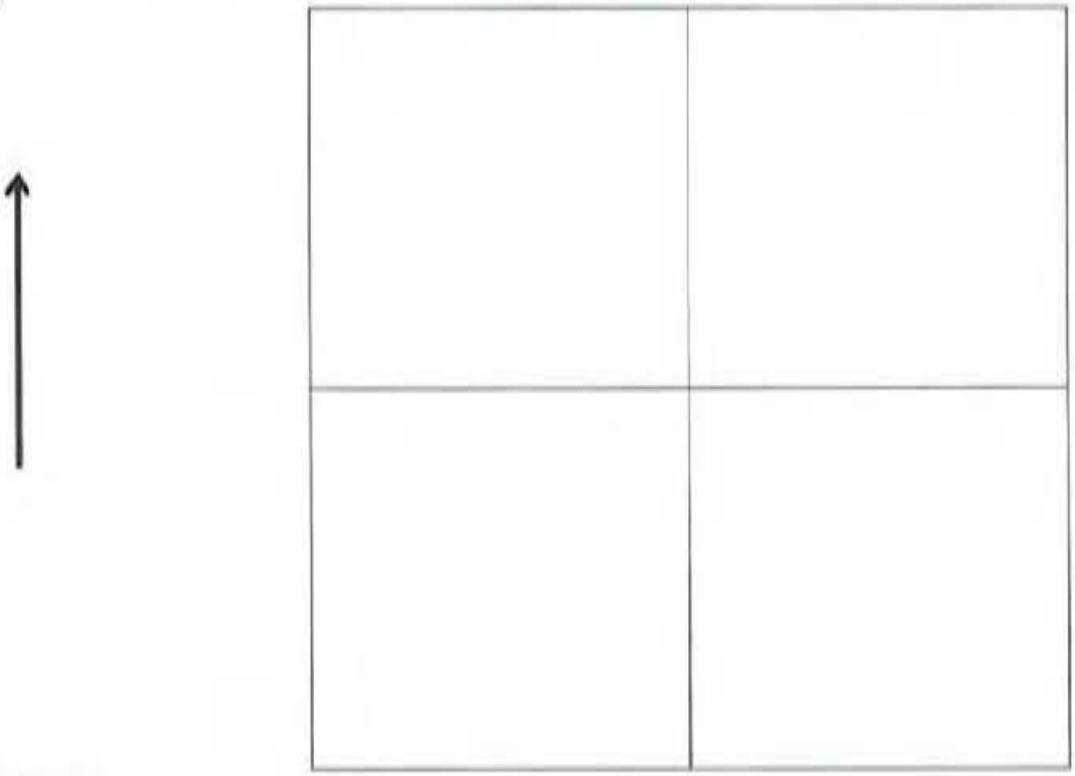
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-15cm (BASE)	~~A1~~ ~~A2~~ (A) B Other			Ø
2	15-20cm	A1 A2 (B) Other			Ø
	20-30cm.	A1 A2 (B) Other (C)		C HORIZON AT 28-29cm.	Ø
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. CANOLA PLANT ABOVE SURFACE. SUBSURFACE = NARROW ROOTLETS ASH (0cm)
~~A1~~ (A)	(1)	SILTY CLAY TO COMPONENT OF SUGAR, PHOSPHATE & POTASSIUM AND ADDED FERTILISERS. STRONG BROWN, FINE GRAINED & LOOSE.
~~A2~~ (B)	2->3	STIFF CLAY STRONG FINE GRAINED TO MANY INCLUSIONS OF FERRUGINOUS NODULES (30%). WATER BECOMES ABSORBED AS THE CLAY INCREASES.
(C)	(3) 28cm-29cm	STICKY RED/B CLAY W MINOR SILT COMPONENT. DAMP & COMPACT

Description of material below B or the limit of excavations

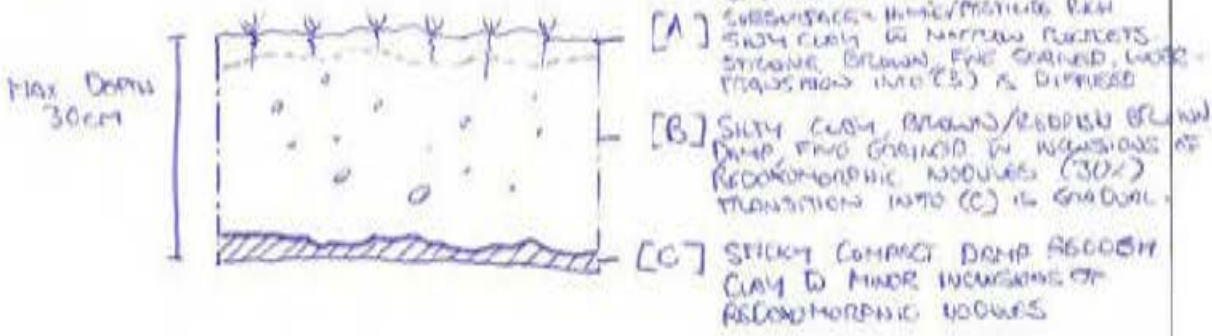
Plan



Spit drawn:

Section Plan ↯N

Face: SOUTHERN SECTION
Scale: 1:10 @A4



KEY/ = CANOLA PLANT + ROOTLETS = CLAY
= RECOMORPHIC NODULES @ 30cm ONWARDS. = HUMIC/PESTICIDES RICH SILTY CLAY.

Further descriptions and relationships to other TU

THIS PIT IS POSITIONED WITHIN CANOLA FIELDS. HIGH PRUNED + SUPER PHOSPHATE + PESTICIDES OR FERTILIZERS ADDED. ENDEMIC WITHIN FIRST 0 → 20cm DEPTH.

#

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27/133
Excavators	AR, JAMES, DILLON	Date 9/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) (A2) B Other			
2	100	A1 (A2) (B) Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 B (Other)			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400				

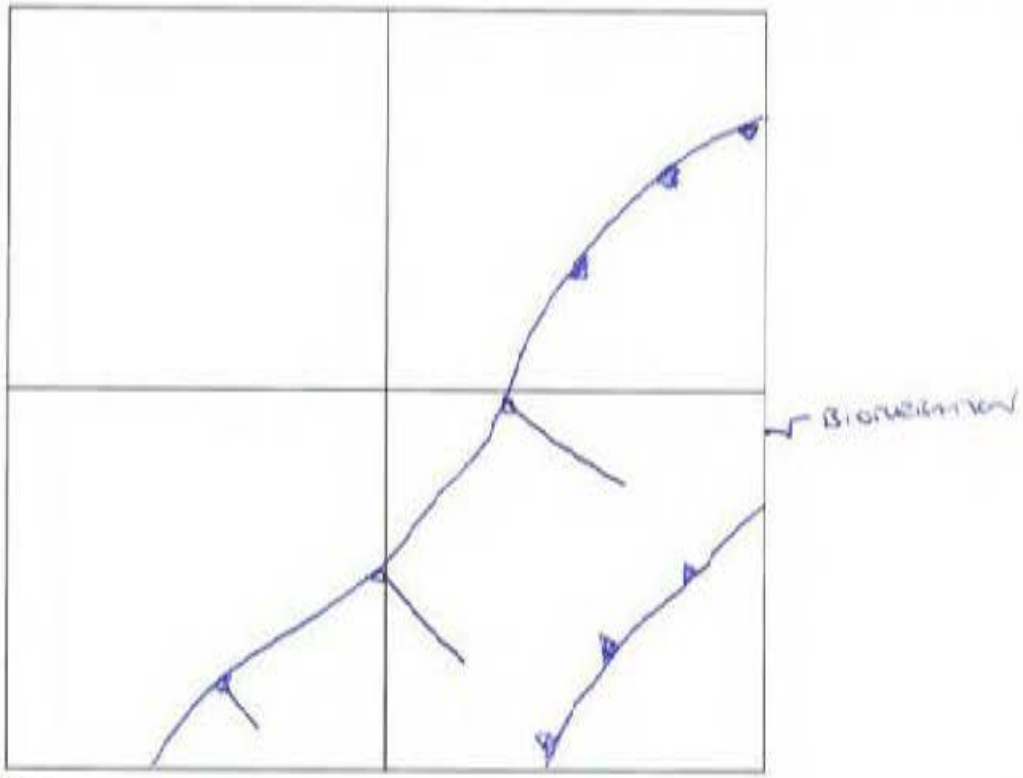
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		MID GREY BROWN SANDY (CAM (120M WET), U-DECR. ROCK DISTURB., CLEAR ONTO A2.
A2		MID GREY BROWN SANDY CAY (CAM (120M WET), U-DECR ROCK DISTURB. CLEAR ONTO B.
B		PALE WHITE SANDY CAY, EARTH MANGANESE NODULES. DECR ROCK DISTURB. (70M WET (30M) MOTTLED TRANSITION ONTO C HORIZON.
Bedrock		ROCK FILLED W/ GREY SILTY CLAY

Description of material below B or the limit of excavations

MID ORANGE YELLOW CLAY

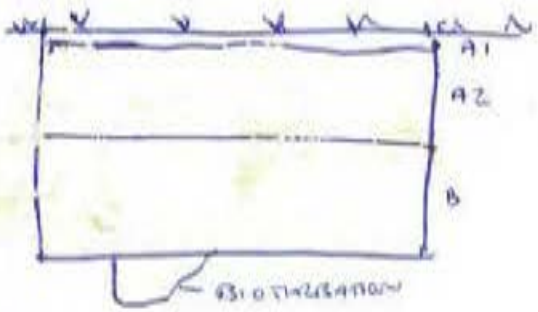
Plan



Spit drawn: END of EPC.

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7 TU: 134
Excavators	MARGIE FREEMAN, REBECCA YEATES, LEANN FLEMING.	Date 13 5.17	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	HISTORY EVIDENCE OF CANOLA FARMING & LAND CLEARANCE.
Worthy of expansion? How?	NO.
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting ~~□□□□□□~~	Northing ~~□□□□□□~~	
Soil landscape	FRAMPTON LANDSCAPE	* Approx. 10m WEST OF TU: 134.	
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / (Swamps) / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 1 – 2 %.	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 – 100mm	(A) A1 A2 B Other			Ø
2	100mm – 200mm	A1 A2 (B) Other			Ø
	200 – 300mm	A1 A2 (B) Other	LIMIT OF EX.		Ø
4	300 – 350 / 350 – 400m	A1 A2 (B) Other			Ø
5	~~400 – 500~~	A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

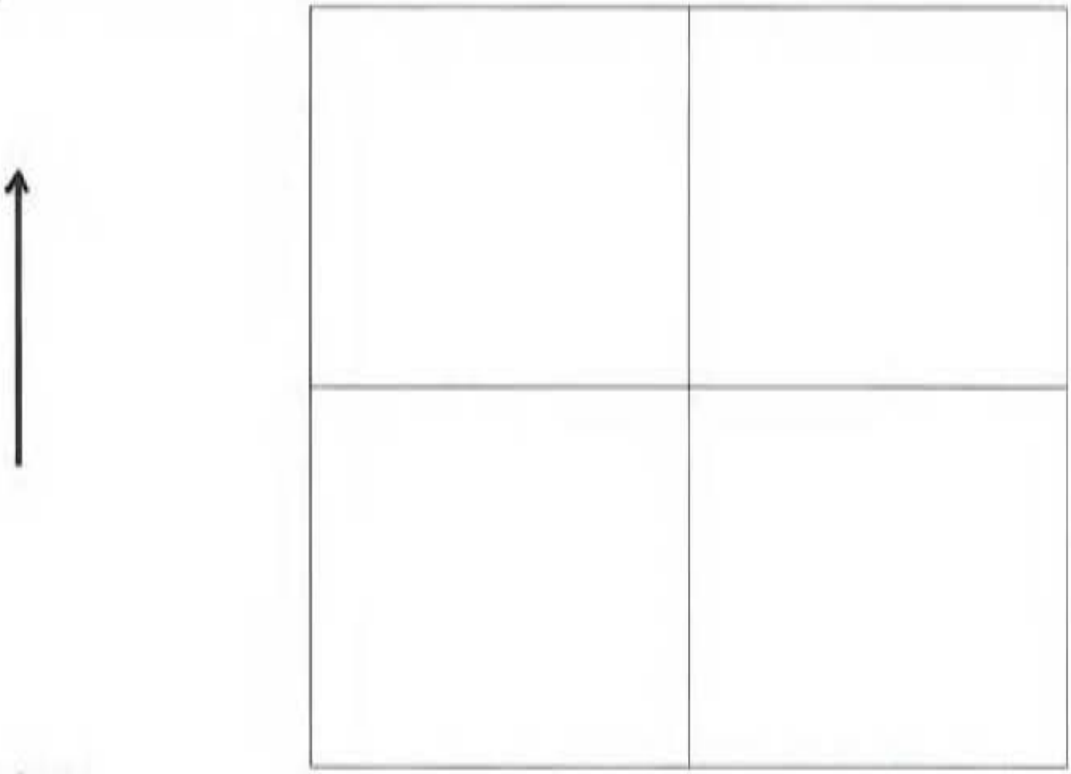
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. CLEARED SOIL SURFACE WITHIN THE CANOLA FIELD. DARK BROWN/BROWN
A1 Spit 1 – 2	(A) 1	HEAVILY MACHINE REWORKED LANDSCAPE. M. SOME MATERIAL TO SILTY CLAY LOAM ADDED FERTILIZER + SUPER PHOSPHATE. CROP IS BEING CANOLA FIELD. FINE GRADED, WELL SORTED TO LOOSE CONSISTENCY + SLIGHTLY DRY.
A2 Spit 2 – 3	(B) 2 3	SILTY CLAY, ~~LIGHT~~ ~~RED~~ ~~REDDISH~~ LIGHT BROWN TO DARKER BROWN, INCLUSIONS OF MANGANESE, FERROMAGNESIC NODULES (<1mm) (30%). LOOSE TO MEDIUM CONSISTENCY. ~~SLIGHTLY~~ SLIGHTLY DAMP
Spt 3 ~~Spit~~ 33 – 35cm Dep't.	(C)	GRADUAL TRANSITION INTO REDDISH BROWN SILTY CLAY TO MINOR COMPONENT OF CLAY. Compact & Pedomorphic inclusions lessening at this depth.

Description of material below B or the limit of excavations

35cm IS THE LIMIT OF THIS PITS DEPTH.

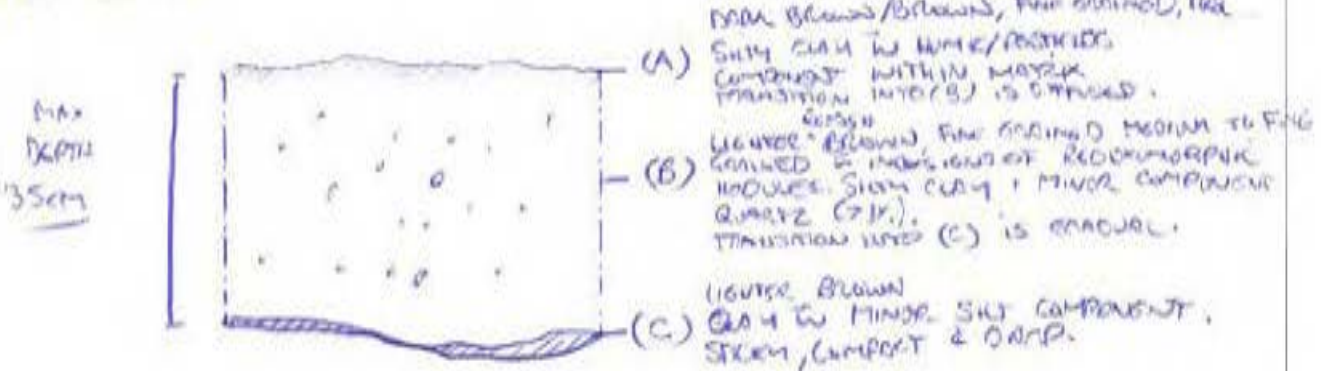
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:10



KEY
= RECRYSTALLISED NODULES
= SILTY HUMIC/PEATY RICH IN ORGANICS
= CLAY
= QUARTZ

Further descriptions and relationships to other TU

PIT WITHIN CANNOCK FIELD. POSITION LOWER SLOPE SLOPE APPROX 10m FROM OF LOWER LYING MARSHES THAT APPEAR TO BE SUBJECT TO WATER PONDING & FLOODING.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE: 7 TU: 135
Excavators	KEITH FREEMAN, MARNIE FREEMAN & REBECCA VARTY	Date	10.5.19 → 13.5.19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	NO = HEAVILY FARMED FOR CANOLA.
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	FRAMPTON LANDSCAPE WITHIN CANOLA FIELDS CLOSE TO SWAMPY LOW LYING AREA CLOSE TO CREEK.		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / (Swamp) / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

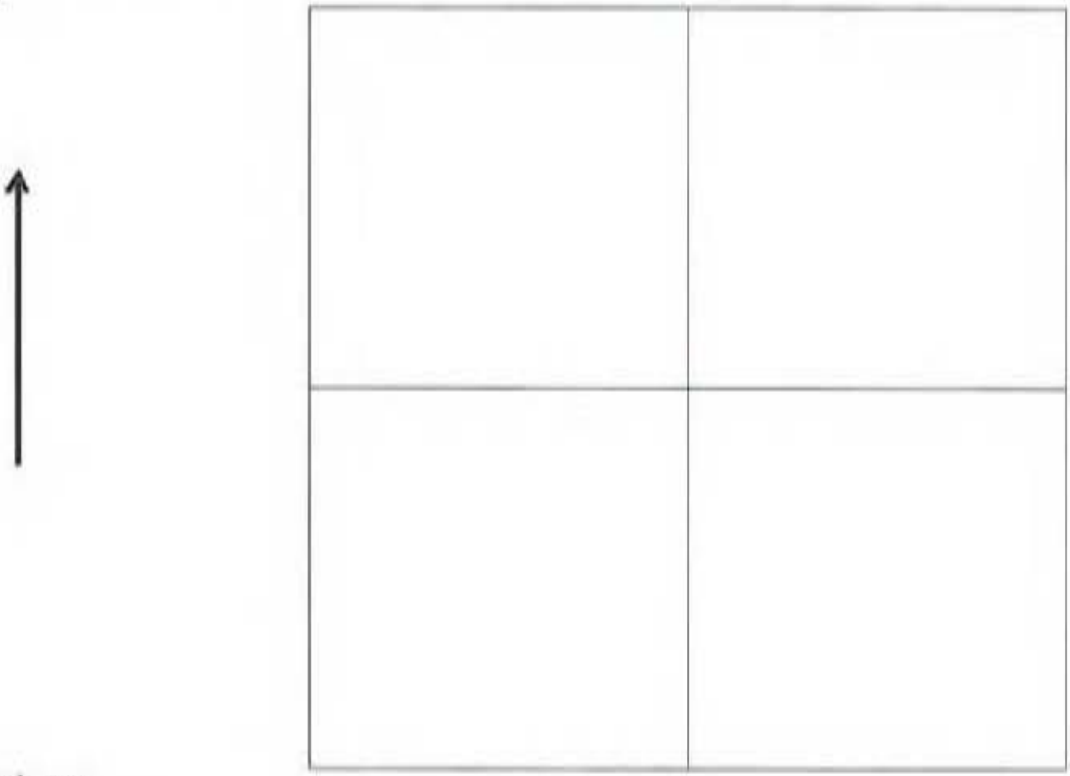
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 – 100mm	(A) A1 A2 B Other		AREA USED FOR CANOLA FARMING.	Ø
2	100 – 200mm	A1 A2 (B) Other		IN SMALL NODULES REDOXIMORPHIC NODULES	Ø
	200 – 350mm	A1 A2 (B) Other		" "	Ø
4	300–400mm	A1 A2 (B) Other		FLECKS OF CHARCOAL	Ø
5	400–500mm	A1 A2 (B) Other		FLECKS OF CHARCOAL	Ø
6	500–550	A1 A2 (B) (C) Other		TRANSITIONS INTO CLAY AT BASE.	Ø
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE IS DARK OF CANOLA FIELD, HEAVILY FARMED AND GRADED.
A1 A (0-5cm approx)	(1) → (4)	A HORIZON = DARK BROWN, DAMP, FINE GRAINED? WELL SORTED. HUMIC COMPONENT (2) INTRODUCED FERTILISERS WITHIN MATRIX (DUE TO AREA BEING A CANOLA FIELD).
A2 B	(1) → 6	LIGHTER REDDISH BROWN SILTY CLAY TO MINOR INCLUSIONS OF REDOXO MORPHIC NODULES THROUGHOUT (≈15%) @ 1mm. SCREENING @ DEPTH. SMALL FLECKS OF CHARCOAL (≈3%) @ SPIT 4 + 5 (400–500cm).
C	6 (approx 550+)	STRONG REDDISH BROWN CLAY. MINOR INCLUSIONS OF MANGANESE & REDOXOMORPHIC NODULES (≈5%). DAMP & COMPACT at depth. FINE GRAIN TO MEDIUM.

Description of material below B or the limit of excavations

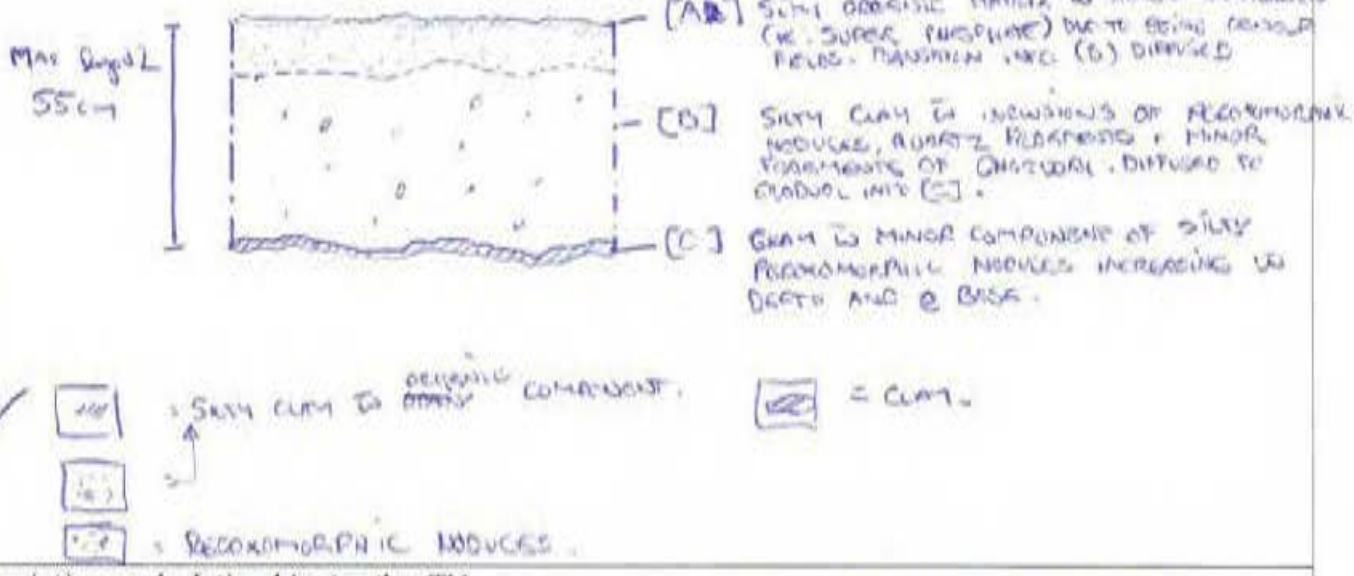
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:10



Key: = SILTY CLAY W ORGANIC COMPONENT. = CLAY. = FERROMAGNESIAN NODULES.

Further descriptions and relationships to other TU

TEST PIT LOCATED WITHIN CANOLA FIELDS FORMED ON A SLIGHT SLOPE, CLOSE TO, TO THE EAST WHICH SITS ON A LOWER END OF SLOPE CLOSE TO MINOR DEPRESSION.

LANDSCAPE IS HEAVILY FARMED AND DESPITE THE SITES (PIT) CLOSE LOCATION TO A CREEK, OCCUPATION SITES HAVE MOST LIKELY BEEN DISTURBED AND POSSIBLY WASHED AWAY (?)

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 7, TU. 138
Excavators	SARAH, JIRRAH, LORRAINE	Date 22/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	PLOUGHED + SOWN FIELD		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

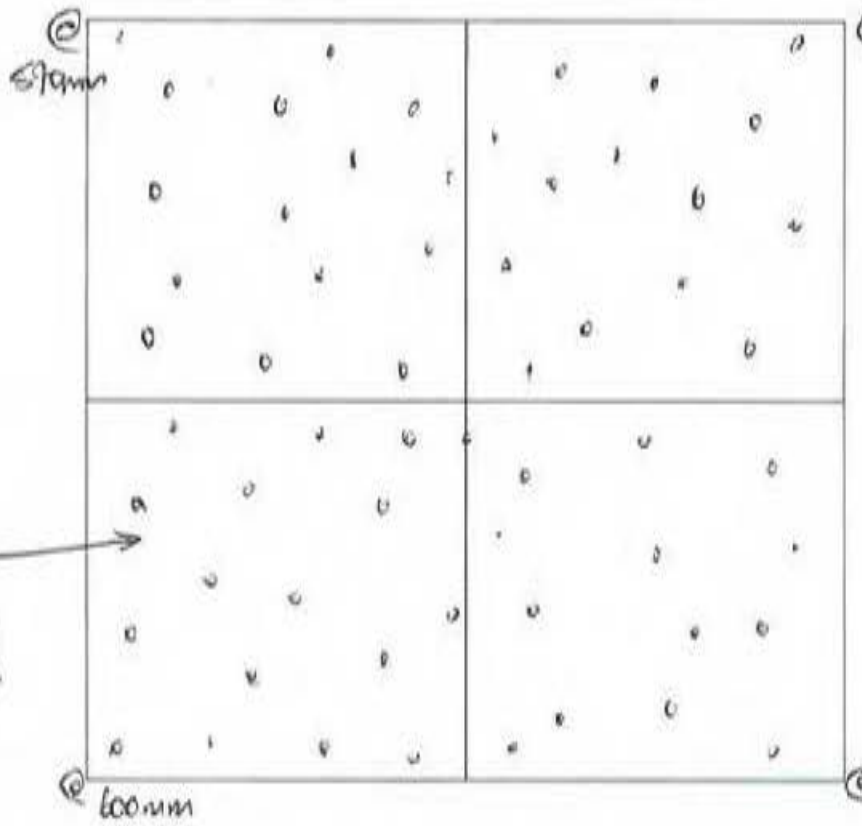
	Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
0-10	1	100	A1 A2 (B) Other			N/A
10-20	2	100	A1 A2 (B) Other			N/A
20-30	3	100	A1 A2 (B) Other			N/A
30-40	4	100	A1 A2 (B) Other			N/A
40-50	5	100	A1 A2 (B) Other			N/A
50-60	6	100	A1 A2 (B) Other			N/A
	7		A1 A2 B Other			
	Totals	600				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	~~SPIT 1~~	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = Ploughed + sown field, and sparse dead grass cover.
A1 B	SPIT 1	A dry, mid reddish brown silty clay loam. Soft + fine, at the 2-3cm thick. Below this, the same deposit, but more moist, and therefore dark red. Very fine root inclusions a rare, <1%. Fine to quartz gravel c. 1-2%. Fine charcoal inclusions c. <1%.
A2 B	SPIT 2	As spit 1 above, with no charcoal inclusions. Increasing clay content with depth.
B	SPIT 3	As spit 2 above, increasing clay content with depth.
B	SPIT 4	As spit 2/3 above, increasing clay content with depth. Fine to medium quartz gravel c. 1%. Very fine gravel (not sure what stone) appearing in deposit, c. 2-5%.
B	SPIT 5	As spit 4 above. Increasing clay content with depth.
Description of material below B or the limit of excavations		
B-	SPIT 6	As spit 5 above. Increasing clay content with depth. At 60cm, it comes down to a hard, compact yellow / greyish yellow silty clay.

BASE = A hard, compact yellow to greyish yellow silty clay, with fine to medium ironstone gravel inclusions c. 15% [illegible] staining from ironstone

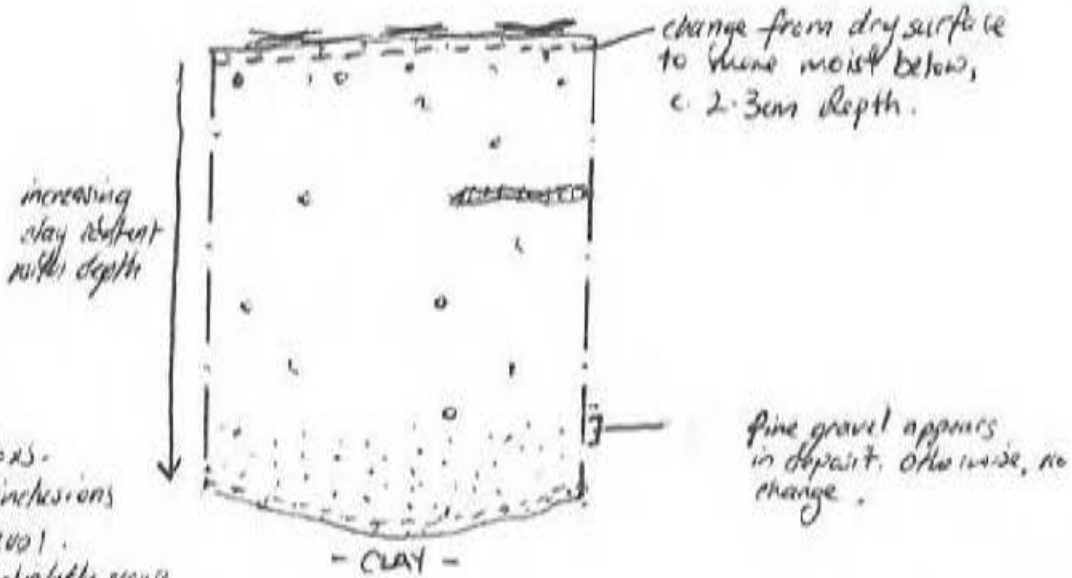
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:10.



KEY:
o quartz gravel
• charcoal inclusions.
\ very fine root inclusions
∴ very fine gravel.
darker red, slightly more clayey patch. Only one in TU.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28/143
Excavators	AP, JAMES, DILLON	Date 9/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	GUNNING RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 20	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			
2	50	A1 A2 (B) Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
(A1)		40mm of SOFT silty loam, occa. rock disturbance. clear onto B1, Paler grey brown silty clay loam. clear
A2 B		AS ABOVE clear onto C.

Description of material below B or the limit of excavations

while clay w/ yellow MOTTLING

Plan

150 150

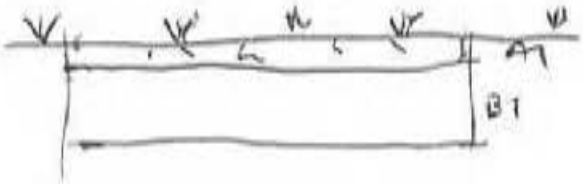
150 150

Spit drawn: excl.

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28 / 144
Excavators	AP. JAMES, DILLON	Date 9/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TUMUT RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 30	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	1	(A1) A2 (B) Other			
2	2	A1 A2 (B) Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	100	Soft loose brown silty loam - dry. Thin grass - clear change to B1. Silty clay loam.
~~A2~~ B1	50	AS ABOVE, clear change to C -

n of material below B or the limit of excavations

Mid Sandy clay

Plan

150

140

150

150

Spit drawn: c of

Section Plan

Face: N
Scale: 1:10

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28/149
Excavators	AO, JAMES, DILLON	Date 9/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 35	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			
2	60	A1 A2 (B) Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

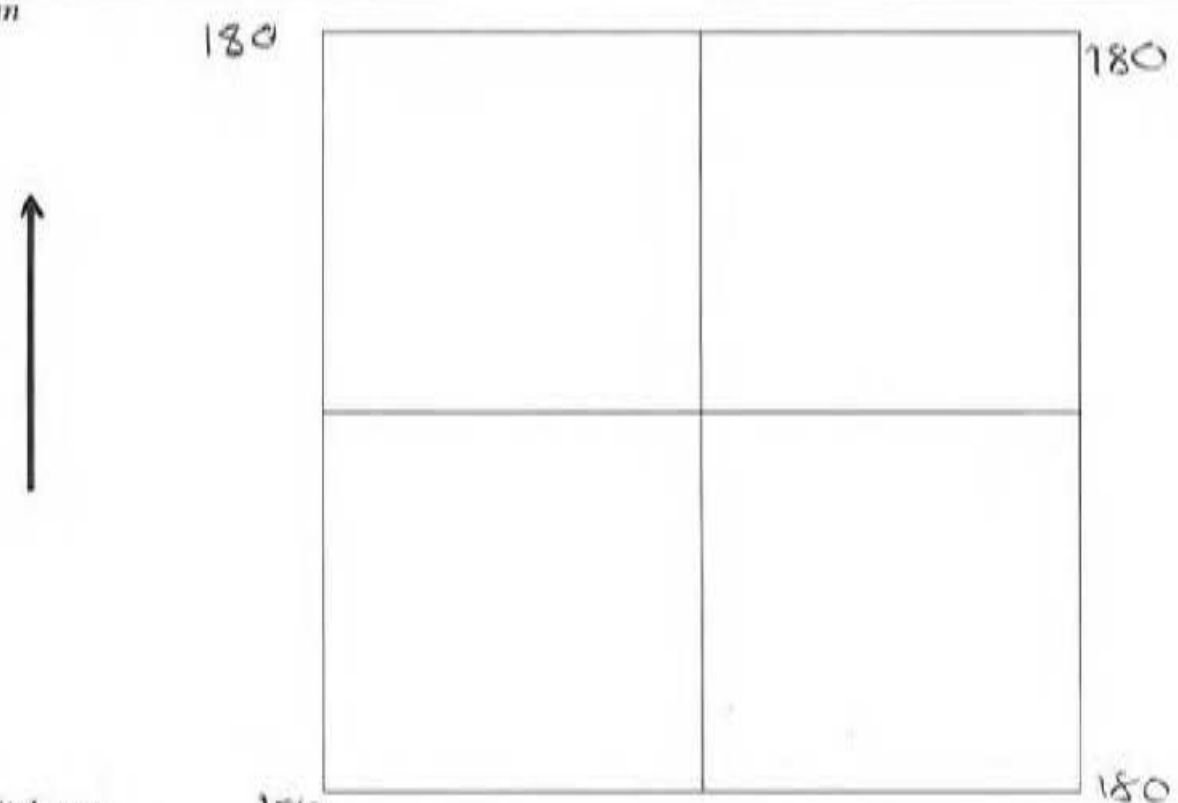
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	40m	SOFT light brown silty loam w/ occ rock disturbed from above. dec into B1. silty clay loam.
~~A2~~ B1	1+2 140mm	AS above. dec into C

Description of material below B or the limit of excavations

WHITE SANDY CLAY

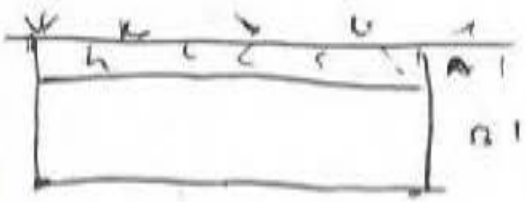
Plan



Spit drawn: c-d

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # 136 PHOTO # Zone 7	
Excavators	Seb Jessawa imtgiwt	Date 22/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

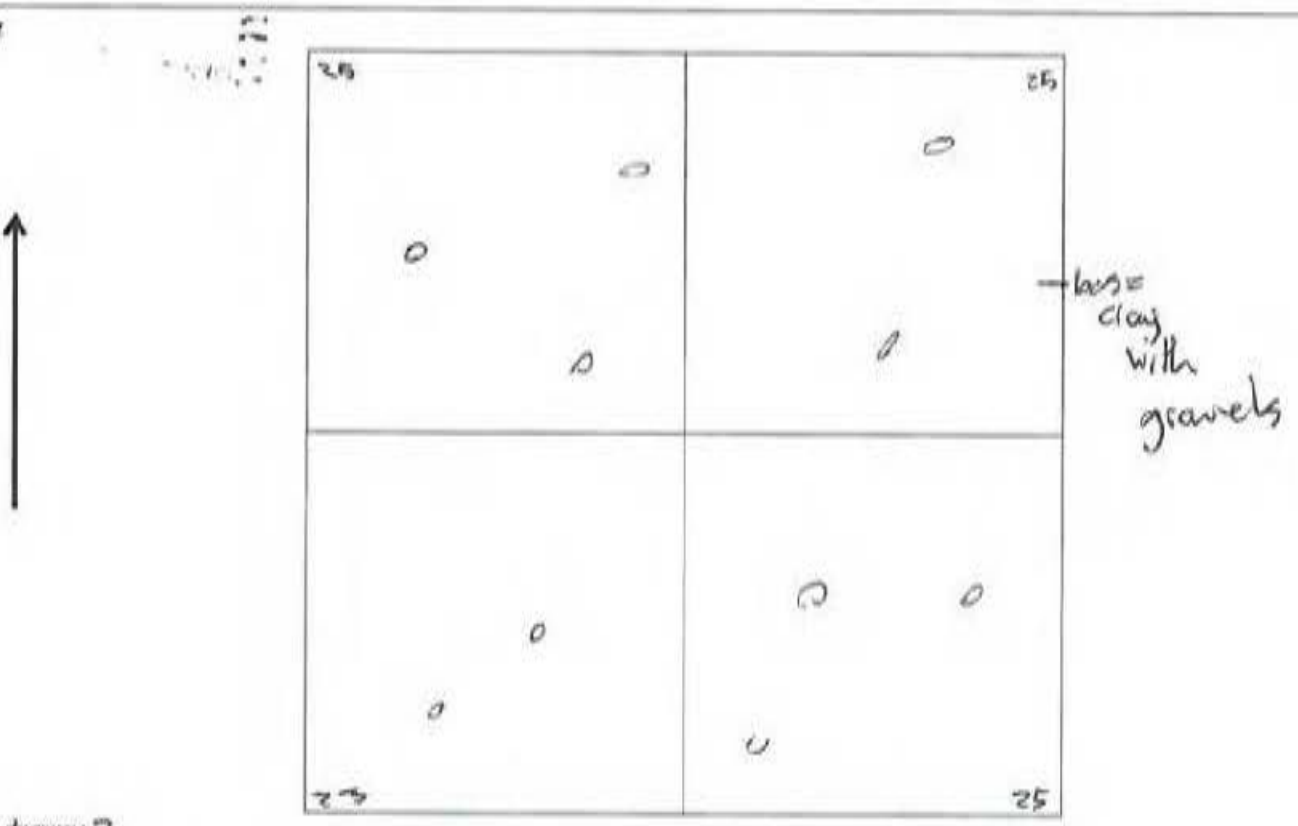
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			0
2	100	A1 (A2) (B) Other		None	0
	50	A1 A2 (B) Other			0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	reddish brown silty clay compact with a hardened top 3cm from dryness then onto slightly damp soils. no bioturbation test pit is along the fence line in a road track
A2	2	continuation of above onto mottled reddish brown to red clay with ~~red~~ coarse gravel inclusions (5%)
	3	onto compact red base clay with 5% gravels &

Description of material below B or the limit of excavations

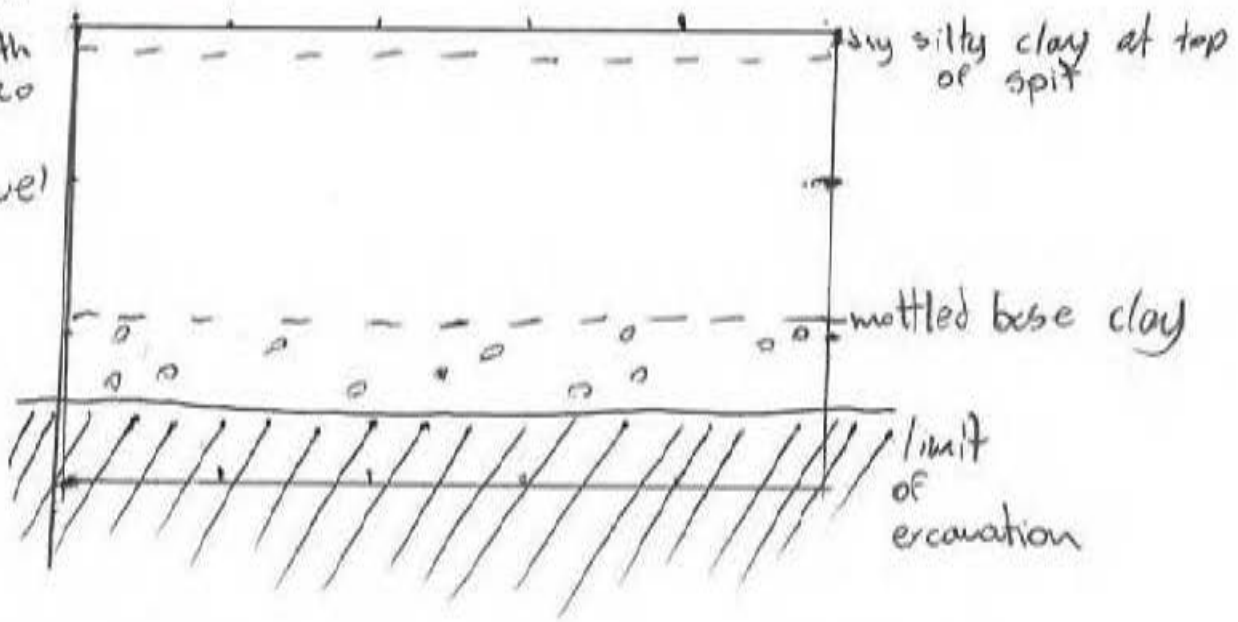
Plan



Spit drawn: 3

Section Plan

Face: north
Scale: 1 - 20
key
o = gravel



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	137 Zone 7
Excavators	Dessawa Imigive	Date	22/8/19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

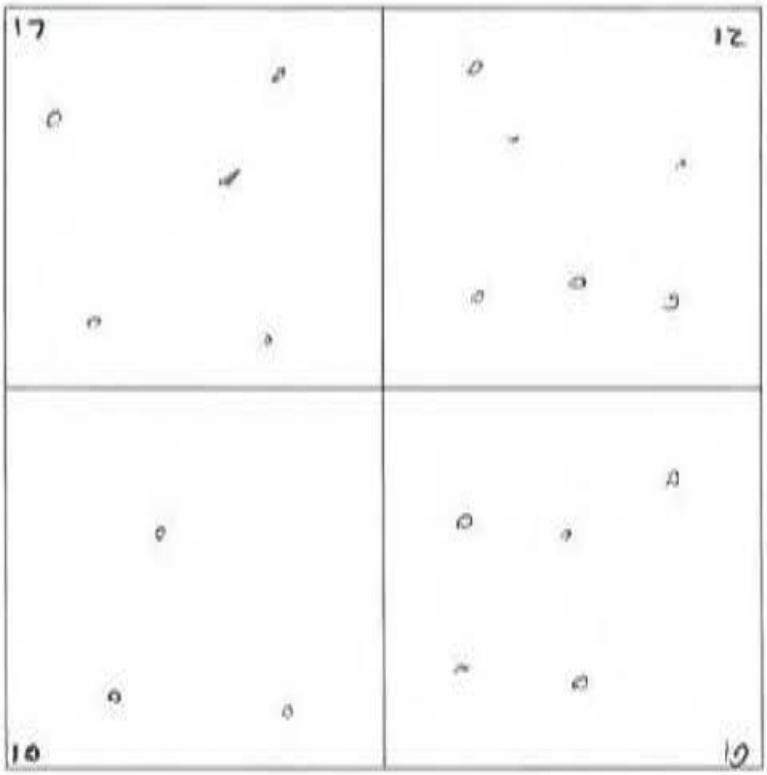
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	70	A1 A2 (B) Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. plowed, some dried crop stalks
A1	1	red silty clay with some very fine roots onto a red very compact base clay
A2	2	Base clay with some fine gravels, change was abrupt with no other features detectable

Description of material below B or the limit of excavations

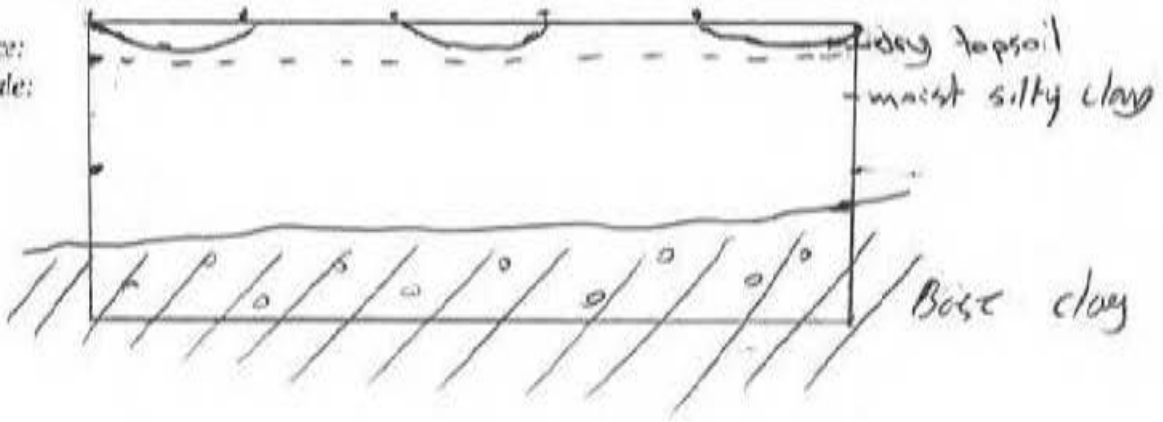
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27/139 015 1-5m
Excavators	AB, James, Dillon	Date 22/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	In Roadway		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
	50	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	250				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GGP: S
A1	1+2	150mm Mid dry loam ~~straight sand~~ Driveway, mod. compact. mid brown grey clear and
A2 B	2+3	Mid orange red silty clay. clear on C.

Description of material below B or the limit of excavations

orange red clay

Plan

250

200

250

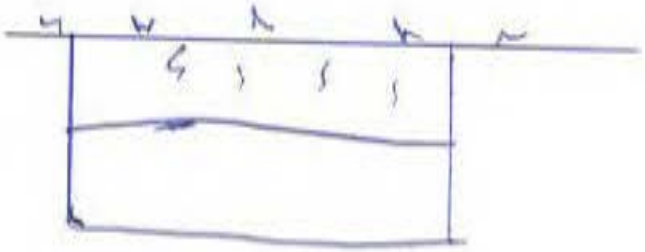
200

Spit drawn: a d

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	27/140
Excavators	AP, JAMES, DILLON	Date 22/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 15	

EXCAVATION wet sieved (dry sieved)

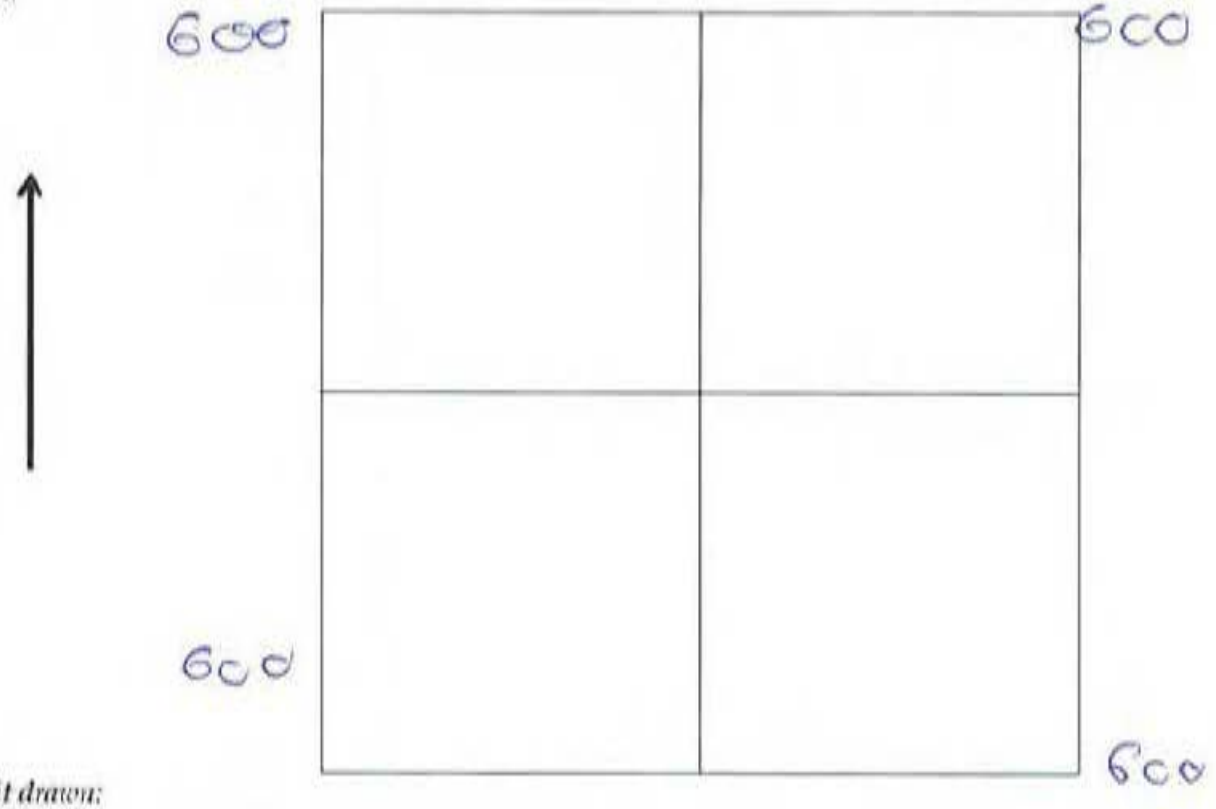
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 B Other			
3	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6	100	A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. CANOLA CROP
A1	1	10cm Mid Mid grey brown clay loam topsoil (PLOUGH SOIL) clear
A2 B	2-6	MID ORANGE CLAYEY SILT, CONSISTENT clear ons orange clay C horizon

Description of material below B or the limit of excavations ORANGE clay.

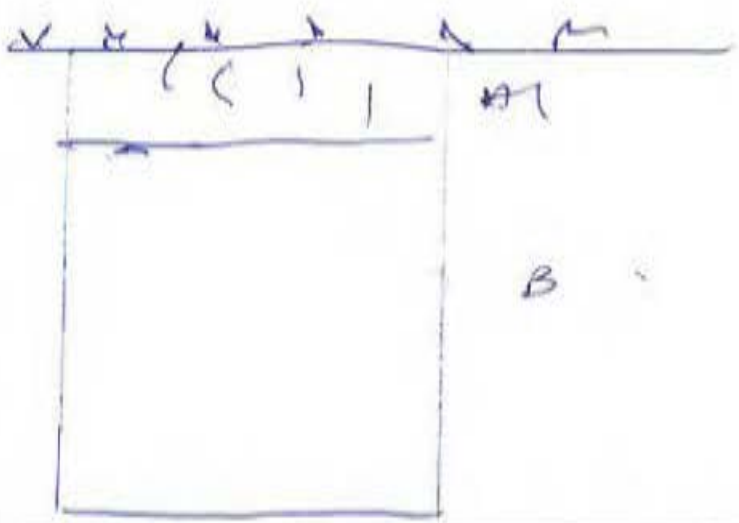
Plan:



Spit drawn:

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation — Job #:17-0169A		TEST UNIT # PHOTO #	Zone 7 TU 141
Excavators	REBECCA VASSIO // MARNIE & SOPHIA EGGMAN	Date 22.5.19.	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	PLOUGHING + RECENT BURNING OF TREE STUMP WITHIN PIT
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☒☐☐	Northing ☒☐☐☐☐☐	
Soil landscape	FERNTOP. WITHIN GENTLE SLOPING FLATS OF PLOUGHED FIELD		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 1-2%	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-5-10CM	(A1) A2 B Other			Ø
2	10-15CM 15-20CM	A1 (A2) (B) Other			Ø
	20 → 30CM	A1 A2 (B) Other			Ø
4	30 → 40CM	A1 A2 (B) Other			Ø
5	40 → 45CM	A1 A2 (B) Other (C)			Ø
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

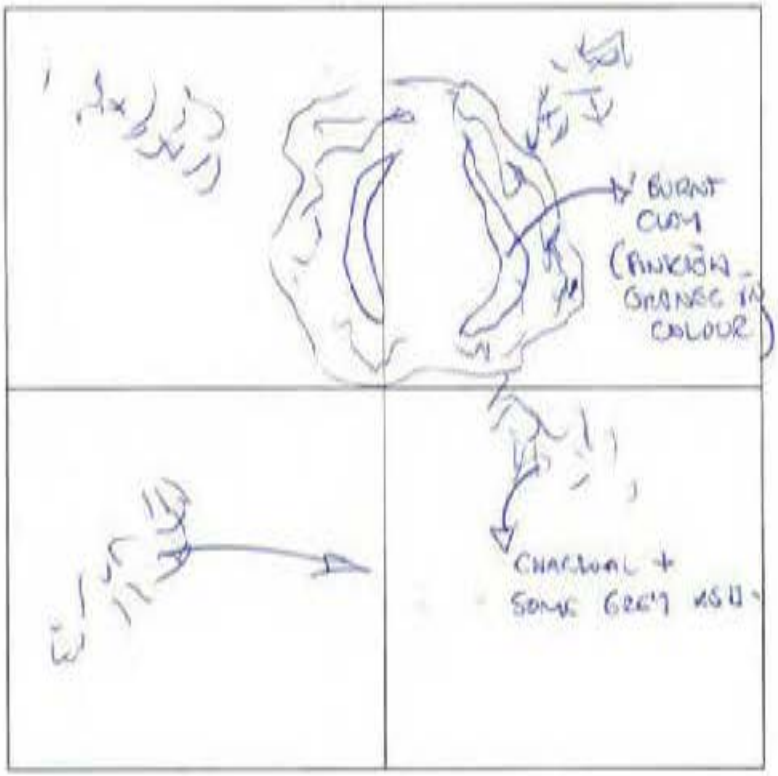
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. PIT LOCATED CLOSE TO FENCE LINE WITHIN PLOUGHED FIELD,
A1 — BETWEEN 0 → 5 TO 10CM DEPTH		STRONG REDDISH BROWN SILTY CLAY, MOIST + COMPACT WITH V. FINE ROOTLETS WITHIN FIRST 1-2CM LESSENING ABRUPTLY AFTER THIS. CONCENTRATION OF CHARCOAL + RED/ORANGE BURNT CLAY (BURNT TREE ROOT)
~~A2~~	(A2)	TRANSITION INTO (A2) IS ABRUPT (IN SECTION) INTO REDDISH BROWN SILTY CLAY TO A CONTINUATION OF THE BURNT TREE ROOT CONTINUING IN DEPTH → PARTICULARLY IN THE NW PORTION OF PIT
	(B)	RED SILTY CLAY WITH CONTINUATION OF BURNT TREE ROOT STICK VISIBLE WITH NW CORNER. SILTY CLAY VERY STICKY AND COMPACT. TRANSITION INTO (C) IS DIFFUSED TO GRADUAL.
	(C)	RED V. STICKY COMPACT CLAY, MOIST + CONTAINING NO VISIBLE INCLUSIONS. LIMIT OF EX APPROX 45CM.

Description of material below B or the limit of excavations

RED STICKY COMPACT CLAY BEARING NO VISIBLE INCLUSIONS AT BASE (APPROX 45CM).

Plan

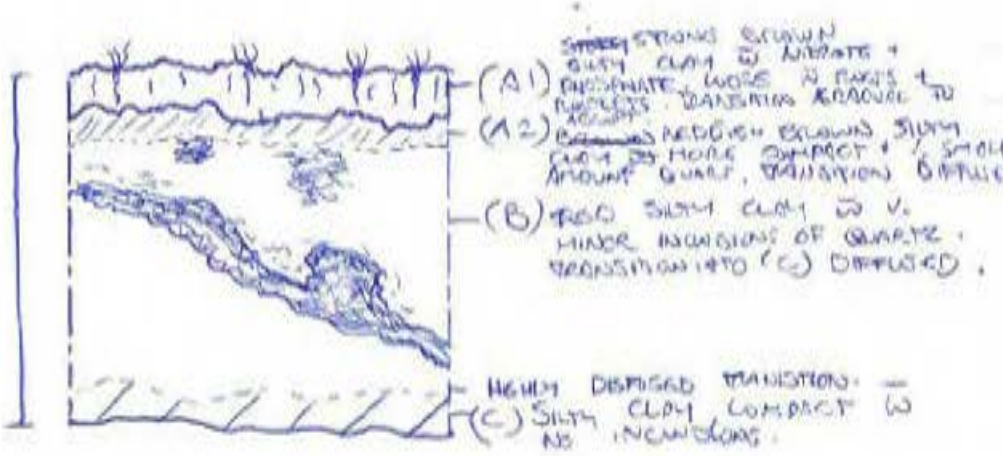


Spit 2
Approx depth 25cm.
(BURNT TREE ROOT CONTINUED UNTIL APPROX 40cm)

Spit drawn:

Section Plan

Face: WESTERN SECTION
Scale: 1:10 cm.



KEY / = BROWN SILTY CLAY = CHARCOAL + ROOTS = BURNT TREE ROOT (CHARCOAL) = ASH

Further descriptions and relationships to other TU

P1 ISOLATED IN NORTH OF DIRT TRACK THAT RUNS PARALLEL TO BARB-WIRE FENCE. P8 POSITIONED WITHIN RECENTLY PLOUGHED CANOLA FIELD. SURFACE CONTAINED RECENTLY LAID STRAW + NEWLY PLANTED CANOLA. FIRST 10-15cm NEWLY DISTURBED AND RE PLOUGHED W ADDED NITRATES + PHOSPHATES. AT APPROX. 10cm - 15cm REMNANTS OF BURNT TREE CONCENTRATED IN NW PORTION OF PIT CONTAINING CHARCOAL (CHARCOALISED) AND ASH + PINKISH/ORANGE BURNT CLAY.

LIMIT OF Ex DUE TO V. STICKY RED CLAY AT BASE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28 / 142
Excavators	AP, JAMES, DUCN	Date 8/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	TWINE RANGE	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	(N) E S W	Slope % 5

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		40mm light brown ~~clay~~ silty loam, soft. occas. root disturbance. Merging into B
A2 B1		light brown grey clay loam, Paler than A1. merging into Mid yellow clay. friable. 50mm merge is into clay gravel — changed back to (B2)

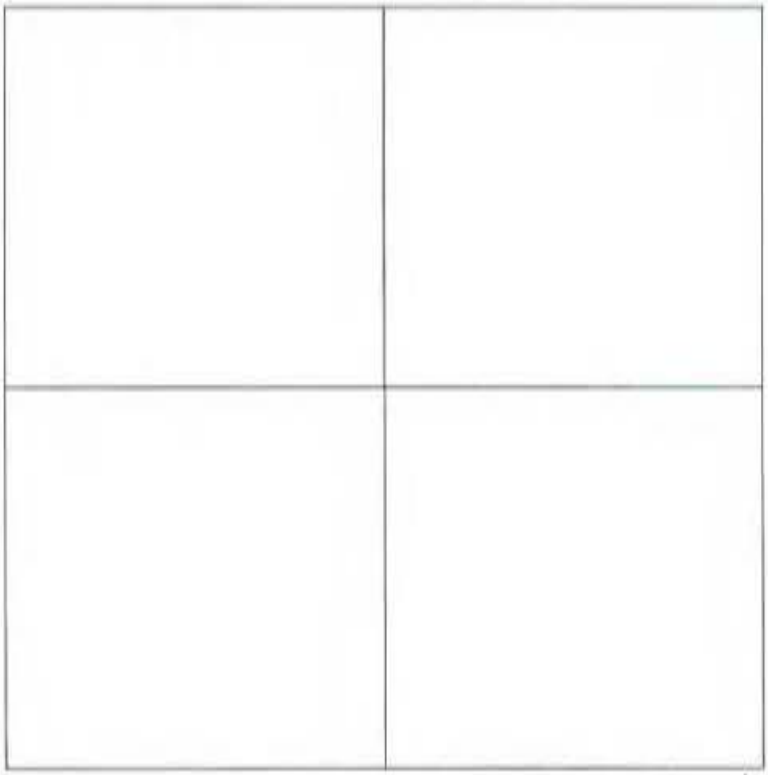
Description of material below B or the limit of excavations

yellow clay

Plan

200

200



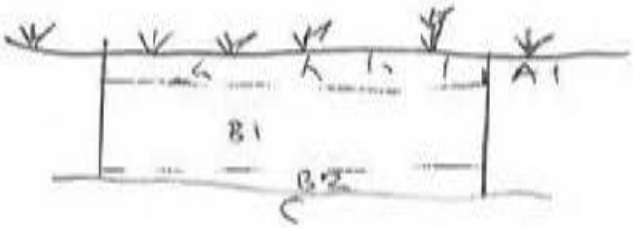
Spit drawn:

180

190

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8 AREA = 145
Excavators	REBECCA VARTO MARIAN FREEMAN & KEITH FREEMAN	Date 9.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	NO – HEAVILY ERODED SLOPE, CLOSE TO MARGINS OF THE SMITH WATER (30–40m SOUTH).
Worthy of expansion? How?	NO
Plan #	-
Samples (description & number)	NONE

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape	FRAMPTON // LOWER SLOPES		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / (Rock Outcrops) / Other		* GRANITE OUTCROPS.
Aspect	(N) E S W	Slope % 40–45%	

EXCAVATION wet sieved dry sieved

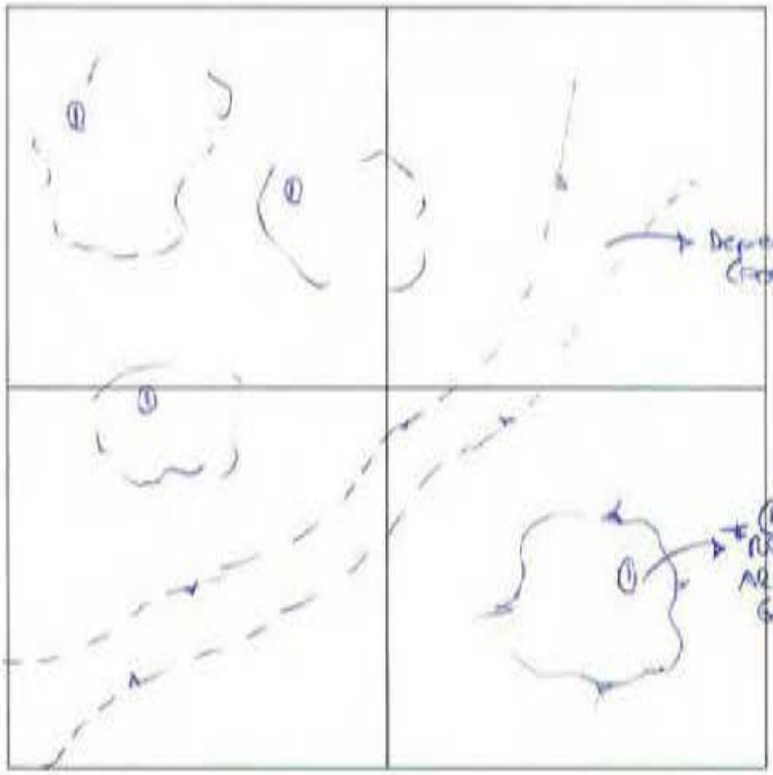
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
(1)	0–3cm 3cm → 160mm	A1 (A2) (B) Other		LARGE BOULDERS OF QUARTZ PORPHYRY	Ø
(2)	160–200mm	A1 A2 (B) Other		V. HIGHLY DEGRADED GRANITE	Ø
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE GRAVELS (QTZ), HIGH LEVELS OF EROSION, ANIMAL // GRAZING, LOSS OF TOPSOILS DUE TO WATER / WIND EROSION
A1 →	GONE	
A2	1 → 1	HUMIC COMPONENT WITHIN SILTY CLAY, DARK AND CONTAINING FINE NARROW ROOTLETS WITHIN FIRST 0–5mm → LIGHTENING TO BROWN. SPECKLES OF QUARTZ ARE EVIDENT ON SURFACE AND SUBSURFACE.
B	1 → 2	TRANSITIONS GRADUALLY INTO SILTY CLAY, DARK → MOIST, COMPACT TO MOIST INCLUSIONS OF ANGULAR QUARTZ FRAGMENTS.
(C)	BASE OF SPIT 2 (approx 180mm)	TRANSITIONS ABRUPTLY INTO WHITE SILTY CLAY, VERY COMPACT W INCLUSIONS OF QUARTZ (>50%) AND VERY HIGHLY DEGRADED GRANITE AT BASE. EVIDENCE OF OLD DECEASED TREE ROOTS AT BASE OF SPIT

Description of material below B or the limit of excavations

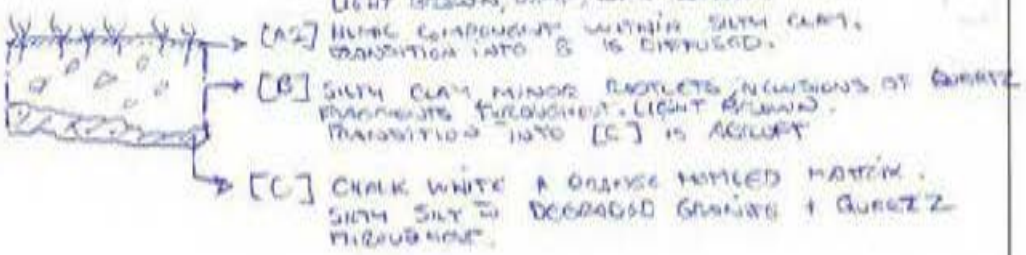
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:20



KEY


= ROOTS & ROOTLETS


= QUARTZ FRAGMENTS


= CLAY TO SILT & DEGRADED GRANITE.


= HUMIC COMPONENT

Further descriptions and relationships to other TU

THIS AT IS POSITIONED AT LOWER SLOPE OF RISING RANGE CLOSE TO MARSHES. HEAVILY ERODED & DEGRADED, HEAVILY GRAZED FOR CATTLE GRAZING.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28/ ~~152~~ 146
Excavators	Adam, James, Dilic	Date	3/5/19

SUMMARY OF EXCAVATION

tal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TABINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 30	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	80	A1 A2 (B) Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	10cm light brown silty loam - occas ROCK DISTURBANCE / SOIL MIXING into Pale grey brown clay loam B1 horizon -
A2 B1	2	AS ABOVE - ~~no~~ clear cut light white ~~grey~~ clay - decayed bedrock? -
		Ko

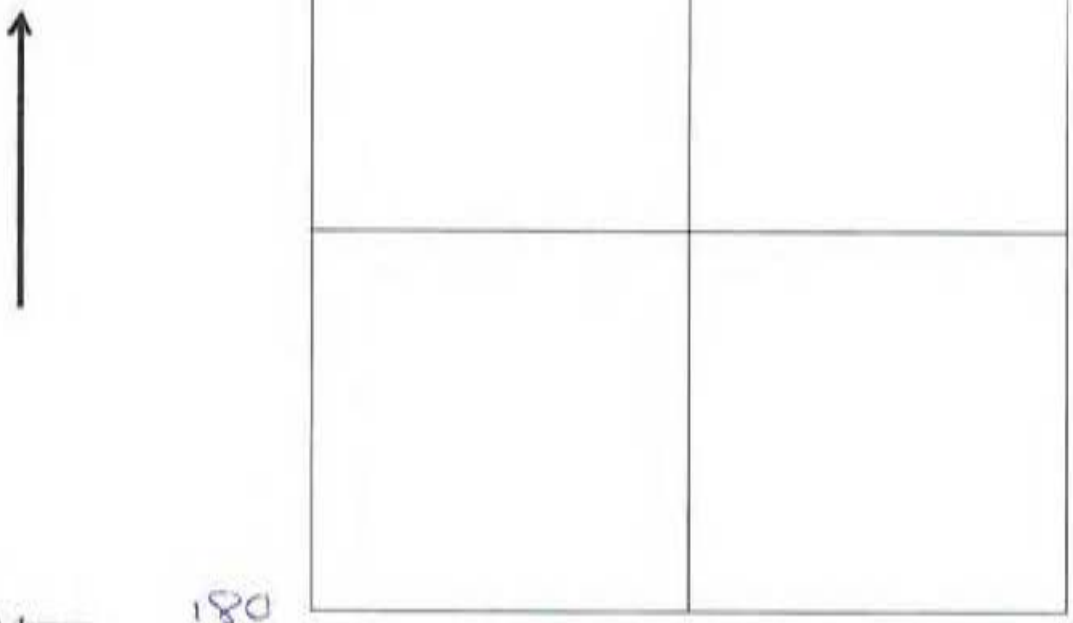
Description of material below B or the limit of excavations

light white clay.

Plan

180

180

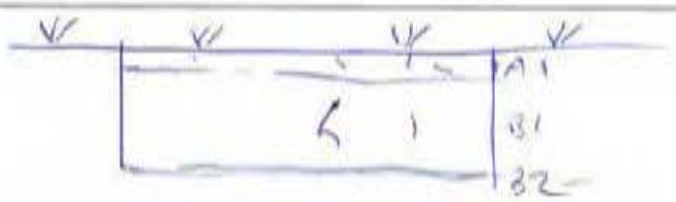


180

180

Spit drawn:

Section Plan



Face: N

Scale: 1-10

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8, TU 147
Excavators	BRAD, RODNEY, SARAH.	Date 9/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E (S) W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon (c. 1cm)	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	200 (max)		/		

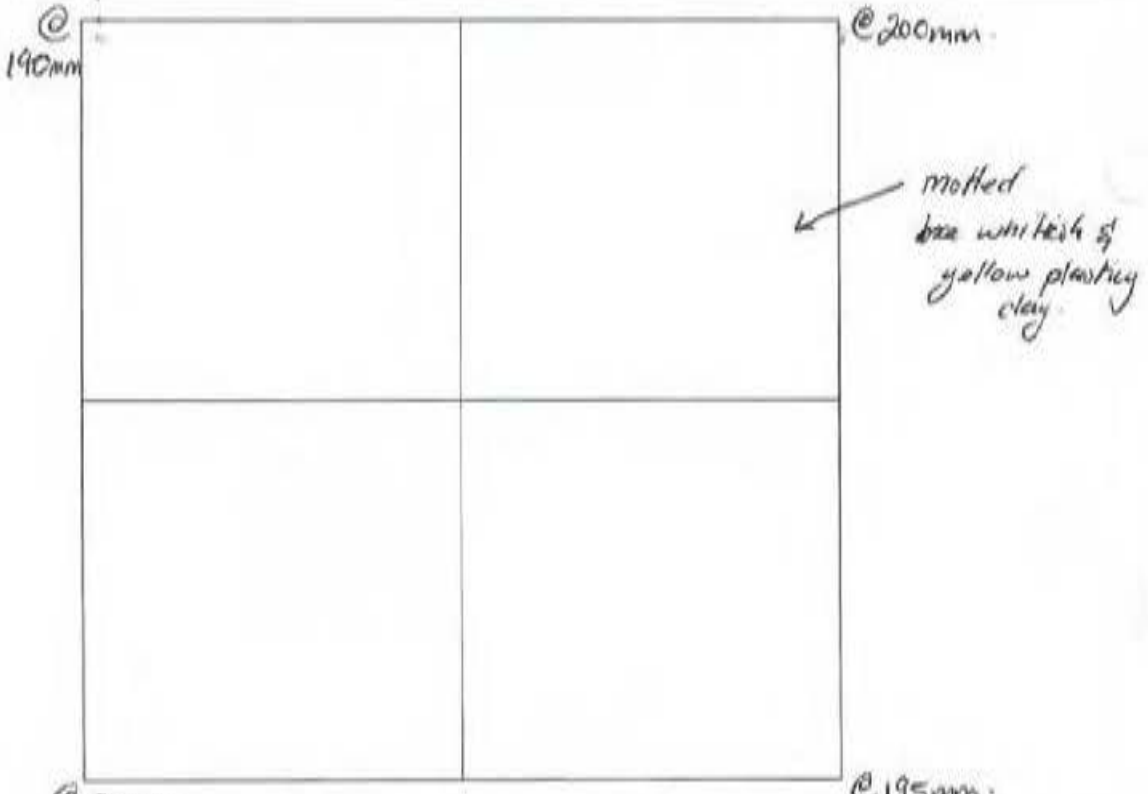
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = moderate – dense grass + wood cover. A1 = mid grey-brown silty loam, very fine + soft
A1 B.	SPIT 1	Below A1 as is mid grey-brown (slightly paler than A1) silty clay loam, very fine, very soft. Clear, undulating change across most of TU, change to a light pale white/light brown/light grey-brown compact sandy clay loam c. 4–8cm Very fine to fine root inclusions c. 2–5%. Quartz inclusions, fine gravel – coarse gravel (3–20), c. 15%.
B	SPIT 2	lightly compact sandy clay loam, pale (yellowish-brown to white pale grey-brown. → pale grey-brown Clear horizon change to a more compact sandy clay, between c. 12–16cm, and on the W/NW/SW sides, an abrupt horizon change to a hard mottled white + brown plastic clay. Very fine root inclusions c. 1–2%. at c. 16–17cm. Fine to moderate quartz gravel inclusions c. 2%

Description of material below B or the limit of excavations

BASE = compact/hard mottled white and mid yellow-brown slightly plastic clay. Contains very fine root inclusions c. 2%. Fine quartz gravel inclusions c. 2%.

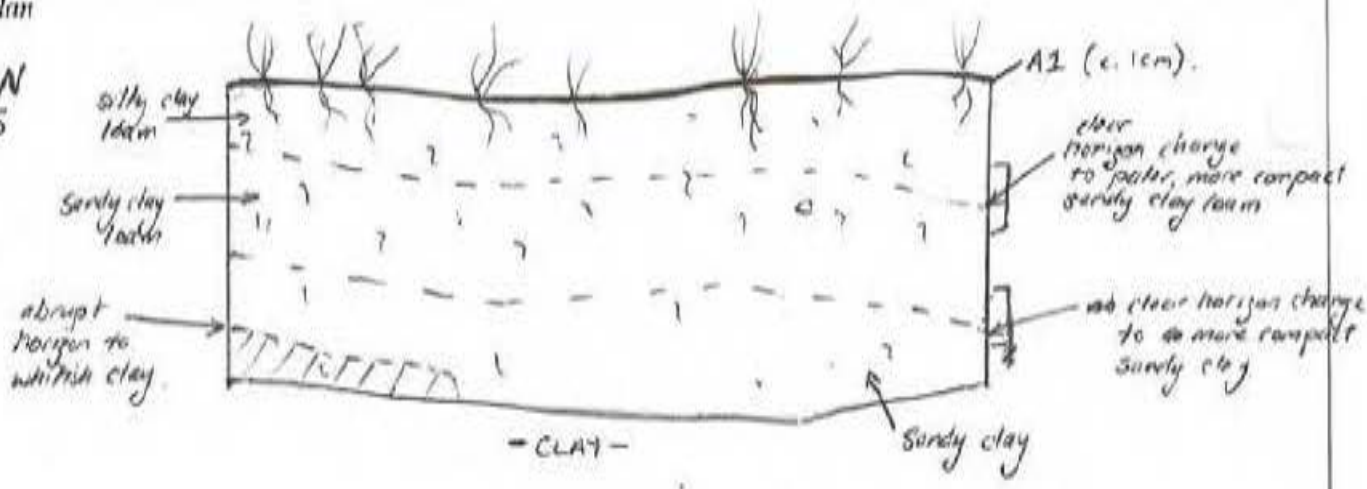
Plan



Spit drawn:
END OF EX.

Section Plan

Face: ~~W~~ N
Scale: 1:5



KEY:
/// clay
? fine/v. fine root inclusions
o quartz gravel inclusions

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A	TEST UNIT # PHOTO #	148 Zone 8
Excavators Seb Jarrah	Date 9/5/17	

SUMMARY OF EXCAVATION

tal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

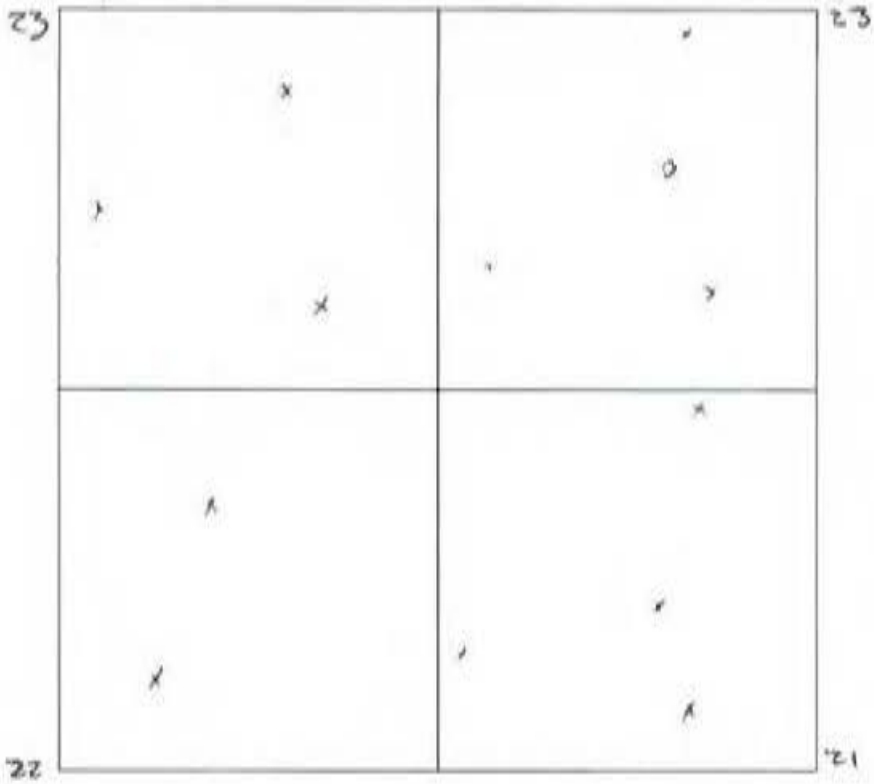
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other		natural quartz fragments	
2	100	A1 (A2) B Other		" "	
3	30	A1 A2 (B) Other		" "	
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. - grass, animal feces matter
A1	1	Silty clay loam lightly compacted with 20% approx quartz fragments as well as degraded granite gravels, fine grass roots with insect activity
A2	2	Silty clay friable pale grey with sandy gravel inclusions quartz and degraded granite fragments,
	3	silty clay onto base clay with quartz fragments included mottled yellow reds with granite degraded inclusions. Signs of some bioturbation

Description of material below B or the limit of excavations

Plan



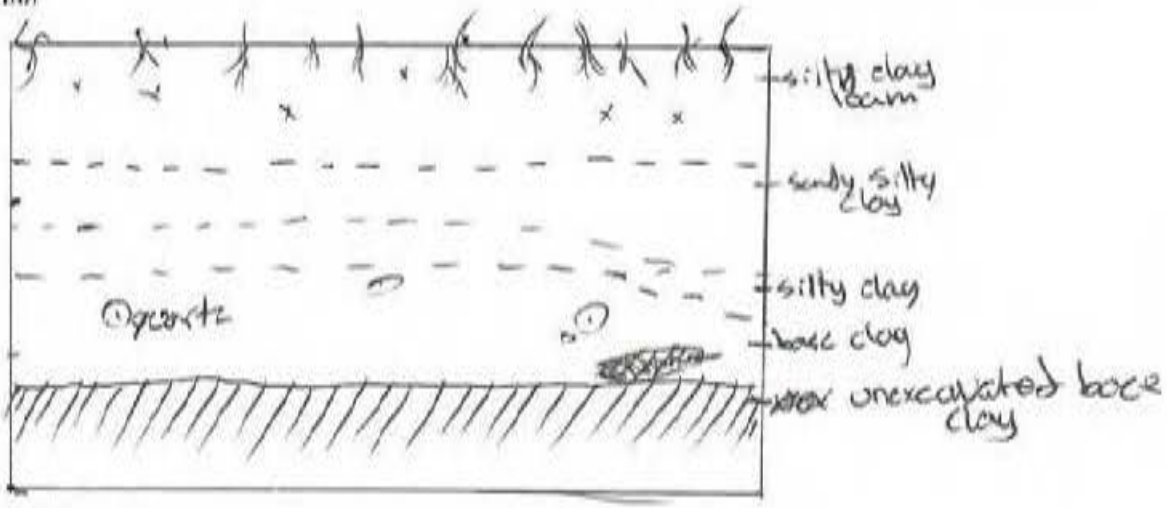
key x = fine quartz

Spit drawn:

Section Plan

Face:

Scale:



key - quartz ①

- granite

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8 TO: 150
Excavators	KEITH MCDONALD, MARNIE PARSONS, REBECCA UMATO	Date 9.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	Ø
Worthy of expansion? How?	NO -
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	FRAMPTON // LOWER SLOPE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 10-15%	

EXCAVATION wet sieved dry sieved

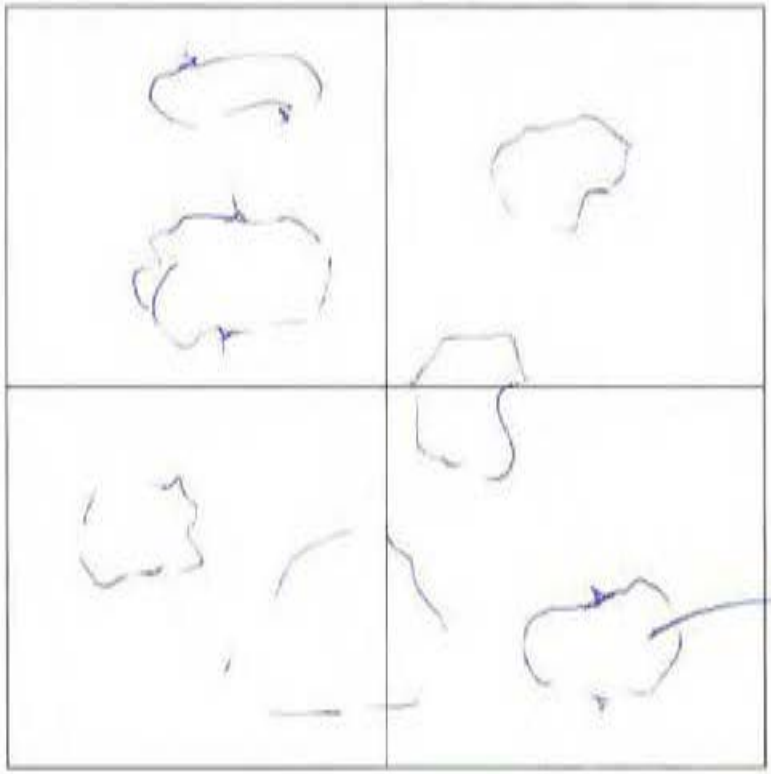
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-2mm 2mm-10mm	A1 (A2) (B) Other			Ø
2		A1 A2 (B) Other (C)		DEGRADED GRANITE + WHITE CLAY. STONE WITHIN MATRIX.	Ø
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. 90% GRASS, COBBLES ATOP SURFACE. GRASS ROOTLETS BELOW SURFACE (0-5mm)
A1 →		ERODED / GONE
A2 →	(1)	SILTY CLAY WITH LARGE CONCENTRATION OF QUARTZ THROUGHOUT (50%) LIGHT BROWN + DEM. MINOR HUMIC COMPONENT WITHIN 0-2mm. TRANSITIONING TO DIFFUSED INTO (B)
B →	(1)-(2)	SILTY CLAY VOID OF HUMIC COMPONENT. CONTINUATION OF QUARTZ INCLUSIONS & INCREASING TO DEPTH. LIGHT BROWN, DEM. TRANSITIONS INTO (C) ABRUPTLY.
(C) →		LIGHT CLAY. WHITE WITH MOTTLING OF ORANGE/BROWN (STAIN FEATURE WITHIN MATRIX) COMBINED WITH DEGRADED GRANITE + QUARTZ THROUGHOUT. COMPACT + HARD TO V. SMALL AMOUNT OF NATURAL OBJECTS AT BASE. ARTIFACTS TO BE V. OLD AND DEGRADED BECAUSE OF BASE.

Description of material below B or the limit of excavations

Plan

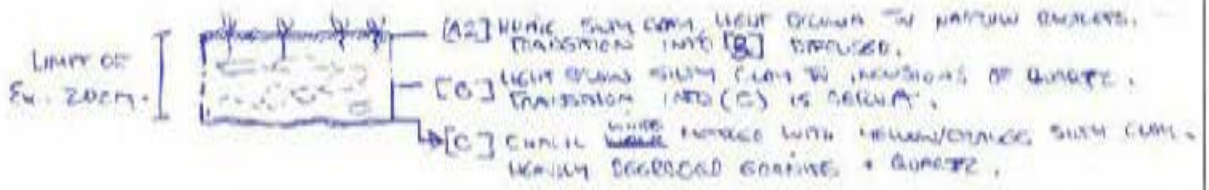


Spit drawn:

Section Plan

Face: NORTHERN FACE

Scale: 1:20.



Key

= ROOTS + RUBBLE'S

= MOTTLING

= HUMIC COMPONENT

= QUARTZ FRAGMENTS

Further descriptions and relationships to other TU

PIT: 150 POSITION APPROX: 10M NORTH OF PIT 145. THIS PIT FOLLOWS THE SAME STRATIGRAPHIC PATTERNS AS PIT 145 AND AT A SIMILAR DEPTH OF 30CM. APPEARS TO BE NEOLITH EROSION TRANSITIONING GRADUALLY FROM SILTY CLAY TO A CLAY WITH FLAKE INCLUSIONS THROUGHOUT COMPOSED OF DEGRADED GRANITE + QUARTZ.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	151, 28
Excavators	Seb Reys Jiccaio	Date 10/5/19	

SUMMARY OF EXCAVATION

tal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

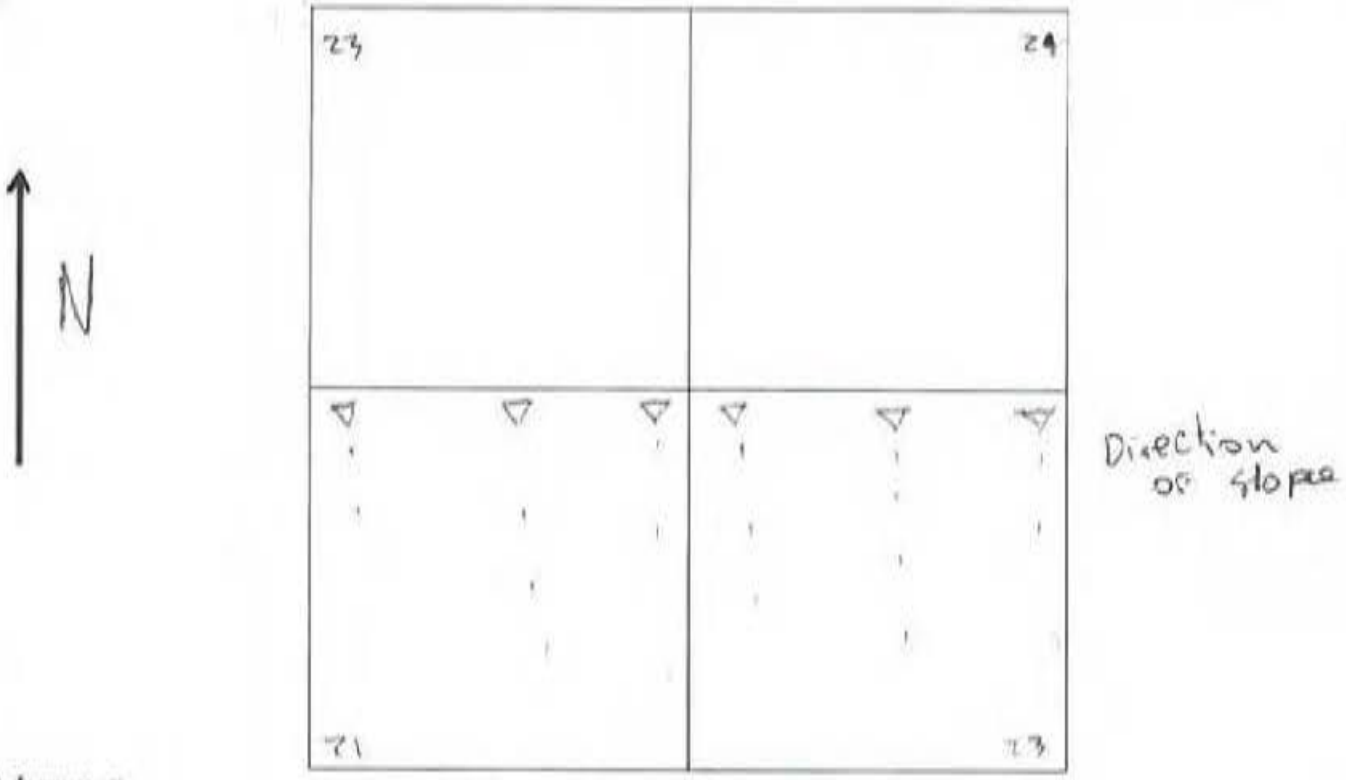
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		quartz 20%	
2	100	A1 (A2) B Other		quartz 2-1	
	30	A1 (A2) (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. pasture grasslands
A1	1	silty clay loam, friable lightly compacted with quartz frequents throughout some silty clay, worms, grass roots etc animal waste
A2	2	sandy silty clay some quartz inclusions + degraded granite bedrock some fine roots 1-2%
	3	silty clay lightly compacted with some granite degraded bedrock

Description of material below B or the limit of excavations

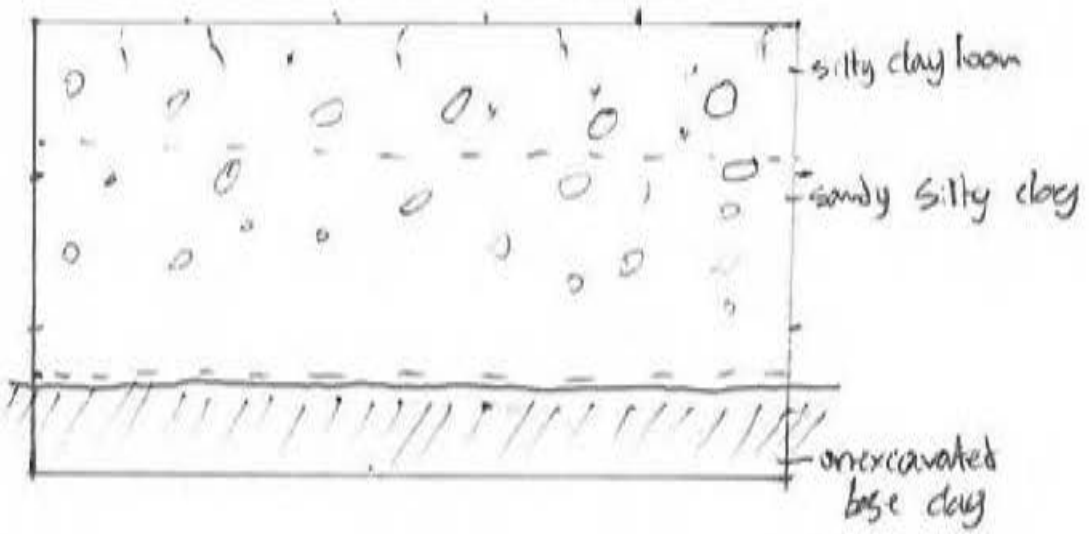
Plan



Spit drawn: 3

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE S, TU 152.
Excavators	RODNEY, BRAD, SARAH	Date 9/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E (S) W	Slope %	

EXCAVATION wet sieved (dry sieved)

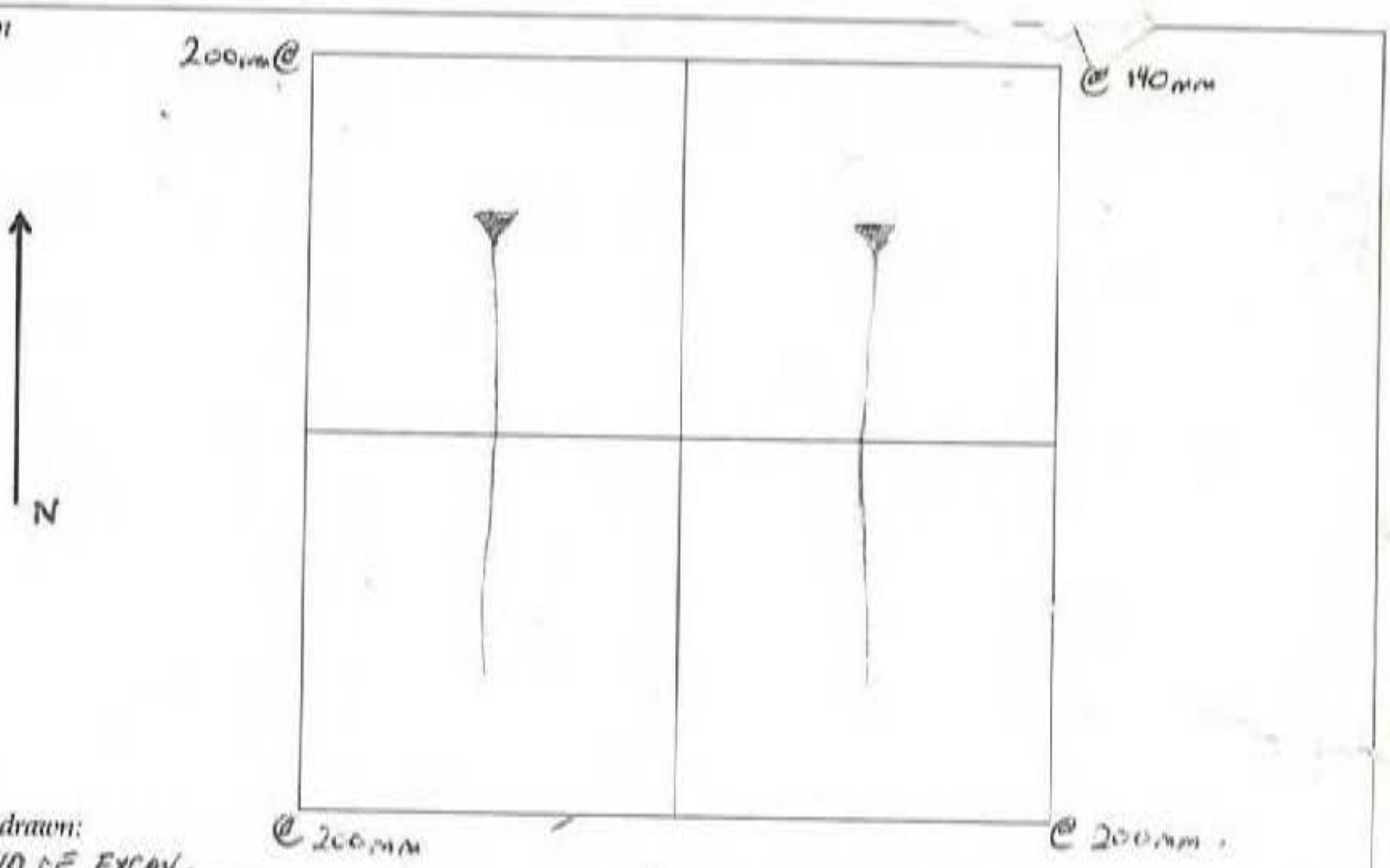
Spit #	Depth (mm)	Soil Horizon (c. 1–4 cm)	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A.
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	200				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = moderate to dense grass cover/weed cover. A1 = c. 1–4cm thick. A mid grey, soft + very fine sandy clay loam / Sandy loam.
A1 B	SPIT 1	BEARINGS, a firm fine, pale grey-brown sandy clay loam. Some yellow-brown clay staining present. Up 4cm, very fine to medium abd inclusions c. 90–50%. Bet. 4–10 cm. Root inclusions (very fine to fine) c. 1–2%. Fine to coarse quartz gravel inclusions c. 10–15%.
A2		Clear horizon change from A1 to B at c. 2–4cm depth.
B	SPIT 2	As above (pale yellowy grey-brown sandy clay loam) increasingly compact. Clear horizon transition to a yellowish-brown, mottled, sandy clay, at depth c. 12–17 cm. Some yellow-brown clay staining present. Very fine root inclusions c. 1–2%. Fine quartz gravel inclusions c. 2–5%.

Description of material below B or the limit of excavations
BASE = White sandy clay, hard, compact, slightly plastic, mottled with very pale yellow sandy clay spots. Very fine root inclusions c. 1–2%.

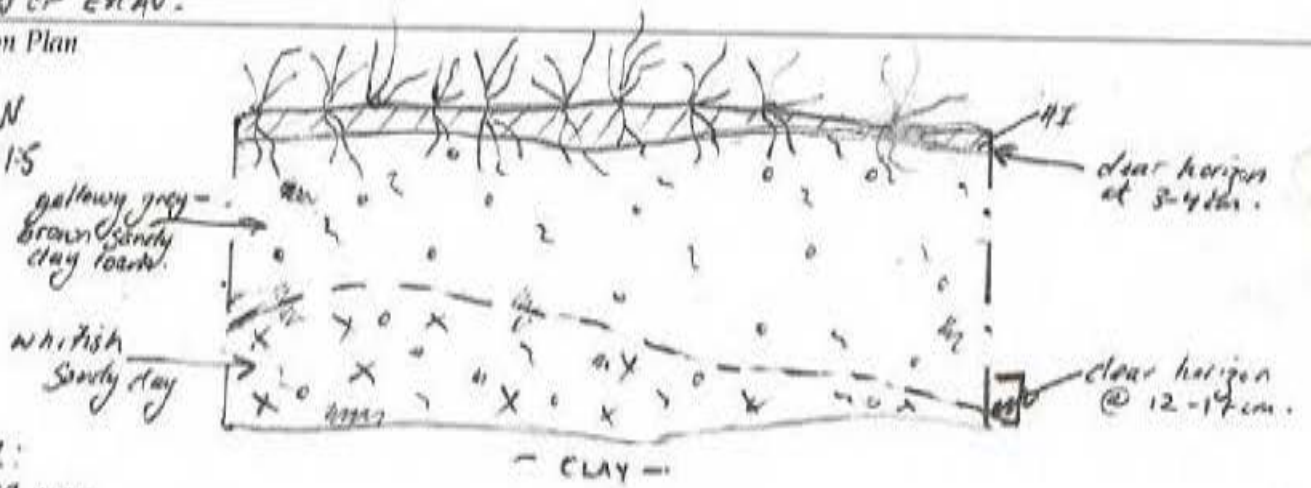
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5



KEY:
I/AI layer
} Fine root inclusions
X whitish sandy clay
yellow-brown clay staining.
• fine quartz gravel inclusions

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Z8/153
Excavators	AR. JAMES, DILLON	Date 8/5/19	

SUMMARY OF EXCAVATION

tal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWNS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 4-0	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			
2		A1 (A2) B Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		30 mm light brown SOA silty loam. ORG ROOTS Lecom GRASS. Clear onto ~~A2~~ B1.
~~A2~~ B1		PALE GREY BROWN CLAY LOAM. Clear onto white clay.

Description of material below B or the limit of excavations

White sandy clay

Plan

100

100

100

100

Spit drawn: GND

Section Plan

Face: N

Scale: 1:10

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	154 - Z 8
Excavators	Geb steve jiccah	Date 13/5/19	

SUMMARY OF EXCAVATION

otal Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

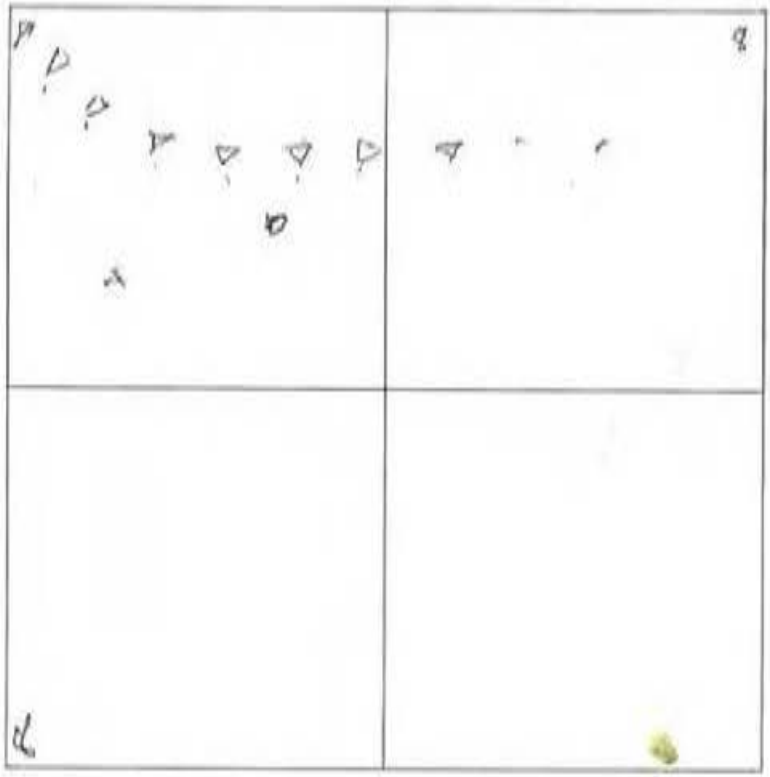
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Rems/ Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 (B) Other		quartz fragments 20% stones	
2		A1 A2 (B) Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carban, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. pasture land, grasses some exposed granite
A1		
A2		
B	1	thin silty clay loam topsoil with fine root inclusions quartz fragments and degraded granite onto pale silty clay onto the base clay which is mixed with degraded granite

Description of material below B or the limit of excavations

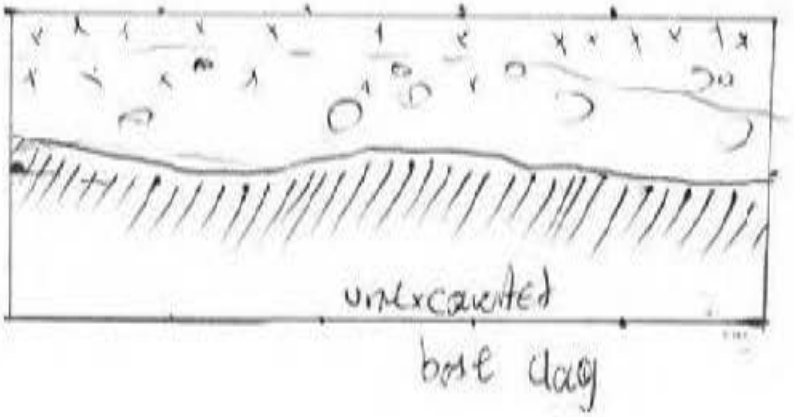
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE B / TU . 162
Excavators	KATH FLEMING, [illegible] & [illegible]	Date 9.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	NO
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	-

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	TWINS RANGE (LOWER SLOPES)		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % ~~70~~ 65-70%.	

EXCAVATION wet sieved dry sieved

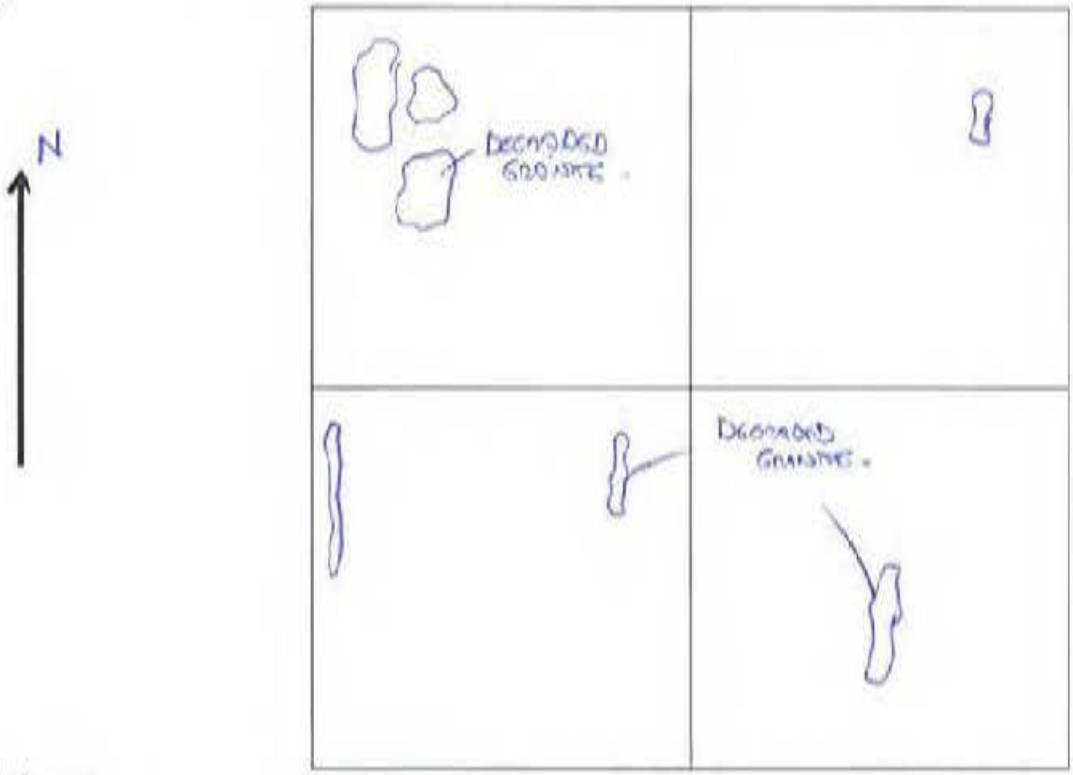
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-2mm Spit 1.	A1 (A2) B Other			Ø
2		A1 A2 (B) Other		DECREASED GRANITE	Ø
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
(A2)	0-2mm	HUMIC SILTY CLAY TRANSITIONING INTO SILTY CLAY. (BLEACHED TRANSITION).
(B)	2- 1mm + approx: 14cm.	THIN & approx 15-16cm TRANSITIONS ABRUPTLY INTO
(B)		CLAY & DECOMPOSED GRANITE. (C HORIZON).

Description of material below B or the limit of excavations

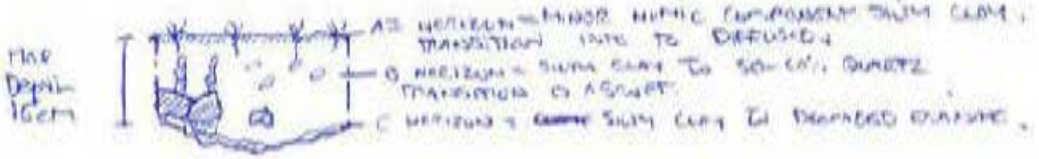
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:20



Key
- = DECOMPOSED GRANITE
- = GRAVEL + FRAGMENTS
- = QUARTZ FRAGMENTS
- = HUMIC COMPONENT.

Further descriptions and relationships to other TU

LOWER SLOPES CONTAINING LARGE AMOUNTS OF GRANITE BEDROCK + QUARTZ FRAGMENTS VISIBLE ON SURFACE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8 TO : 63
Excavators	KATH FLEGEMAN, JACQUIE REDDISSE & REBECCA JONES	Date 9.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	—
Worthy of expansion? How?	NO.
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	MID SLOPES OF HILL CREST // TWINS RANGE	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	(N) E S W	Slope % 170%.

EXCAVATION wet sieved dry sieved

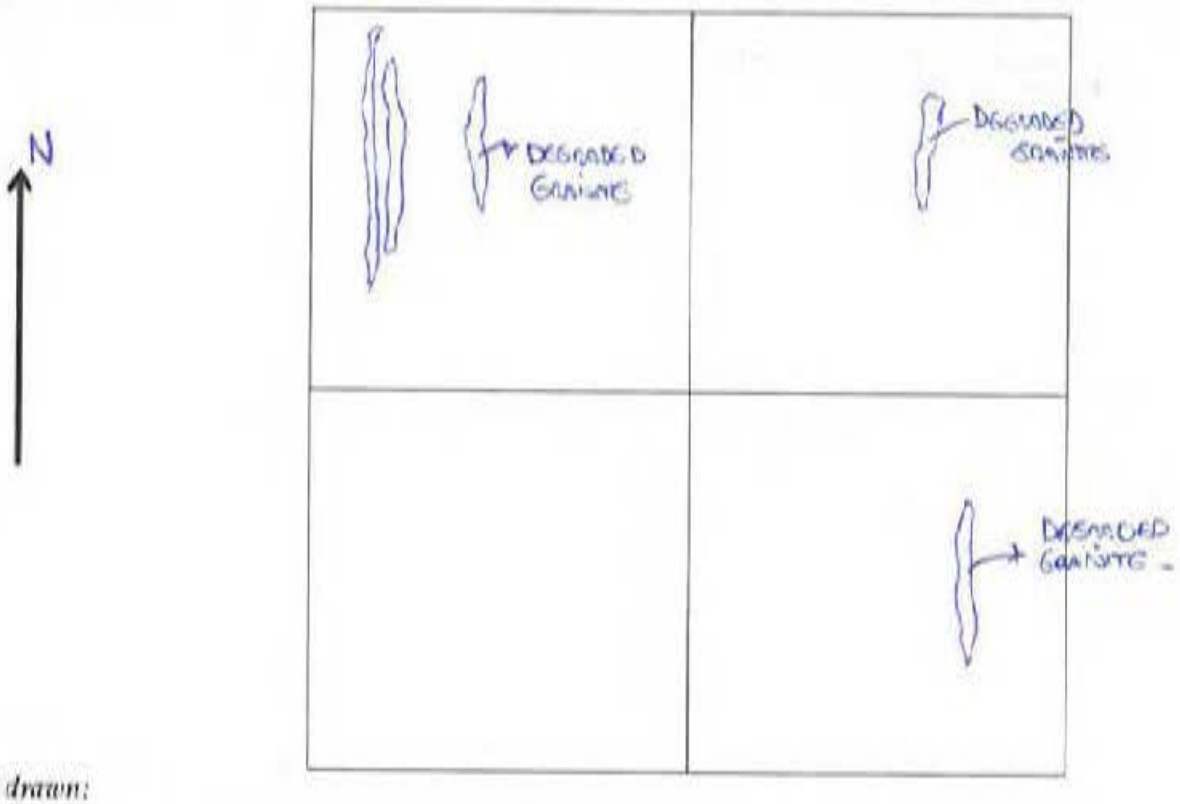
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0 → 1mm (1mm → 10cm)	A1 (A2) B Other			Ø
2	1mm → 20cm	A1 A2 (B) Other		INCLUSIONS OF QUARTZ.	Ø
3	20 - 35cm (EXCAVATION SECTION)	A1 A2 B (C) Other		+ DECOMPOSED GRANITE	Ø
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. LARGE GRANITE + GRANITE FRAGMENTS SMALL GRAVELS (<10%) ACROSS SURFACE. MINIMAL VISIBLE ROCK SURFACE.
~~A1~~		EVIDENCE OF HEAVY GRAZING + LAND CLEARING / BURNING.
A2	0-1cm (Spit 1)	SILTY CLAY W V. MINOR HUMIC COMPONENT. MOIST, LOOSE & FINE GRAINED. TRANSITIONS INTO SILTY CLAY A/B/C FM.
B	Spit 1 + 2.	SILTY CLAY TO HARDER FEATURES. INCLUSIONS OF QUARTZ HETEROGENOUS. (50%) FINE GRAINED, MOIST + GAINS DARKER W DEPTH.
C	Spit (3) NORTHERN WALL ONLY 20-35cm	SPIT 3 EXCAVATED ON NORTHERN SIDE ONLY. EXCAVATED UNTIL BEDROCK WAS FOUND. SILTY CLAY INTERMIXED W DECOMPOSED GRANITIC FRAGMENTS

Description of material below B or the limit of excavations

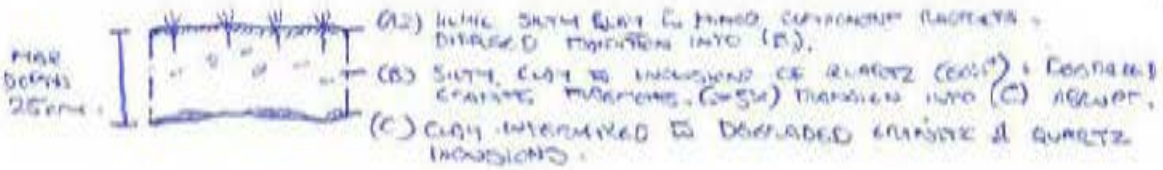
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:20



Key
= GRASS + ROOTLETS
= CLAY + DEGRADED GRANITE.
= A2 HUMIC COMPONENT
= QUARTZ FRAGMENTS

Further descriptions and relationships to other TU

RELATIVELY SHALLOW DUE TO BEING POSITIONED ON LOWER SLOPE OF HILL TO EASTERN & CLEARED FORESHORE & SURROUNDING GRANITE OUTCROPS.
FRAGMENTS = SHALLOW PROFILES.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	28, 164
Excavators	AP, James, Dillon	Date 8/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	TWINS RANGE	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	(N) E S W	Slope % 30

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

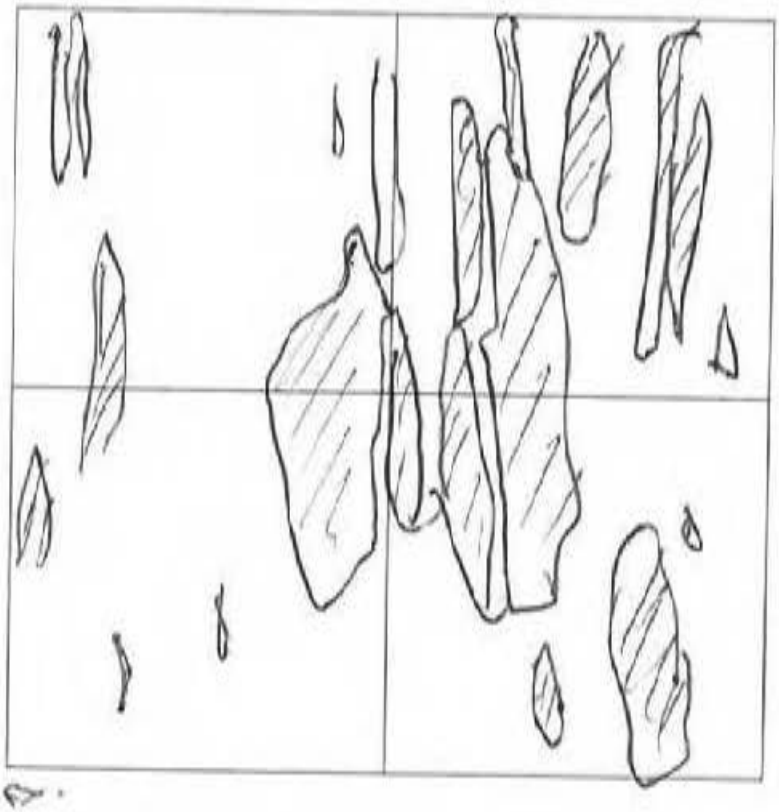
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc GRASS
A1	80mm 1	light brown sandy clay loam, occ. rocks - friable, clear to B horizon.
~~A2~~		
B	120mm 2	Pale grey brown sandy clay loam, v. few - degraded bedrock. Many mod on VS weak bedrock, moderately, compact.

Description of material below B or the limit of excavations

Plan

160m



20m

(1W) = volcanic bedrock

160m

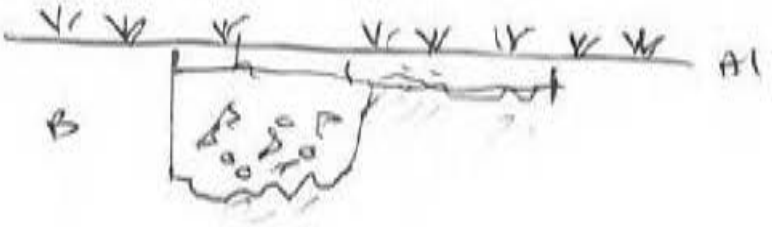
60m

Spit drawn: end of

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	26, 169
Excavators	AJ, Jeff, Josh	Date 8/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting		Northing	
Soil landscape				
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other			
Aspect	(N) E S W	Slope % 10°		

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	20	(A1) A2 B Other			
-		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

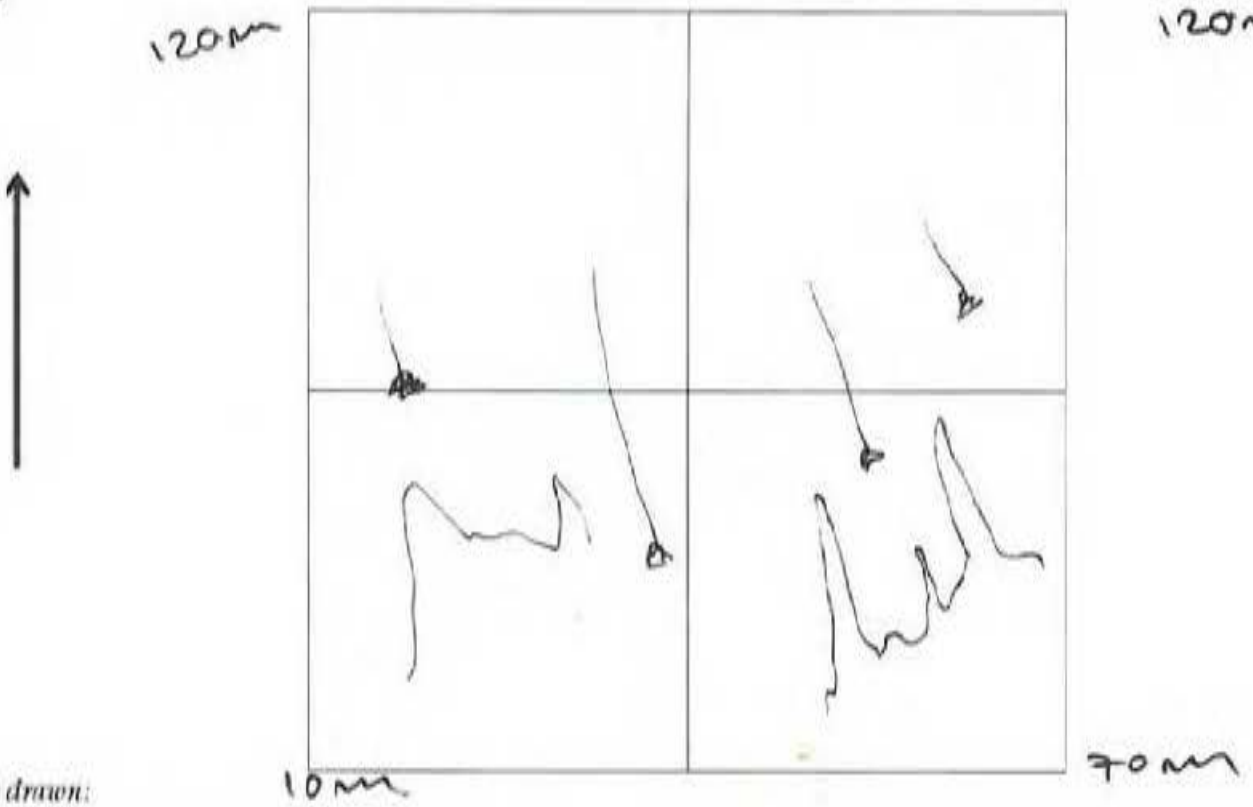
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		light brown SANDY CLAY LOAM. v. occa rock dist. sand low grass. occa. Angular QUARTZ frags. occa ove volcanic grey irregular boulders, sloping to north.
~~A2~~		

Description of material below B or the limit of excavations

Clay volcanic weg or bedrock.

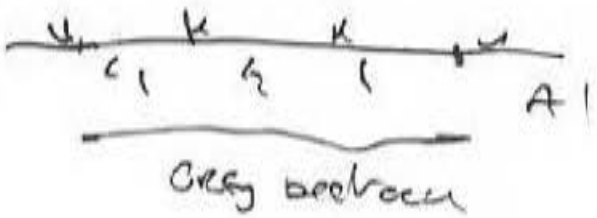
Plan



Spit drawn:

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8 TU 166
Excavators	KEITH STEPHENS, MARNIE FREEMANS & REBECCA WALTON.	Date 9.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	-
Worthy of expansion? How?	-
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	LOWER SLOPE OF HILL ~~PEBBLE~~ IS GRANITE BEDROCK ATOP SURFACE // TWINS RANGE.		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

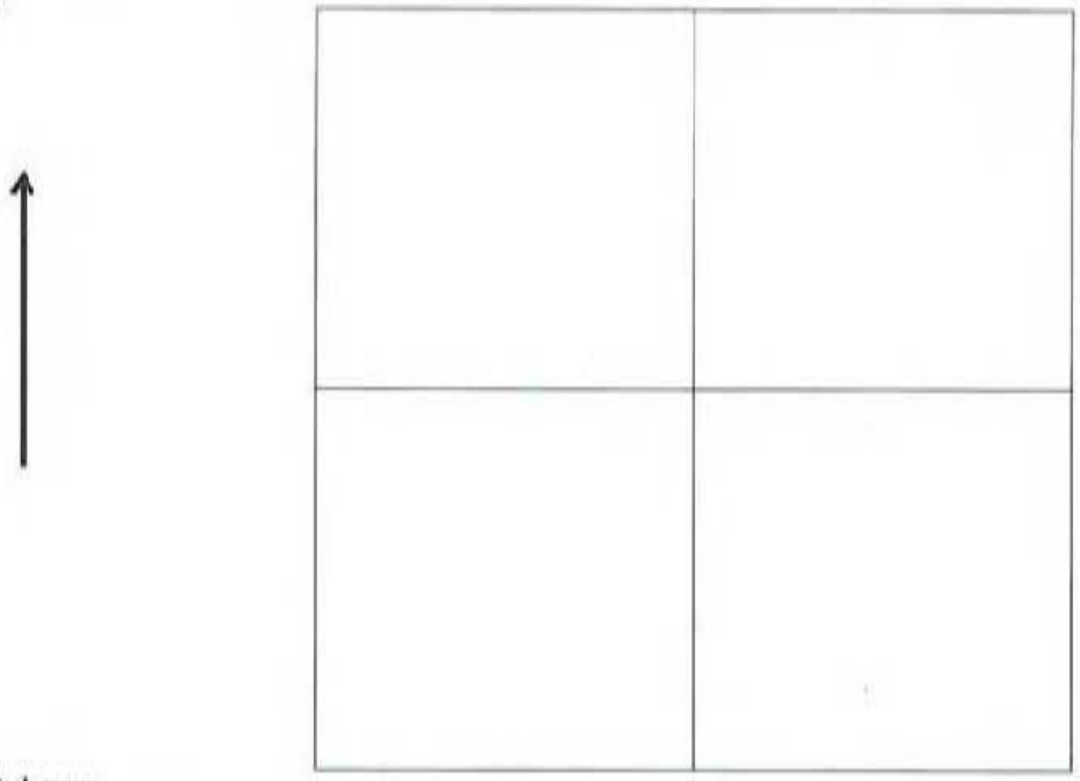
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	(0-1mm) (A2)	A1 (A2) (B) Other		REMNANT HUMIC LOAM WITHIN B HORIZON.	Ø
(1)	1mm → 100mm	A1 A2 (B) Other		~~DECAYED GRANITE~~	Ø
(2)	100 – 500mm	A1 A2 B (Other)		DECAYED GRANITE BEDROCK.	Ø
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	(A2-)	Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE (A2) HORIZON ERODED WITH SMALL GRAVELS + MINOR ROOTLETS, MANIFESTATIONS ABSORPTION INTO Silty Clay.
A1	B	B HORIZON ~~IS~~ ~~MINOR~~ ~~THIN~~ DRY, LOOSE, FINE GRAINED Silty CLAY ▶ SILTY CLAY WITH LARGE INCLUSIONS OF QUARTZ FRAGMENTS.
A2	(C)	SILTY CLAY ~~ABRUPT~~ BATTING ATOP DECAYED GRANITE BEDROCK.

Description of material below B or the limit of excavations

Plan

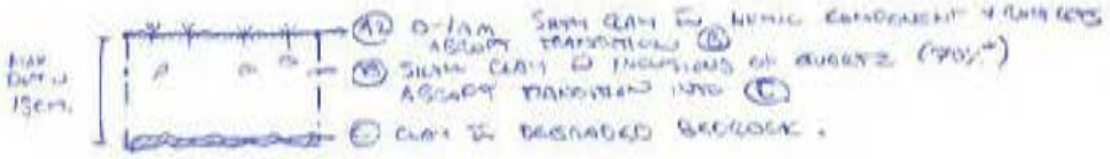


Spit drawn:

Section Plan

Face: NORTH FACE .

Scale: 1:20



KEY = = RANDOM

= QUARTZ FRAGMENTS

= CLAY + DECOMPOSED GRANITE .

Further descriptions and relationships to other TU

POSITIONED ON LOWER SLOPE WITH GENTLE (APPROX: 3-4m ENDS) TO A LOCALLY GRANITE OUTCROP ATOP SURFACE.

VISUAL EVIDENCE OF EROSION & LAND CLEARANCE.

IF ANY ARTEFACTS WERE FOUND THEY WOULD HAVE CARRIED DOWNSLOPE BY MACHINE CLEARING (50-100cm) SOUTH OF THIS PIT.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 6, TU. 167
Excavators	BRAD, ROONEY, SARAH.	Date 9/5/19.	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E (S) W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			N/A
2	100 – 120	A1 A2 (B) Other			N/A.
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	~~100~~ 220 (max) – just NE corner.				

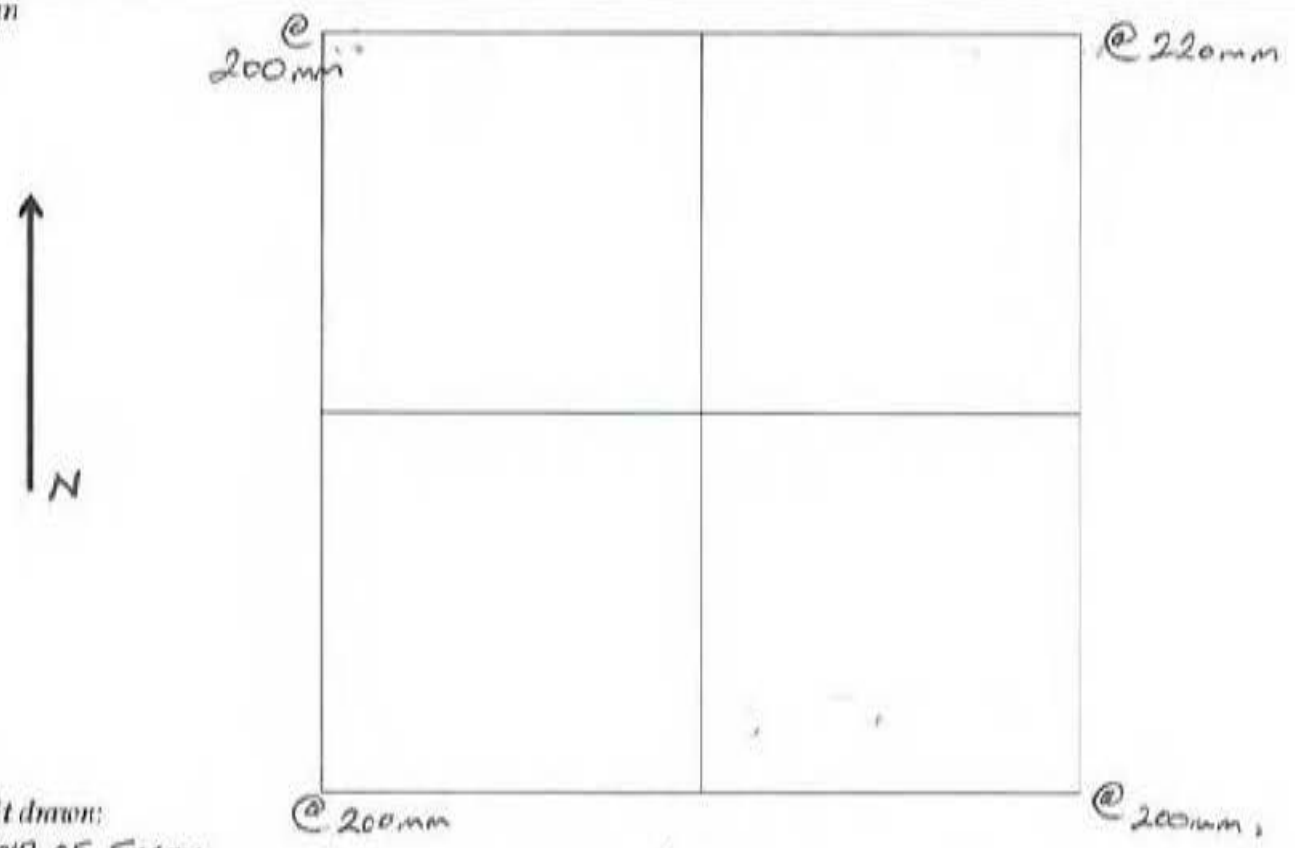
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	SPIT 1.	~~Eg. Gravels, sand, litter, evidence of disturbance etc.~~ Sparse to moderate grass cover on surface. A1 = mid orangey brown, soft sandy loam.
A1 B.		BELOW THIS = A soft to lightly compact mid orangey brown sandy clay loam. An abrupt horizon to a darker orangey brown, compact clayey sand at c. 5cm depth (S side) & c. 8cm depth in north. Very fine root inclusions c. 5-10% Quartz gravel inclusions (fine – coarse) c. 5%.
~~A2~~ ~~B~~		
B.	SPIT 2	Compact mid orangey-brown clayey sand. Abrupt to clear horizon change to a slightly lighter (mid) orange to orange-brown darker clayey sandy clay at c. 10-13 cm (S) (South section) and 17 – 20cm (north). Very fine root inclusions c. 1-2%. Fine quartz gravel inclusions c. 1%.

Description of material below B or the limit of excavations

BASE = mid to dark orange plastic clay. Hard; v. fine root inclusions c. 1%.

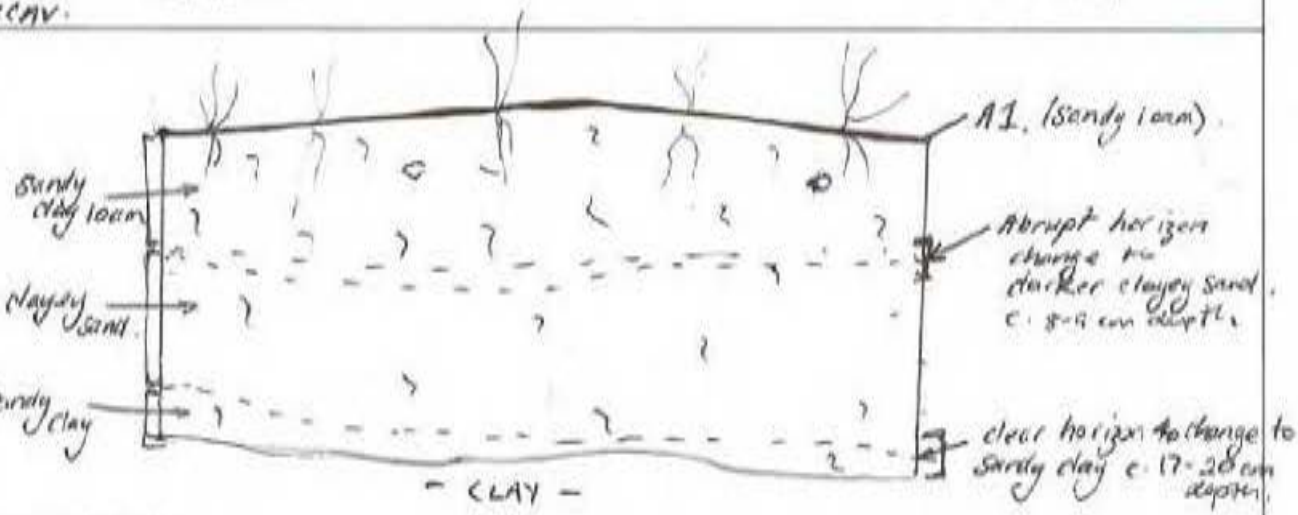
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:5.



KEY:

o quartz gravel inclusions (fine)

+ roots inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	ZONE 8, T.U. 168
Excavators	BRAD, ROONEY, SARAH.	Date 9/5/2019.	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E (S) W	Slope %

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
	100mm	~~A1~~ A2 (B) Other (~21cm.)			
1	~~100~~	(A1) A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A.
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	200 (max).				

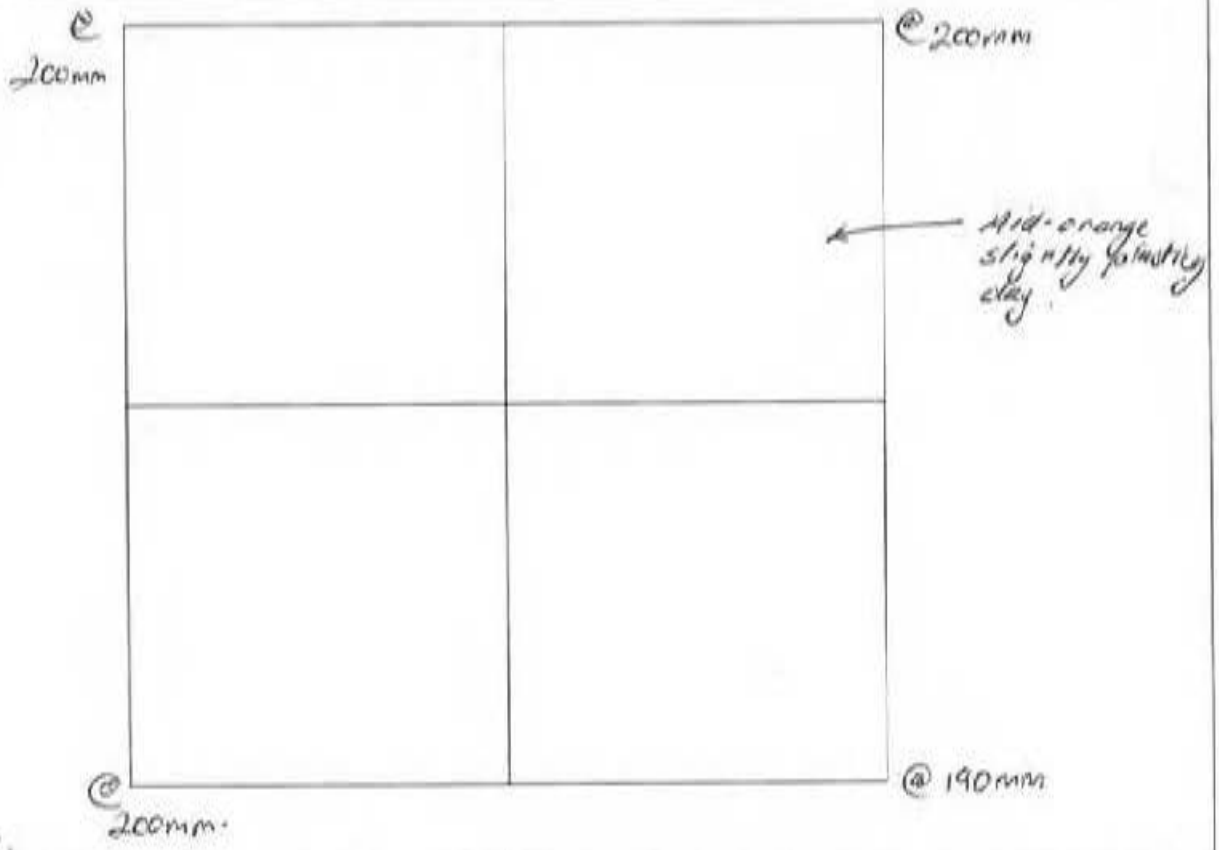
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = sparse to moderate grass cover. A1 = mid orangey brown, soft to firm sandy loam.
A1	SPIT 1	BELOW THIS: a fine pale to mid orange, ~~no~~ slightly compact to compact sandy clay loam. Very fine to fine root inclusions c. 5-10%. Quartz fine gravel to cobble inclusions c. 10%. Occasional quartz stone inclusions.
~~A2~~ B		~~Gradual boundary change~~ Clear horizon change to increasingly compact and increasingly clay content between c. 7-12cm.
B.	SPIT 2	A ~~compact~~ compact pale to mid orange sandy clay. ~~Ultra~~ Very fine root inclusions c. <1%. Quartz gravel inclusions (fine to medium) c. 2%.

Description of material below B or the limit of excavations

BASE – mid orange, ~~stiff~~ hard & compact, slightly plastic clay. ~~No~~ V. fine root inclusions c. 1-2%. ~~No stone inclusions.~~

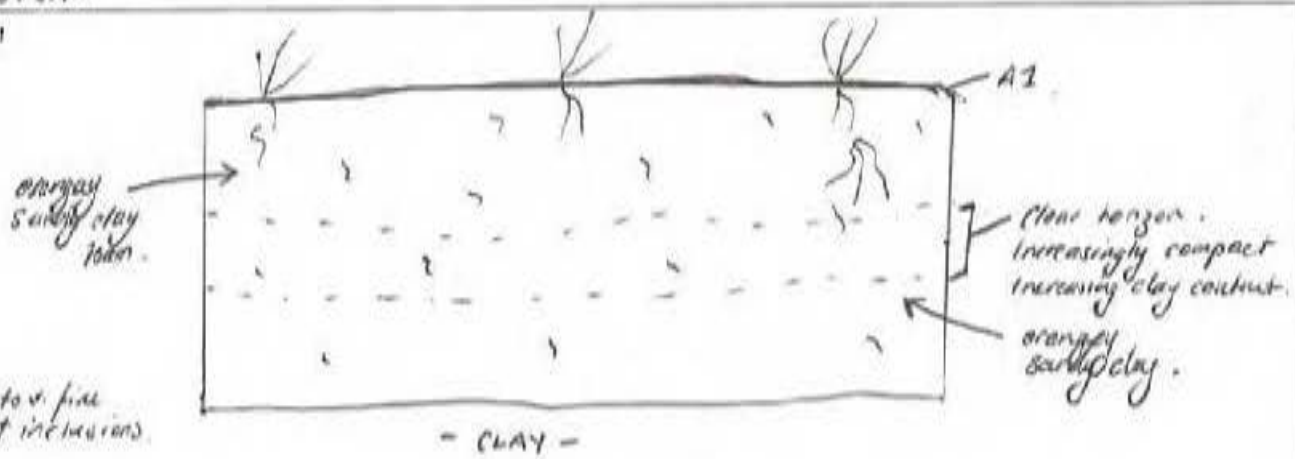
Plan



Spit drawn:
END OF EYCAV.

Section Plan

Face: N
Scale: 1:5



KEY

? Fine to v. fine root inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	169 – Zone 8
Excavators	Seb Jarrah	Date 9/5/19	

SUMMARY OF EXCAVATION	
Total Count Aboriginal Objects	0
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION			
GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

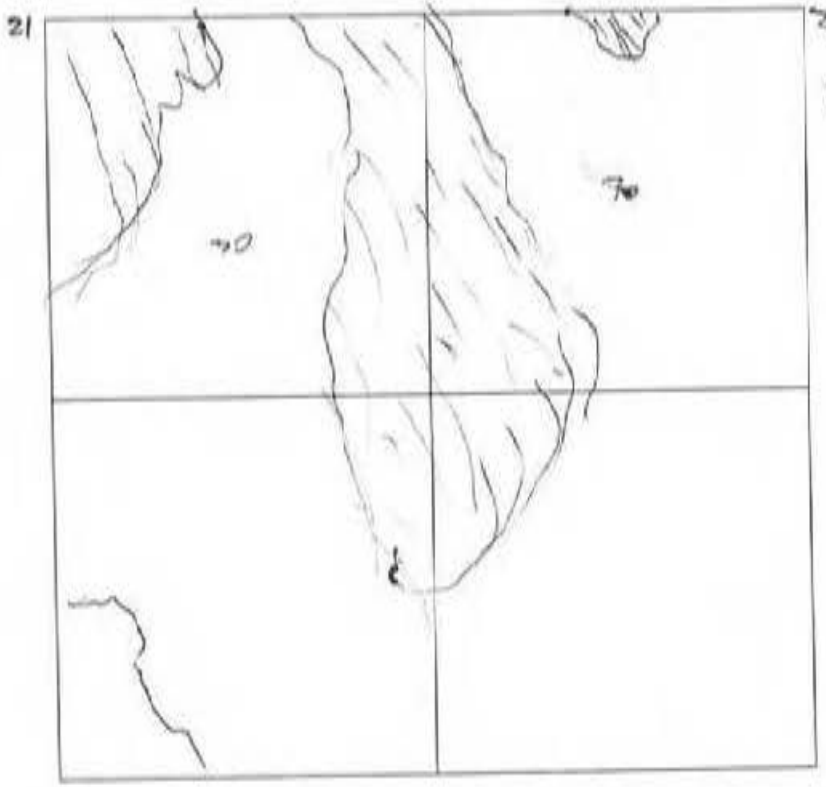
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 A2 (B) Other			
3		A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	sandy silty clay reddish brown, lightly compact with some quartz fragments 5mm-50mm, very fine grass roots bioturbation from ants
A2	2	Silty sandy silty clay + degraded granite bedrock creating gravel inclusions
	3	undulating degrading granite bedrock with patches of silty sandy clay in depressions. End limit of excavation, bedrock

Description of material below B or the limit of excavations

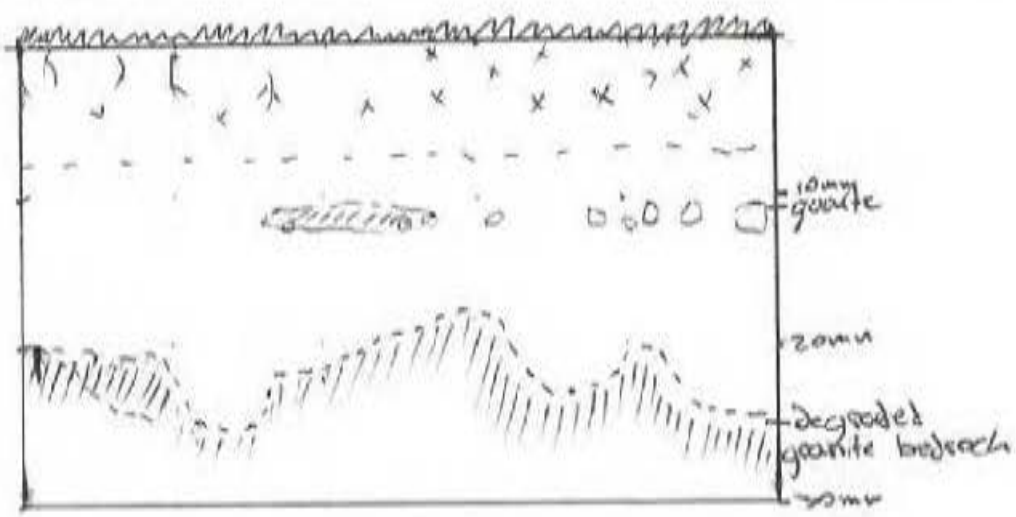
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	170 - Zone 8
Excavators	Seb Jaiscal	Date 9/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

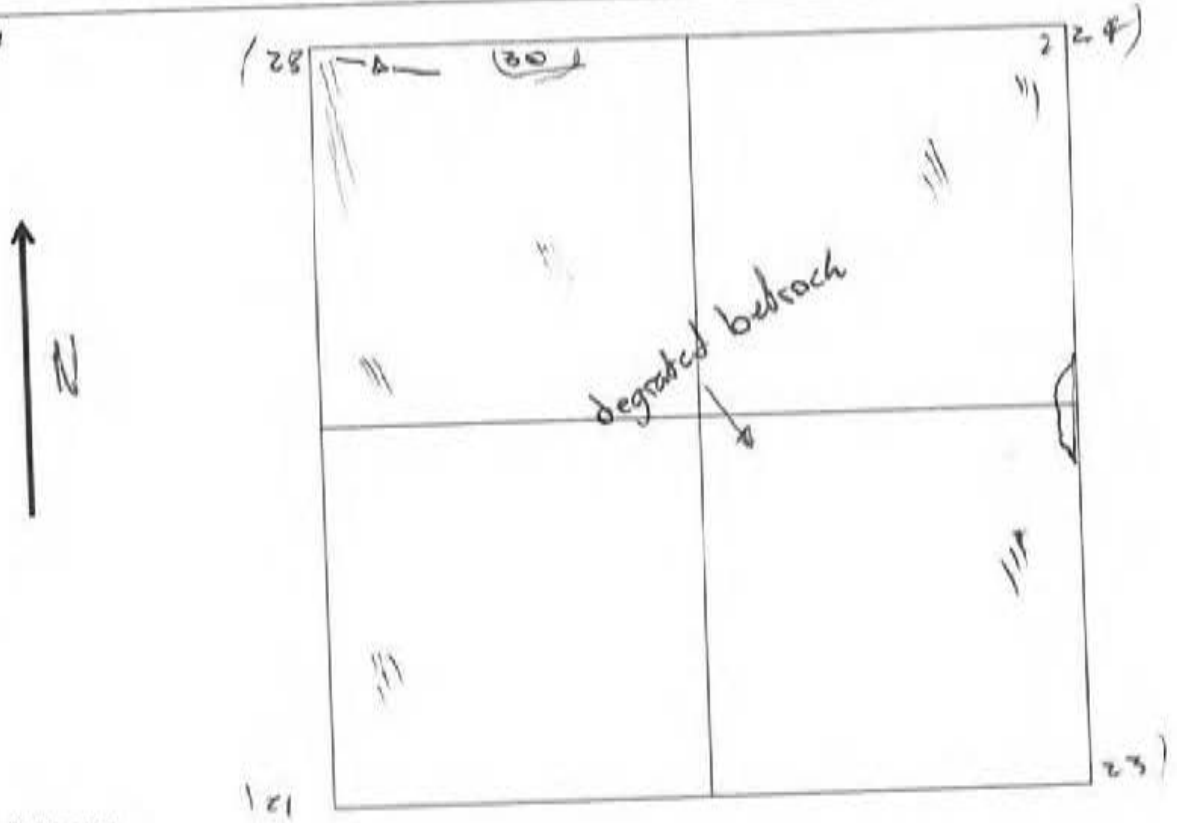
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		A1 (A2) B Other			
2		A1 (A2) B Other			
3		A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	100	Sandy clay loam lightly compact reddish brown, with 10-15% quartz angular fragment pebbles. Fine roots (pastures) 15%
A2	200	Silty clay, lightly compact reddish brown clay with ~~fine~~ with degraded granite bedrock ~~mottling~~ unevenly through Spit
	300 100	degraded granite bedrock, Some fine roots limit of excavation

Description of material below B or the limit of excavations

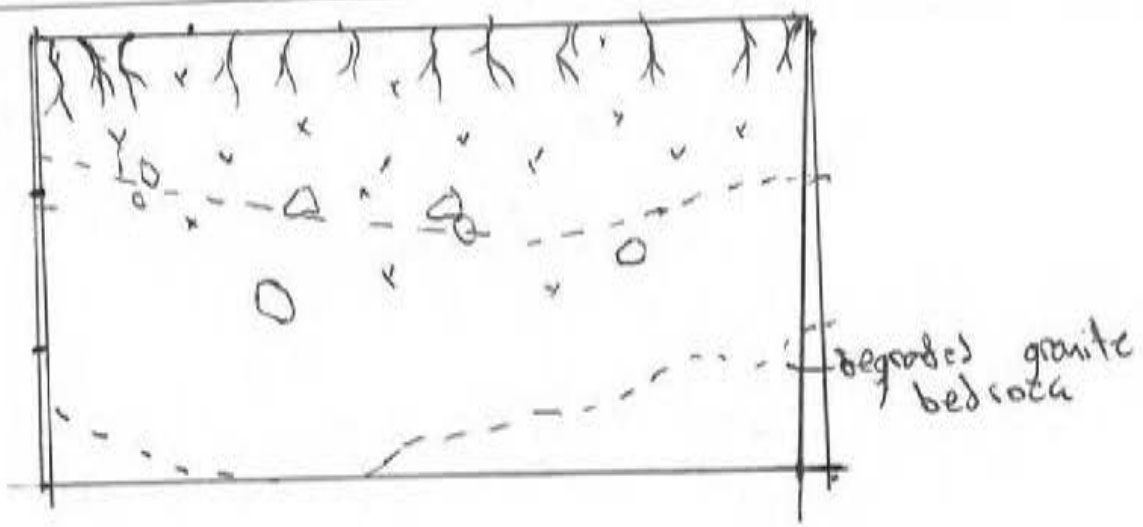
Plan



Spit drawn:

Section Plan

Face: N
Scale: 1 - 20



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	171, Zone 8
Excavators	Seb Jaizah	Date 9/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape	Evansgilly	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / ~~Rock Outcrops~~ / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

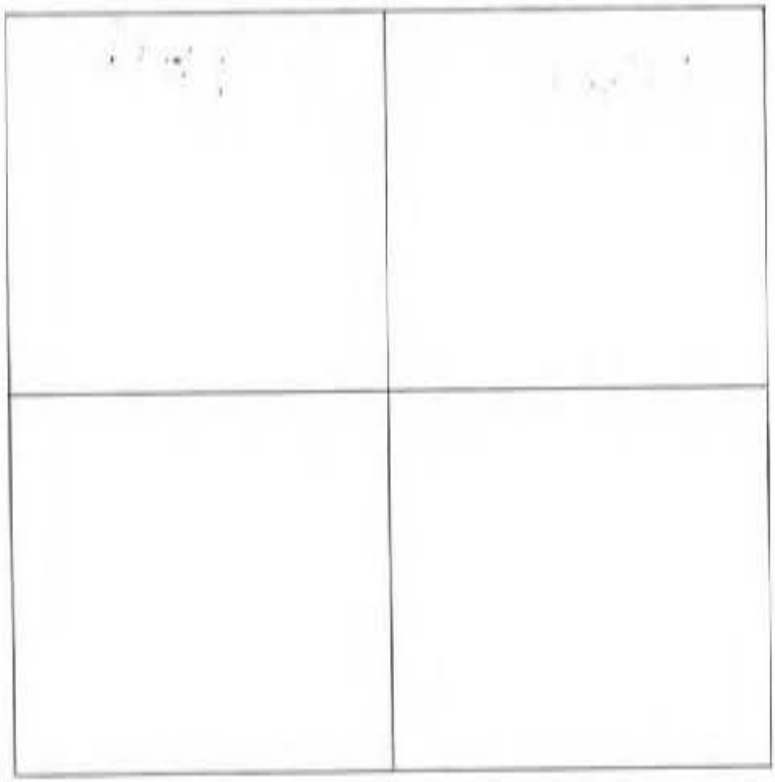
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special interest	Aboriginal Objects #
1	100	(A1) ~~A2~~ B Other		non worked quartz 15%	
2	200	A1 ~~A2~~ (B) Other			
3		A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	100	silty clay, friable Reddish brown to red with high organic content (roots) from pastures, created a loam layer transitioning to silty clay / sandy clay approx 50-80mm
A2	2	sandy clay onto loose Red with fine roots inclusions to a fat clay mottled. non cultural quartz angular fragments throughout ranging from 5mm - 30mm

Description of material below B or the limit of excavations

Plan

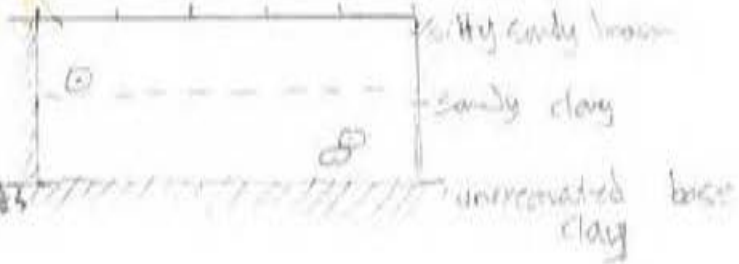


no features in plan

Spit drawn: 2

Section Plan

Face:
Scale:
Key: ⊙ quartz Angular Coarg mixed



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE B TU : 172
Excavators	KEITH PEDERSEN, PETER PIKE & REBECCA VARNEY	Date 9.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	—

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TU 175 POSITIONED ON MID SLOPE OF GENTLY ~~UNDULATING~~ UNDULATING. MODERATE DEGREE OF GRADING. VISIBLE GROUND SURFACE = NATURAL GRAVEL ABOVE SUBSOILS.		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / (Hill Crest) / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % ~10% (APPROX.)	

EXCAVATION wet sieved dry sieved

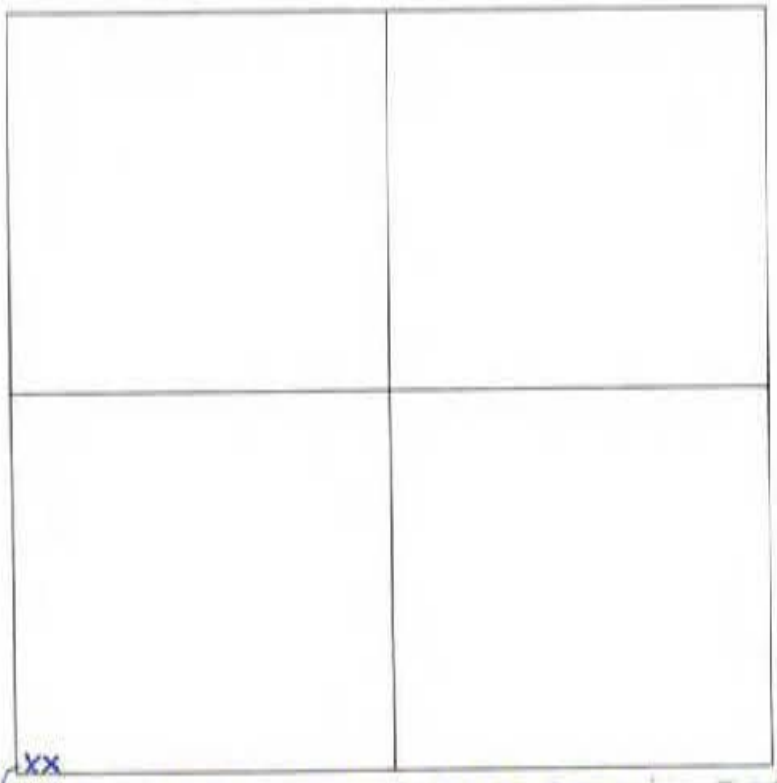
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		NATURAL GRAVEL FOOTPATH ORGANISM (ROOT).	Ø
2	200	A1 (A2) (B) Other		AT APPROX 180mm IN SW IS SMALL FRAGMENT QUARTZ.	Ø
	300	A1 A2 (B) Other			Ø
4	400	A1 A2 B (C) Other		TRANSITION INTO CLAY & DECAYED GRAINS.	Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	(A1) →	FOREST NON-RIPICOLT = TOPSOIL EXPOSED ON THE SIDE LINING SLOPE IS POSITIONED. AT GROUND TO 2mm BELOW SURFACE MINOR HUMIC COMPONENT THAT ABRUPTLY ENDS. SMALL FINE GRAVEL PRESENCE.
~~A2~~ (B)	Spit 1 → V	SILTY CLAY, MODERATELY MOIST BUT BECOMING DRY @ 5-10cm DEPTH. V. FINE GRAINED, WELL SORTED AND CONTAINING SMALL NATURAL NODULES WITHIN FIRST 1mm - SOME DECREASING AS DEPTH ABOUNDS. SOFT & LOOSE.
Spits 1 → Post of (4)		LARGE QUANTITIES OF ANGULAR QUARTZ FRAGMENTS (APPROX. 70%) THROUGHOUT. ALL NATURAL AND NON-CULTURAL.
		QUARTZ FRAGMENTS DECREASE TO 15% (APPROX) 1-4cm SMALLEST AND AT APPROX 25-30cm THIN SHARDS OF GRANITE BEGIN TO PRESENT. @ APPROX (~~35~~ 38cm) OF NORTHERN BOUNDARY AND APPROX 38cm ON SOUTHERN BOUNDARY, DECAYED GRANITE PRESENCE & CLAY EVIDENT.
(C) Interface		LOOSE CLAY INTERMIXED W DECAYED GRANITE GRAVEL/FRAGMENTS INCREASED. EXCAVATION STOPPED AT THIS DEPTH.

Description of material below B or the limit of excavations

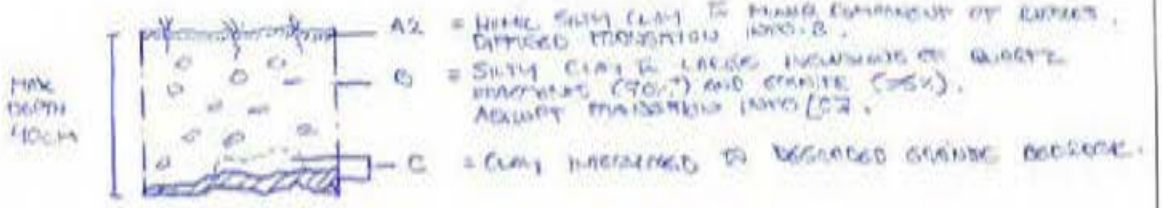
Plan



Spit drawn: SMALL CHARCOAL FRAGMENT @ 160M DEPTH IN SW QUADRANT.

Section Plan

Face: NORTH SECTION
Scale: 1:20



KEY - = CLAY + GRANITE BEDROCK
= QUARTZ FRAGMENTS
= CLAY INCLUSION
= ROOTLETS
= HUMIC COMPONENT.

Further descriptions and relationships to other TU

TU 172. POSITIONED ON NW SLOPE AND WENT TO A DEPTH OF 160CM MAX.. THIS PIT WAS 60CMSQ 5-10M FROM WORK DISTURBED BURNT MOUND. THIS PIT WAS PROBOOLM DEEPER DUE TO BUILD UP OF SEDIMENT CLIMB EROSION + WATER WASH DOWN SLOPE). DUE TO ONSET OF DECOMPOSED GRANITE BEDROCK. THIS PIT WAS STOPPED AT SPIT 4.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 8. TU 173.
Excavators	SARAH, RODNEY, BRAD.	Date 9/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E (SE) W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other (~1cm)			N/A
2	100	A1 A2 (B) Other			N/A
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	200 (max)				

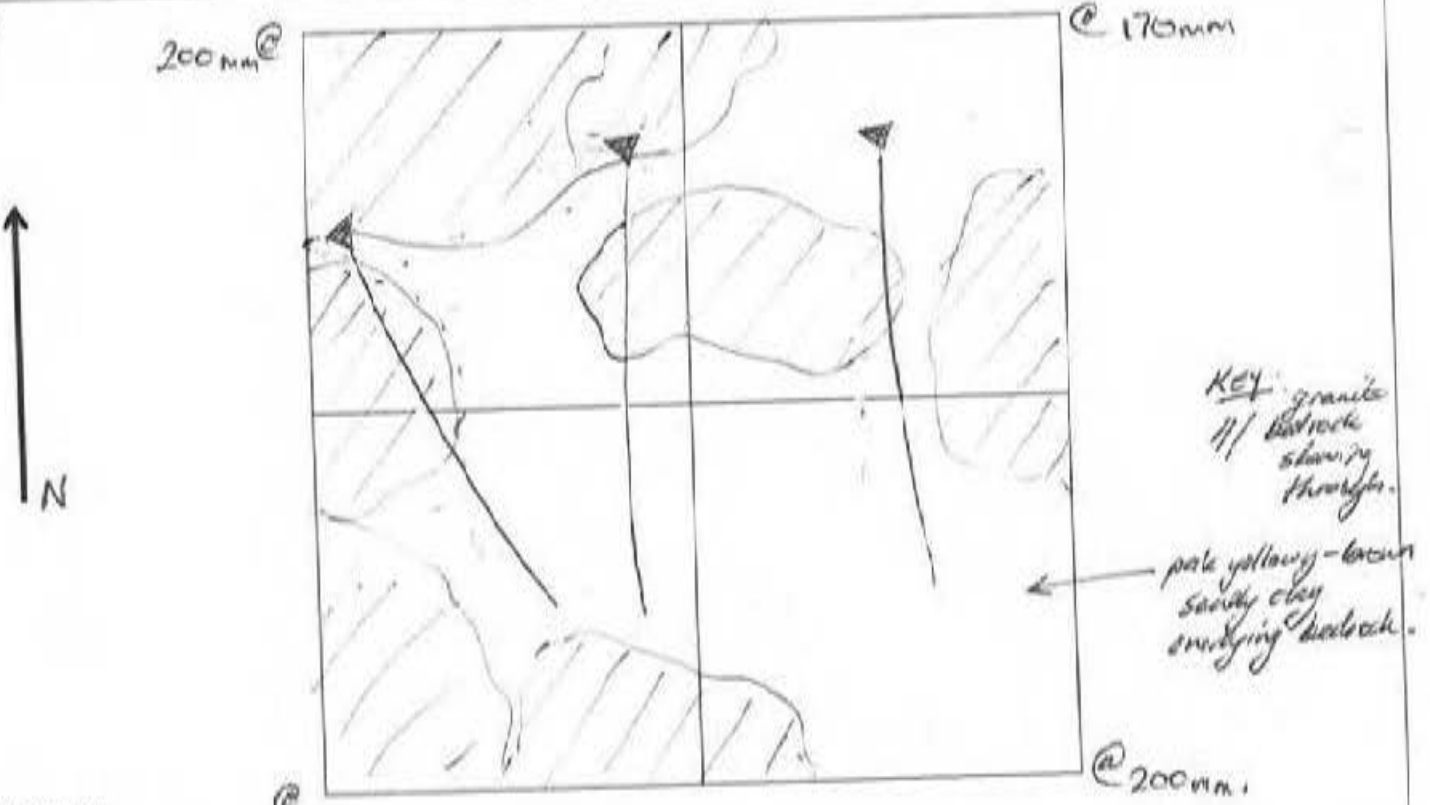
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle. Eg. Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		Surface = Sparse to moderate grass cover. A1 = Mid yellowy-brown sandy loam, ~1cm thick.
A1	SPIT 1	Below this, a mid to pale yellowish-brown, soft, fine, sandy clay loam. Clear horizon change to paler colour with depth c. 5-10cm (are also slightly more compact deposit). Very fine root inclusions c. 10-15%. Friable granite chunks/pieces, 'stone' size, occurring on the eastern side. Quartz fine gravel – cobbles, c. 20%.
B		
~~A21~~		
	SPIT 2.	A soft to Sandy clay loam (N + NE sides), as above, and a compact, pale yellowy-brown Sandy clay (W,S + SE sides); majority of deposit is the compact sandy clay. ONLY – mostly just around the edges – Very fine root inclusions c. 2-5%. Sandy clay is mostly found around large, flat, friable granite pieces/chunks, ~~across~~ the base of the Tu. Granite is light grey in colour, appears to be bedrock. Quartz fine gravel – coarse gravel, c. 5%.

Description of material below B or the limit of excavations

Base = Light grey, friable granite(?) bedrock, ~~overlain~~ covered by/in depressions etc. filled with pale yellowy brown, firm to compact sandy clay.

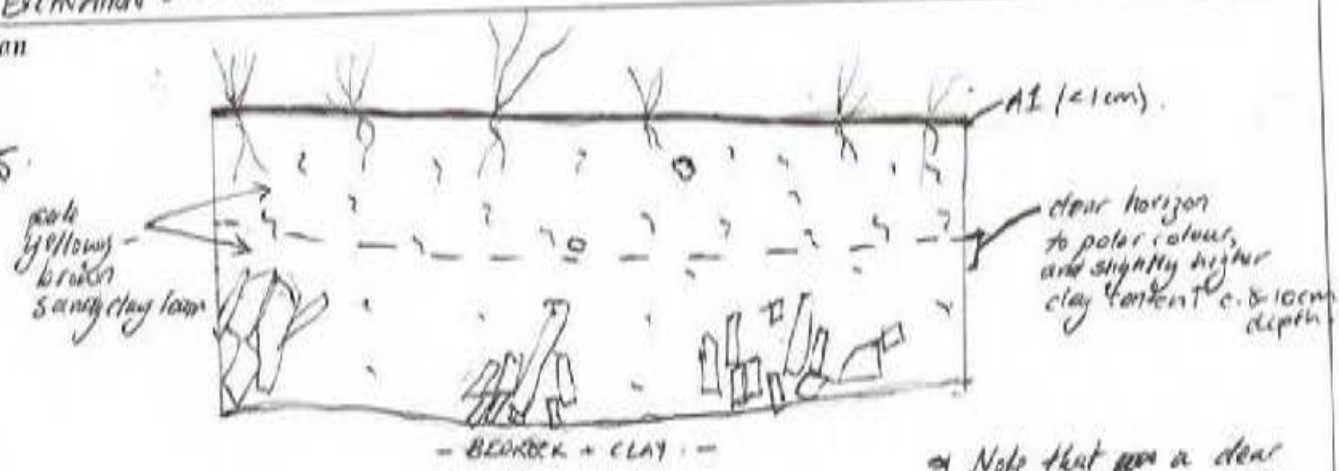
Plan



Spit drawn:
END of EXCAVATION

Section Plan

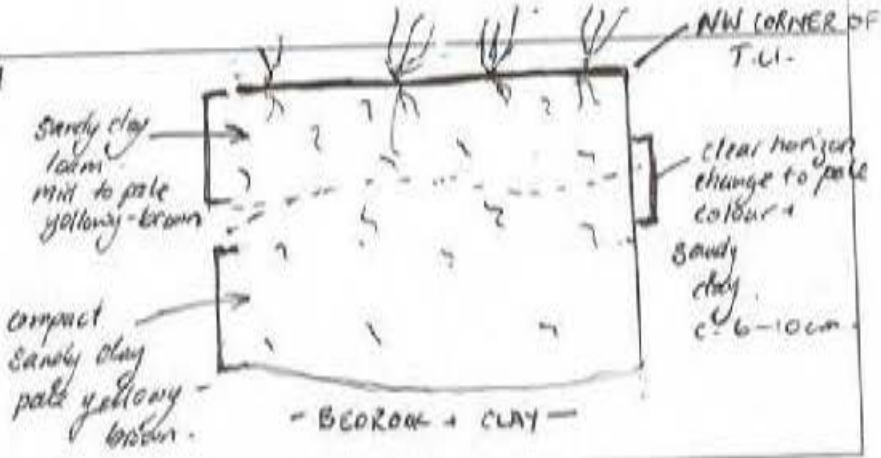
Face: N
Scale: 1:5



KEY
◇ granule (friable)
~ fine/r fine root inclusions
○ quartz inclusions.

* Note that was a clear change from sandy clay loam to sandy clay inside only in W + S sections at c. 8-10cm depth.

Further descriptions and relationships to other TU



Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 8, TU 174.
Excavators	SARAH, BRAD, RODNEY.	Date 9/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) (SE) W	Slope %	

EXCAVATION wet sieved (dry sieved)

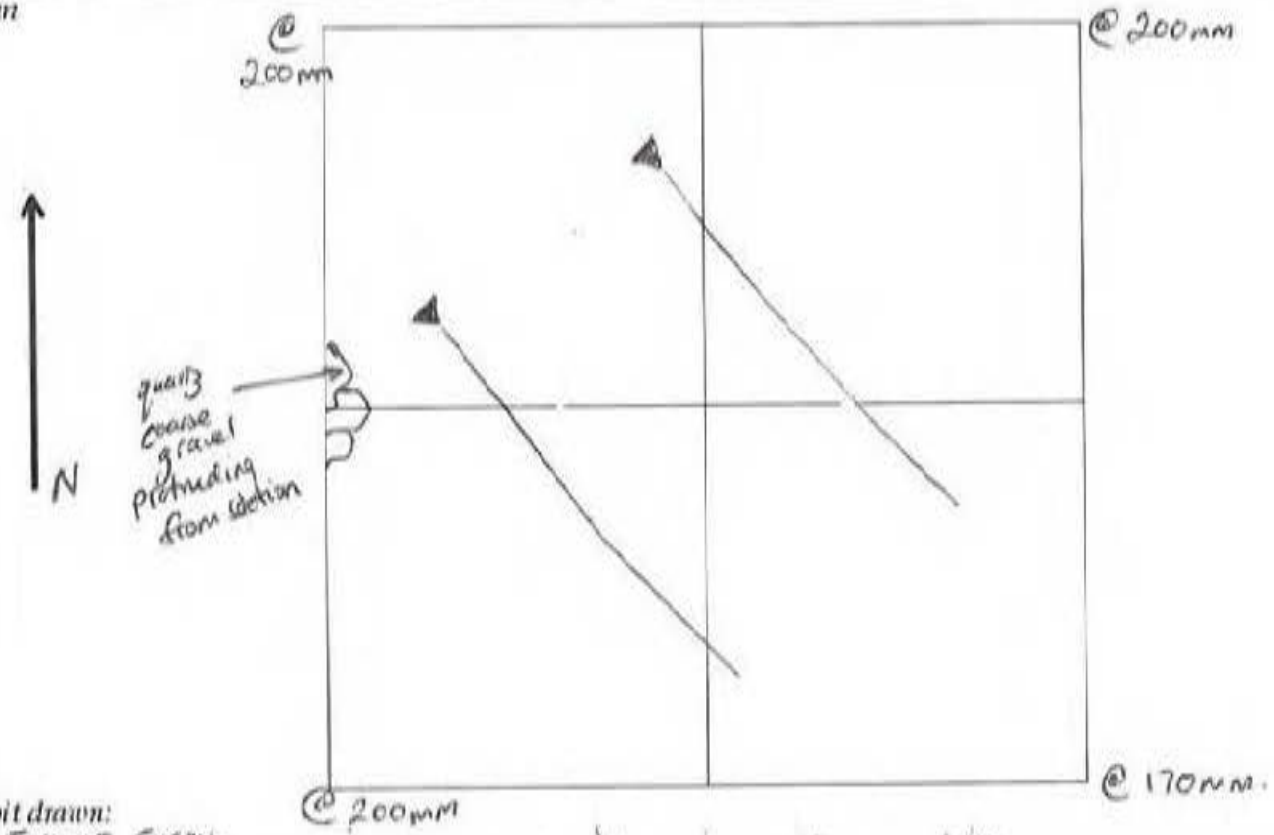
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 (B) Other			N/A
2	100	A1 A2 (B) Other			N/A
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	200 (max)				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Surface = ~~loose~~ grass ~~cover~~ cover. A1 = mid to dark grey-brown sandy loam, ~~slight~~ sparse to moderate ~~firm~~ firm, soft.
A1 B	SPIT 1	Below this, a pale - mid yellowy grey-brown sandy clay loams. Very fine - fine root inclusions, c. 15 - 20%. Quartz gravel (fine to coarse), quartz cobbles and boulders ~~throughout~~ c. 50 - 70%, visible in S + W sections. Clear transition to ~~more~~ orangey sandy clay visible on N + W sections where not rocky, less distinguishable on S + E sections. at c. 7 - 10 cm
B.	SPIT 2	Firm to lightly compact pale brownish to orangey sandy clay ~~throughout~~ and remaining ~~at~~ slight pale to mid yellowy grey brown sandy (clay) loam on the W and SW sections to a depth of c. 17cm. Very fine to fine root inclusions ~~throughout~~, c 2 - 5%. Quartz fine gravel — cobbles c. 15-20%, concentrated mostly on the S + W sides of the TU. Clear horizon change to ~~more~~ compact, slightly plastic darker orange clay (sandy clay?) visible at c. 15 - 18 cm ~~especially~~ especially on E + N sections.

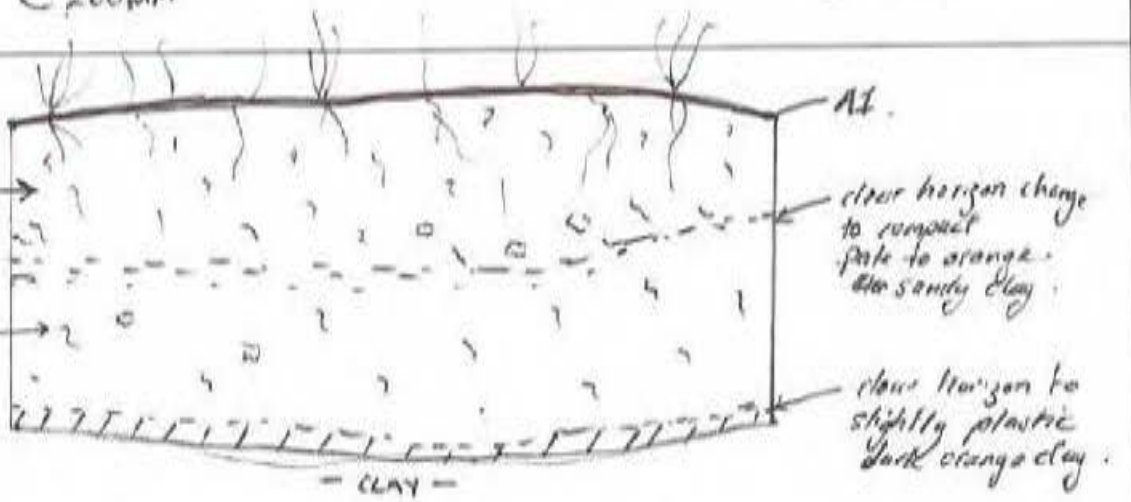
Description of material below B or the limit of excavations.
Clay at base — hard compact, slightly plastic dark orange clay — sandy clay. Occasional quartz medium gravel c. 2 1%.

Plan



Spit drawn:
END OF EXCAV.

Section Plan



Face: N
Scale: 1:5

yellowy grey-brown sandy clay loam

compact pale / orangey sandy clay

KEY:

2 v. fine - fine root inclusions

light whitish-brown clayey spots (more only visible in section).

/// dark orange plastic clay.

Note: quartz inclusions not visible in the N section.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Z B, 175
Excavators	AP, JAKE, DAVE	Date 6/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 25	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3	90	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

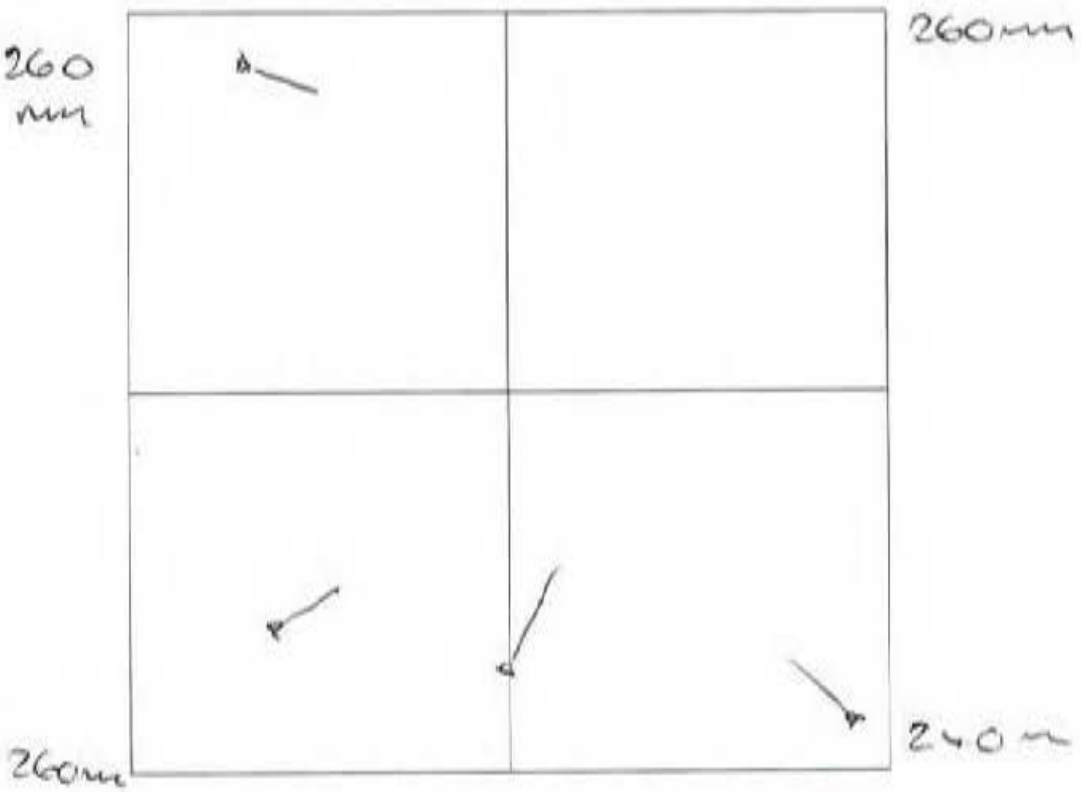
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg, Gravels, sand, litter, evidence of disturbance etc. GRASS
A1		50mm of LIGHT BROWN SANDY LOAM, ORGA. ROOTS FROM GRASS. LOOSE. COMMON. ANGULAR QUARTZ FRAGS. 240mm Merging/gradual transition at 50mm.
~~A2~~ B		LIGHT BROWN SANDY CLAY LOAM, SLIGHT LOCKING, MERGING ORG RED CHERT & BASE WORGA. WITH CLAY MOTTLING. ANGULAR QUARTZ - MED. FRAGS
C		AT 290 mm, NEVER. BRIGHT CLEAR RED CLAY W/ ORGA. WHITE CLAY MOTTLING.

Description of material below B or the limit of excavations

Bright clear red clay w/ white clay mottling.

Plan

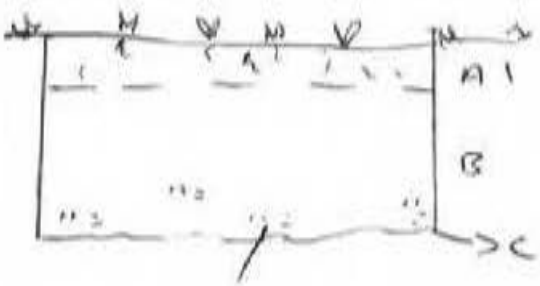


Spit drawn:

Section Plan

Face: 2

Scale: 1:10



while dry matting

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	TU176
Excavators	AP. JAMES / DILLON	Date 8/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	TWINS RANGE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 35°	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 (B) Other			
3	100	A1 A2 (B) Other			
4	40	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

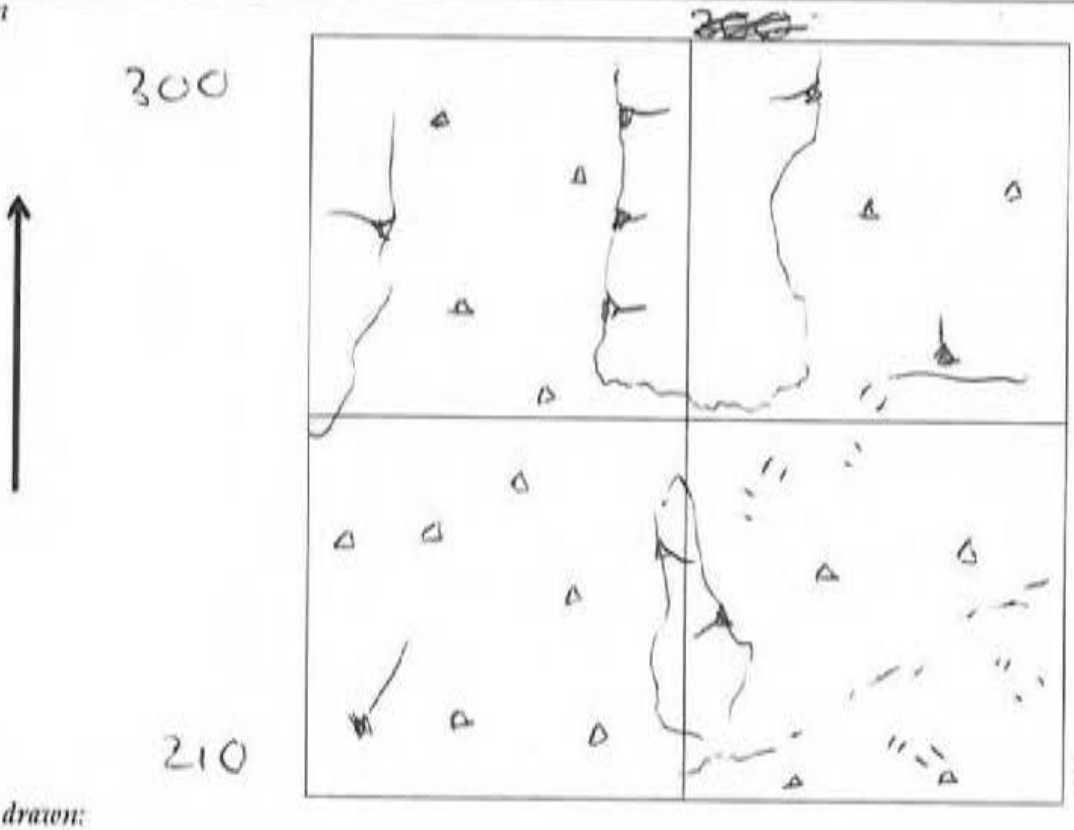
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	light brown SANDY CLAY LOAM. lightly compacted. occa. rock disturbance. few grass. v. occa. Angular QUARTZ frags. 40cm. merging at 70cm into B.
~~A2~~ B	2-4	light grey brown sandy clay loam. occ. rock disturbance. MED. compact. merging into degraded in situ bedrock.

Description of material below B or the limit of excavations
min red clay / patchy bedrock. v. fine. into pale grey white in situ degraded

340

Plan

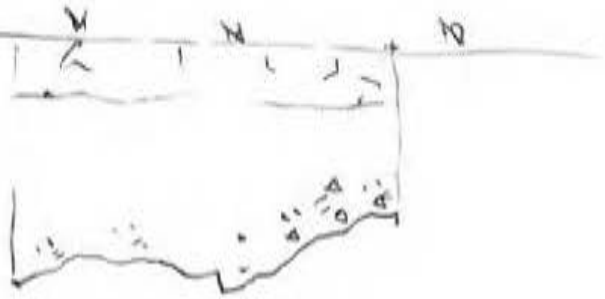


Spit drawn:

Section Plan

Face:

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT #** **PHOTO #**	189
Excavators	Seb, Chris imagine	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Oakville		
Landform	(Creek Bank) / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other			
	100	A1 (A2) B Other			
4	100	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. ~~Some~~ cleared area, roadway inhibits vegetation
A1	1	Compact clay silt, pale pinkish red, compact, Friable (Bleached some very fine grass roots, area is heavily disturbed rabbit way
A2	2	Same as abve very silty, lightly compacted
	3	Continuing with some porous ironstone nodules forming
	4	~~into~~ onto extremely compact dry grey base clay

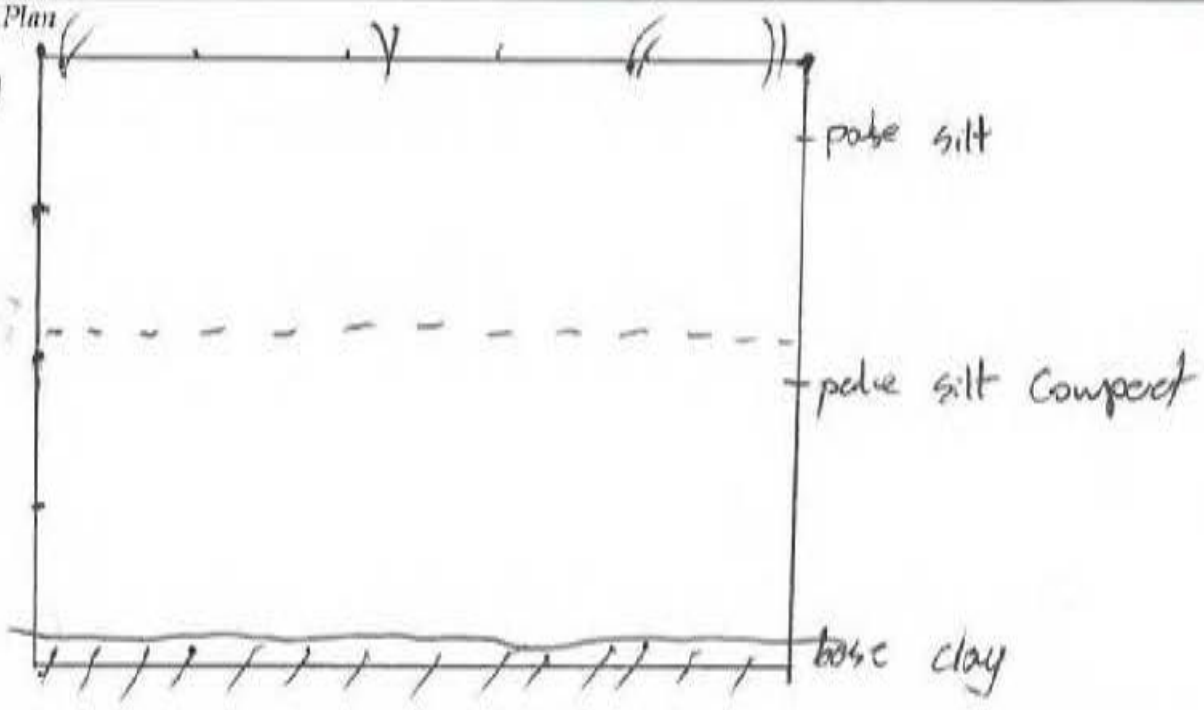
Description of material below B or the limit of excavations

Plan

Spit drawn:

Section Plan

Face: N
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211190 015 47
Excavators	AP, James, Dillon	Date 21/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Sw North of Creek		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved ~~dry sieved~~

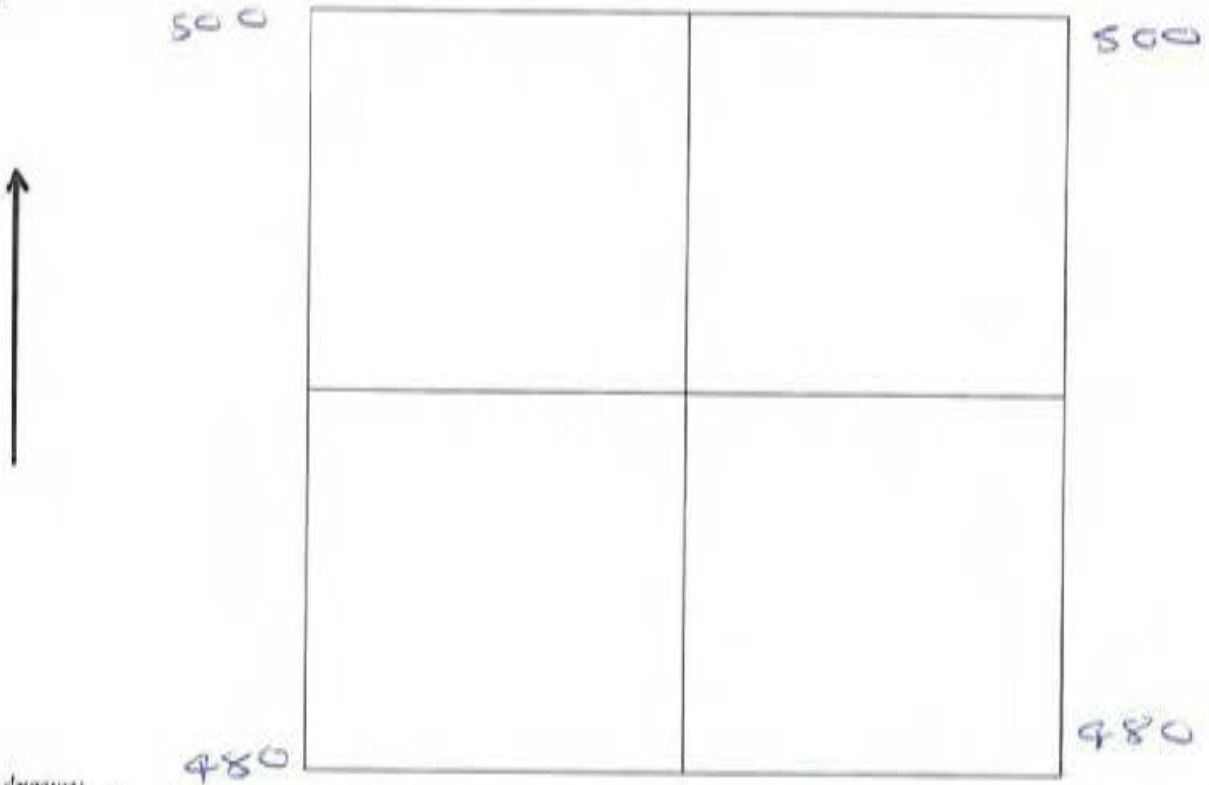
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5	100	A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Grass
A1		200mm Soft silty sandy light grey brown, mod. root disturbance moving into B
A2 B		light white cream silty sand, severe root disturbance. fine roots and Mangrove nodules

Description of material below B or the limit of excavations
Mid Grey Clay

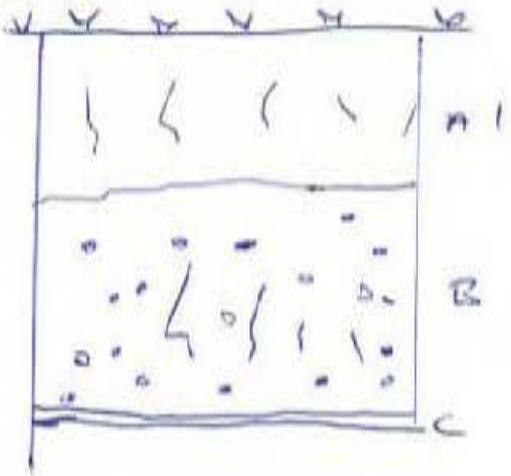
Plan



Spit drawn: 6m0

Section Plan

Face: N
Scale: 1:10



U = Grit
L = Peat
O = Iron stone
• : Manganese

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11 TU: 191
Excavators	REECE VIVIAN // MINDEE & NORMA FACEBOOK	Date 20.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	ALLUVIAL & COLLUVIAL SEDIMENTS BUILT UP ON RIVER BANK (TO LOWER TABLE PIT SITS ABOVE / ABOVE OF).
Worthy of expansion? How?	
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	COOKSFORD // OAKVILLE (OF FOUNDED ON BANKS OF CREEK. (DUDAUMAN CREEK)		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % >1%.	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0 – 100mm	(A1) ~~A2~~ ~~B~~ A ~~A1~~ ~~A2~~ B Other			Ø
2	100 – 200mm	(A1) A2 B Other			Ø
	200 – 300mm	A1 (A2) (B) Other			Ø
4	300 – 400mm	A1 A2 (B) Other			Ø
5	400 → 500mm	A1 A2 (B) Other			Ø
6	(B) 400 → 5800 (C) 580 → 600)	A1 A2 (B) Other			Ø
7		A1 A2 B Other			
Totals					

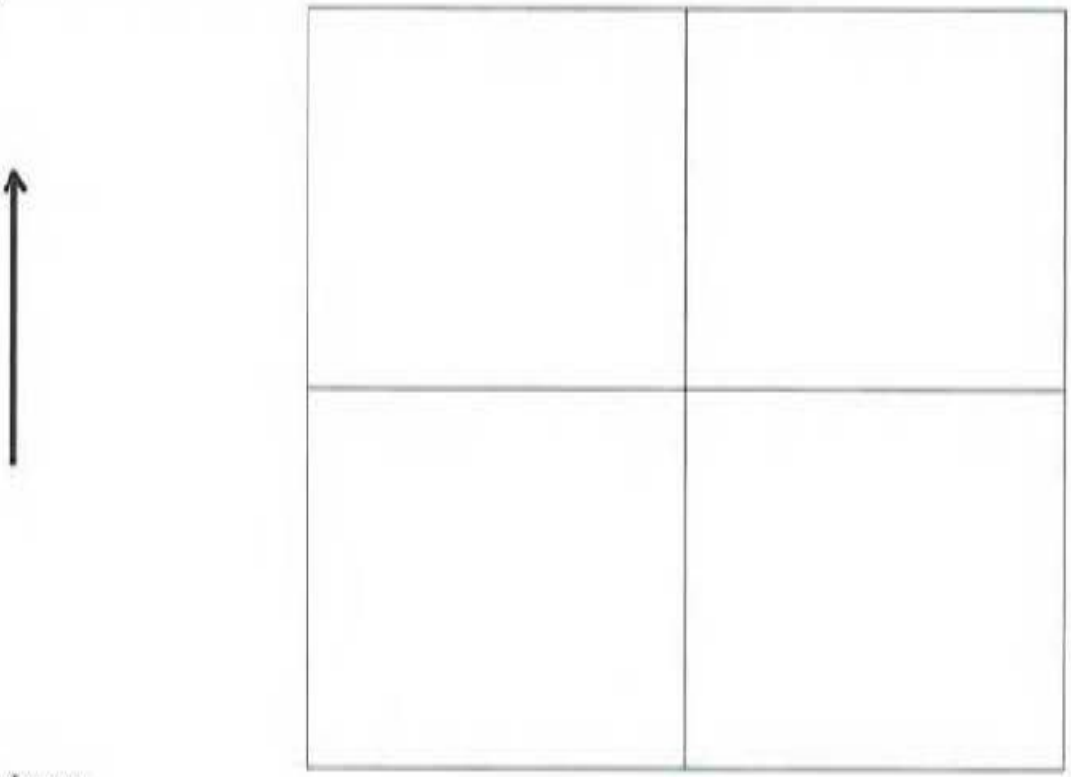
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. PIT CLOSE TO FENCE (30cm) GRASS COVER = 50-60%).
A1	0 – 100mm 0 – 10 mm	SILTY LOAM ~~FR~~ LIGHT BROWN TO MINOR INCLUSIONS OF QUARTZ + SILT STONE, FINE GRAINED.
A2 BECOMING 10mm → 350mm		SILTY LOAM (NOT AS ABOVE) MORE INCLUSIONS TO SILTSTONE & FERROMAGNESIAN NODULES TO DEPTH. TRANSITION IS ABRUPT.
B → 350mm to 580mm		Silty clay loam - Light / Greyish brown. Fine grained with inclusions of siltstone & ironstone - Western corner has a concentration of charcoal V. LOOSE AND FINE GRAINED TO TRANSITION TO (C) SUBSOIL.
C →		GREY STICKY SILTY CLAY TO V. MINOR INCLUSIONS SILTSTONE + FERROMAGNESIC NODULES. COMPACT & SLIGHTLY DAMP.

Description of material below B or the limit of excavations

GREY STICKY SILTY CLAY @ BASE. (approx 58 → 60cm depth)

Plan

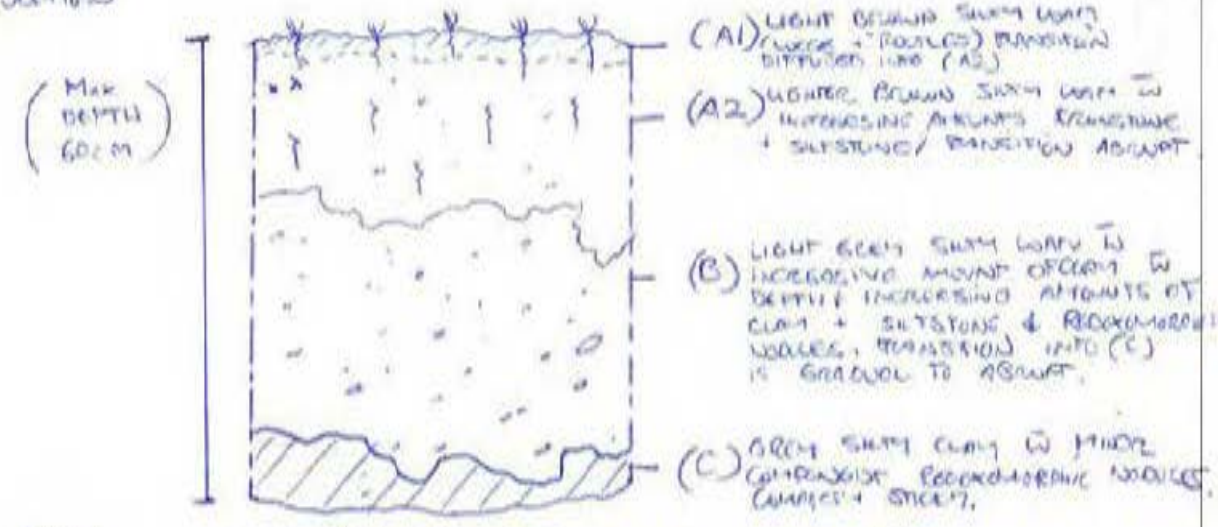


Spit drawn:

Section Plan

Face: NORTHERN SECTION

Scale: 1:10 cm



Further descriptions and relationships to other TU

AT IS LOCATED ON THE BANK OF CREEK. SEDIMENT IS REDEPOSITED ALLUVIAL & COLLUVIAL SOILS THAT TRANSITION INTO A CLAY AT 60CM. LIMIT OF EXCAVATION AT CLAY.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211 · 192
Excavators	AP, James, Dillon	Date 20/05/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	Flat Sandplain Creek Flats		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6	60	A1 A2 B Other			
7		A1 A2 B Other			
Totals					

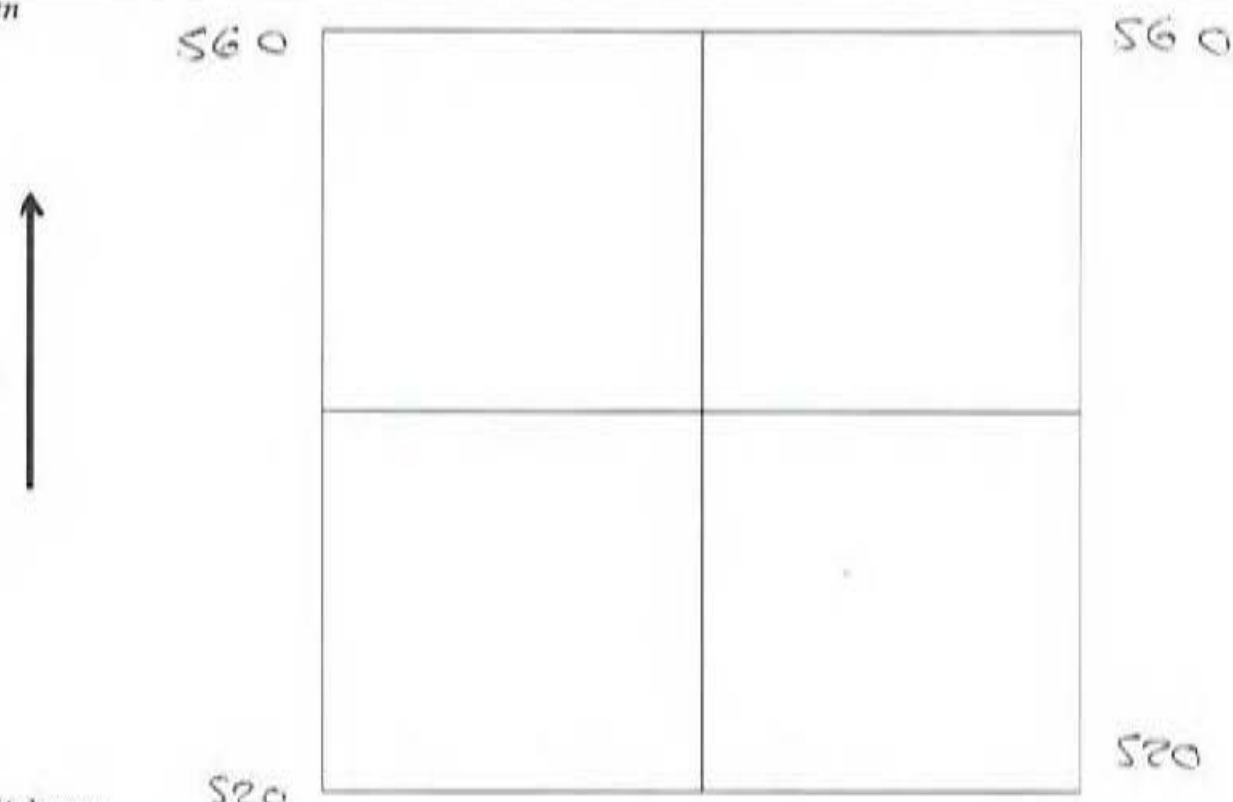
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Grass
A1	1 - 2	170mm thick pale white brown fine silty sand, ~~~ severely disturbed by large roots clear with B.
~~A2~~ B	2 - 6	Compact light cream silty sand with fine sand inclusions and manganese nodules (Clay clear and C (yellow clay).

Description of material below B or the limit of excavations

yellow clay.

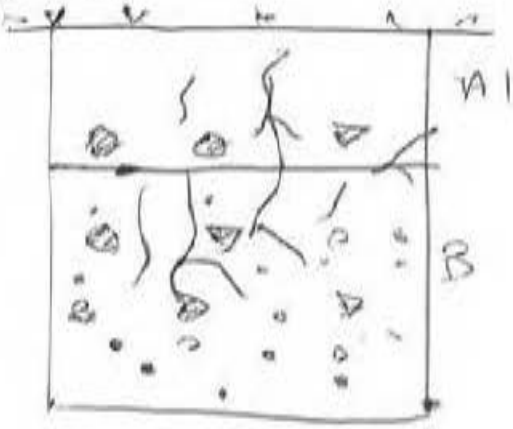
Plan



Spit drawn: END

Section Plan

Face: N
Scale: 1:10



: root (vert.)
: root (horizontal).
: rock
: [illegible]

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211. 193
Excavators	AV, Jones, Dillon	Date 20/05/2015	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	flat Sand next to Creek bank		
Landform	Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved (dry sieved)

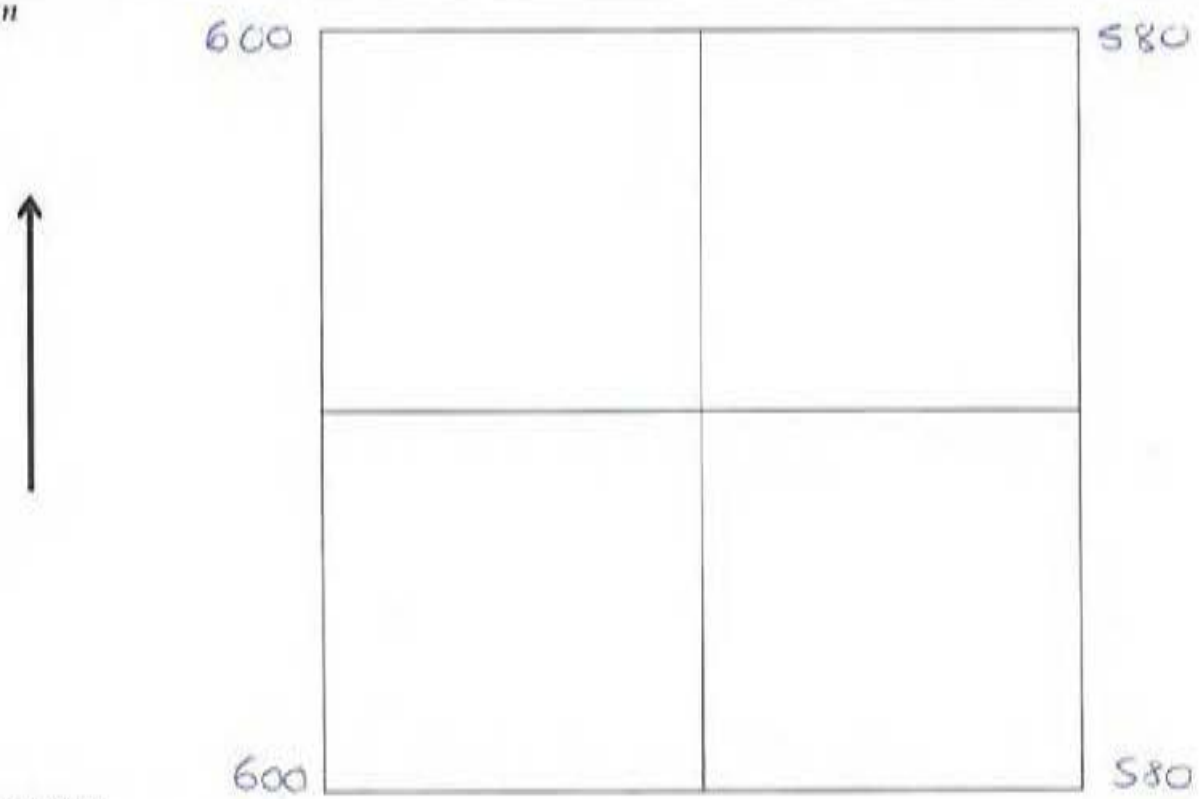
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	1 to 6	(A1) A2 B Other			
2	1 CC	A1 A2 (B) Other			
	1 CC	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6	100	A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg, Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	120mm mid light grey brown fine silty sand, strongly bioturbated by roots. clear abs & irregular
A2 B	2 - 6	compact light white silty sand strongly root disturbed clear abs c.

Description of material below B or the limit of excavations
Yellow clay w/ occas ironstone

Plan

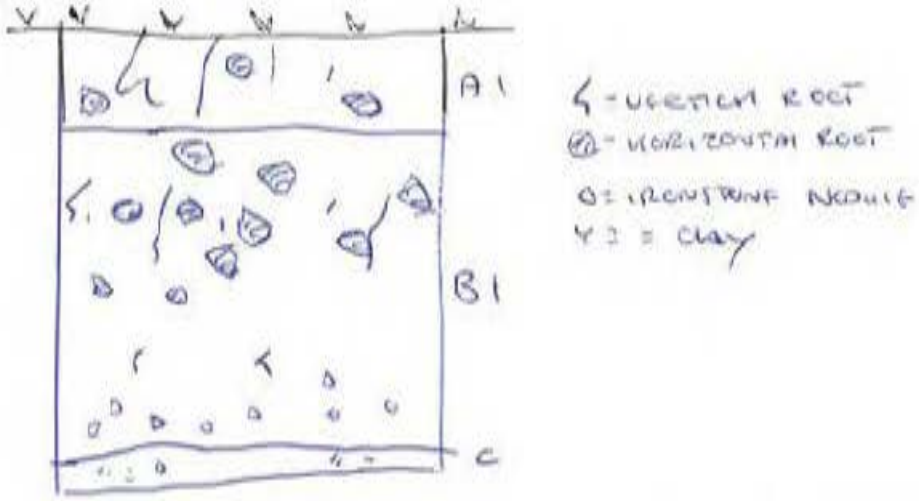


Spit drawn: END

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZONE 11, TU 194
Excavators	SARAH + LORRAINE	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other (cleared land.)		
Aspect	N E S W	Slope %	

EXCAVATION — wet sieved — dry sieved

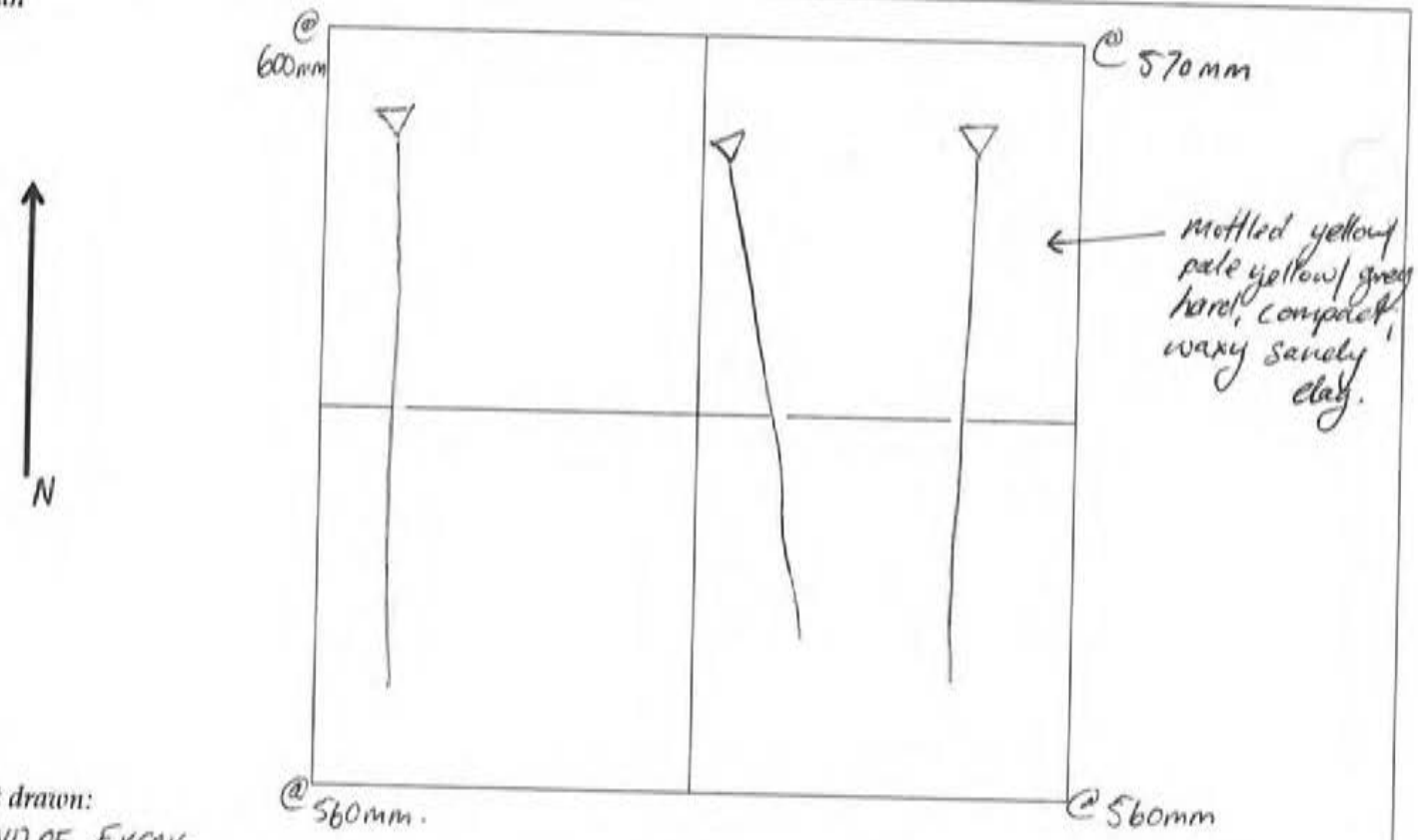
Spit #	Depth (mm)	Soil Horizon (1-2cm)	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
0-10 1	100	A1 A2 B Other			N/A
10-20 2	100	A1 A2 B Other			N/A
20-30 3	100	A1 A2 B Other			N/A
30-40 4	100	A1 A2 B Other			N/A
40-50 5	100	A1 A2 B Other			N/A
50-60 6	100 (max)	A1 A2 B Other			N/A
7		A1 A2 B Other			
Totals	600 (max)				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = sparse to moderate grass/weed cover. Fine humic component.
A1	SPIT 1	A1 = 1-2cm thick, dark brownish-grey, fine, soft sandy clay loam. Root inclusions (very fine to fine) c. 10-15%. Fine to coarse ironstone gravel inclusions c. 5%
A2		Below this A1 (A2): Clear to gradual transition to mid yellowish-brown, soft, fine sandy clay loam @ c. 1-6cm depth. Very fine to fine root inclusions c. 5-10%.
A2	SPIT 2	Horizon at c. 10cm, transition to a lighter yellowish-brown colour; still a soft, fine sandy clay loam, increasing clay content with depth, but only slightly. Very fine to fine root inclusions c. 2%. Fine to medium ironstone gravels c. 1% or less. Some paler whitish brown patches visible in section.
B	SPIT 3	As spit 2 above. Root inclusions (very fine to fine) c. 1-2%. Fine to medium ironstone gravels c. 1% or less. Some paler whitish brown patches visible in section. Increasing clay content with depth.
B	SPIT 4	As spit 3 above. Increasing clay content with depth. Pale to mid grey patches visible in section; not ashy & no charcoal, just a slightly finer sandy clay loam. Horizon @ c. 40cm to a more yellowy sandy clay loam, with increased clay content. Some paler whitish-brown patches visible in section. (also visible in spit 3)
B	SPIT 5	As spit A2 greyish/brownish yellow, sandy clay loam, soft, but more compact than spits above, with a markedly higher clay content. Ironstone gravel inclusions c. (fine to medium) c. 2%. Very fine to fine root inclusions rare, c. 1%. Some softer patches of a pale greyish-brown, very fine and soft sandy clay loam may visible in N+S section below base of spit 4, highlighted with a whitish tint, slightly more compact + clayey sandy clay loam.
Description of material below B of the limit of excavations (below):	B SPIT 6	A mottled yellow and grey, and pale yellow, hard, compact sandy clay, waxy, but not plastic. Ironstone gravel inclusions (fine to medium) c. 5%. Very fine root inclusions very rare.

MSF = A mottled yellow/pale yellow/grey hard, compact Sandy clay, with fine to medium ironstone

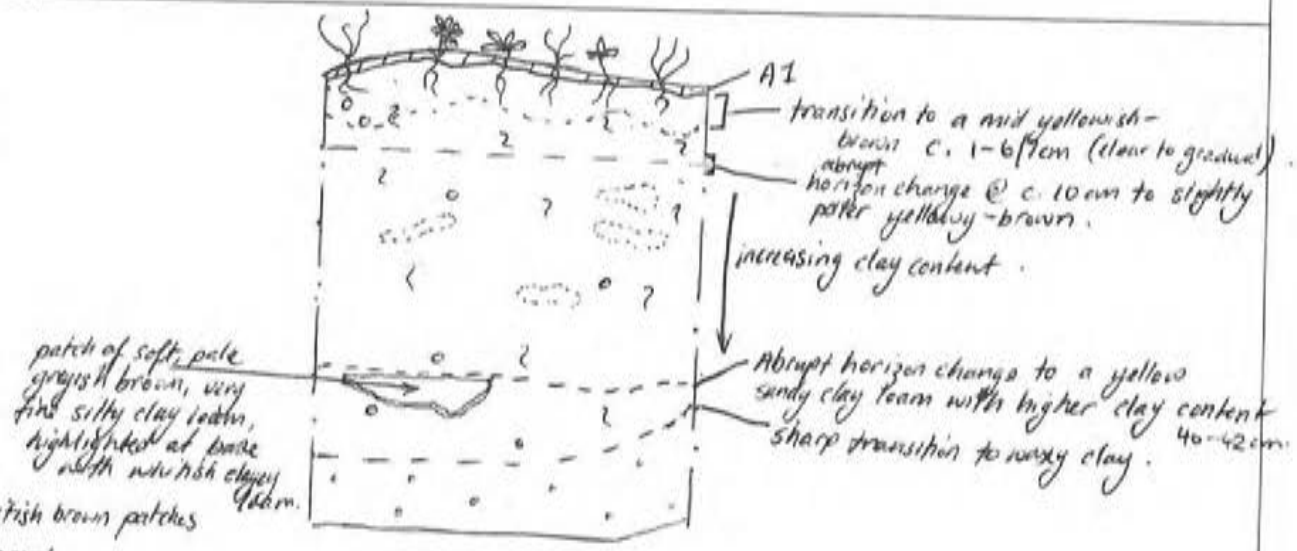
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:10



KEY:
A1
paler whitish brown patches
ironstone gravel
very fine to fine root inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	TU 195, ZONE 11
Excavators	SARAH, JARRAH, LORRAINE	Date 20/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	COMERFORD		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

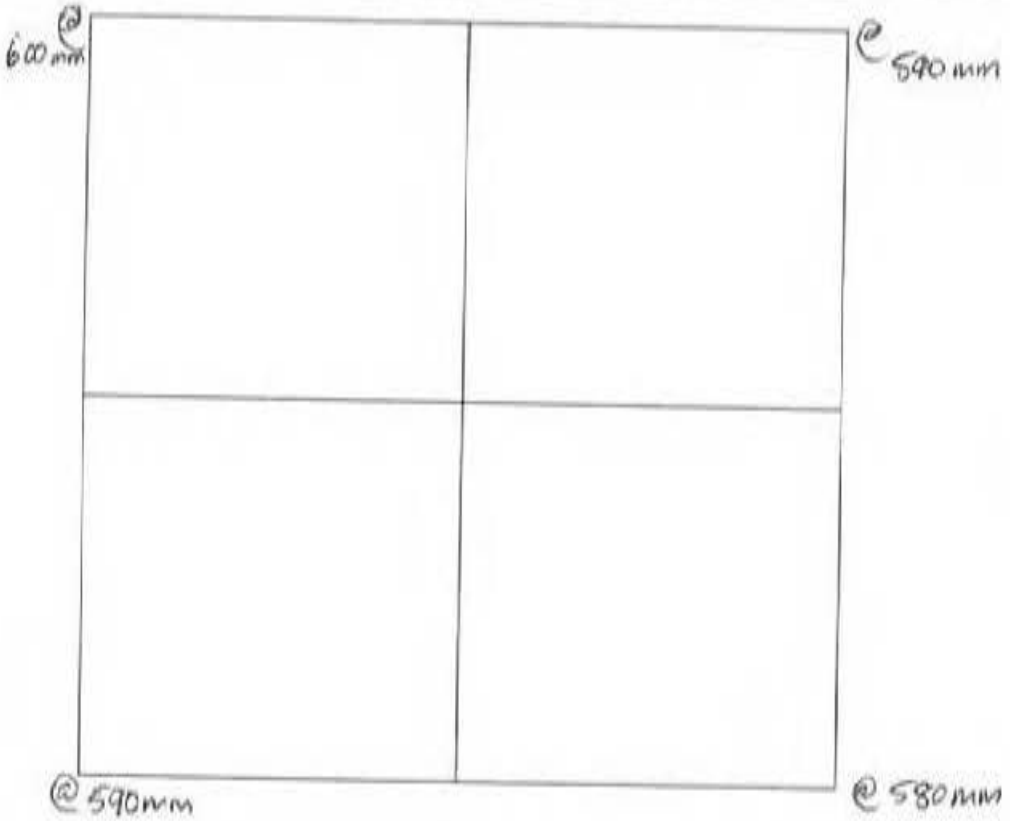
EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1 (0-10)	100	(A1) (A2) B Other			N/A
2 (10-20)	100	A1 (A2) B Other			N/A
3 (20-30)	100	A1 (A2) B Other			N/A
4 (30-40)	100	A1 (A2) (B) Other			N/A
5 (40-50)	100	A1 A2 (B) Other			N/A
6 (50-60)	100 (MAX)	A1 A2 (B) Other			N/A
7		A1 A2 B Other			
Totals	600 (MAX)				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		~~Eg Gravels, sand, litter, evidence of disturbance etc.~~ SURFACE = Sparse to moderate grass/weed cover. Very fine humic component. A1 = very soft, fine, sandy clay loam, mid grey in colour, c. 40cm thick
A1 A2	SPIT 1	Below this, a mid grey-brown, soft, fine sandy clay loam. Very fine to medium root inclusions c. 20-25%. Fine to medium ironstone gravel inclusions c. 5%. Rare coarse siltstone inclusions.
A2	SPIT 2	As above. Very fine to fine root inclusions c. 10% many. Fine to medium ironstone inclusions c. 1-2%. Increasing clay content to depth. Rare coarse siltstone inclusions.
A2	SPIT 3	As spit 2 above. Very fine to fine root inclusions c. 5%. Fine to medium ironstone inclusions c. 2-5%. Increasing clay content to depth. Clear horizon change to paler colour at c. 29-31cm. Rare coarse siltstone inclusions.
A2 B	SPIT 4	A pale grey-brown, fine, soft sandy clay loam. Very fine root inclusions c. 1%. Fine to medium ironstone inclusions c. 5%. Increasing clay content with depth.
B	SPIT 5	As spit 4 above. Very fine root inclusions c. <1%. Fine to medium ironstone inclusions c. 05-10%.
B	SPIT 6	Description of material below B or the limit of Excavations. As spit 5 above. Clear Sharp horizon change to Sandy clay at c. 54cm depth. A compact, mottled yellow and white/pale Sandy clay with fine to medium ironstone inclusions c. 10%. Stone Staining from ironstone also present.
		BACF = 9cm density of Sand & clay in Spit 6 above.

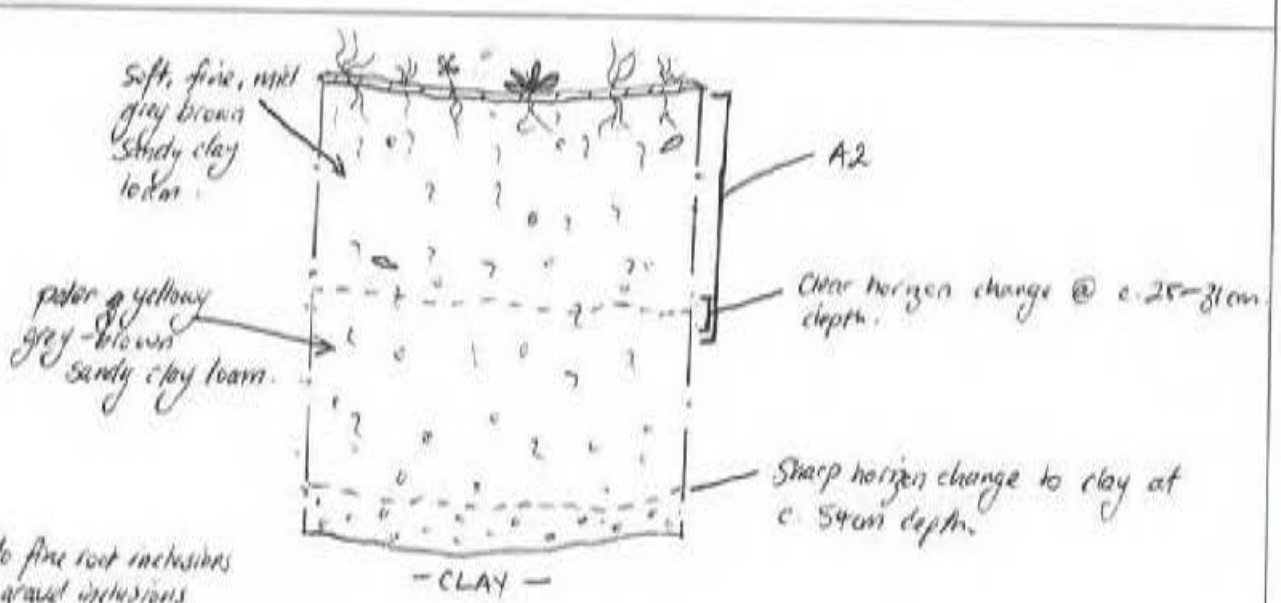
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1: 10



KEY:

// A1
° very fine to fine root inclusions
o ironstone gravel inclusions
▰ siltstone inclusions (coarse, rare).

Further descriptions and relationships to other TU

Test units are very variable across the zone. Deposits vary substantially in colour, texture, and composition from TU to TU.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE: 196 TU. 196
Excavators	Rebecca Vartko / Marnie Freeman	Date 30.5.2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	Heavy land clearing, cattle grazing, signs of natural erosion
Worthy of expansion? How?	NO –
Plan #	
Samples (description & number)	Ø

LOCATION

GPS (for additional TU only)	Easting [ ][ ][/][ ][ ][ ]	Northing [ ][ ][ ][/][ ][ ][ ]	
Soil landscape	Comerford / Coolville (LOCATED ON UPPER SLOPE CLOSE TO CREEK)		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 25%.	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1 B @	Approx (10-15) 10mm → 100mm	(A) → A1 A2 (B) Other	–		Ø
2	100 → 200mm	A1 A2 (B) Other	–		Ø
	200 - 300mm	A1 A2 (B) Other	–		Ø
4	300mm → 350 mm	A1 A2 (B) → (C) Other	= VARIES ACROSS PIT.		Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

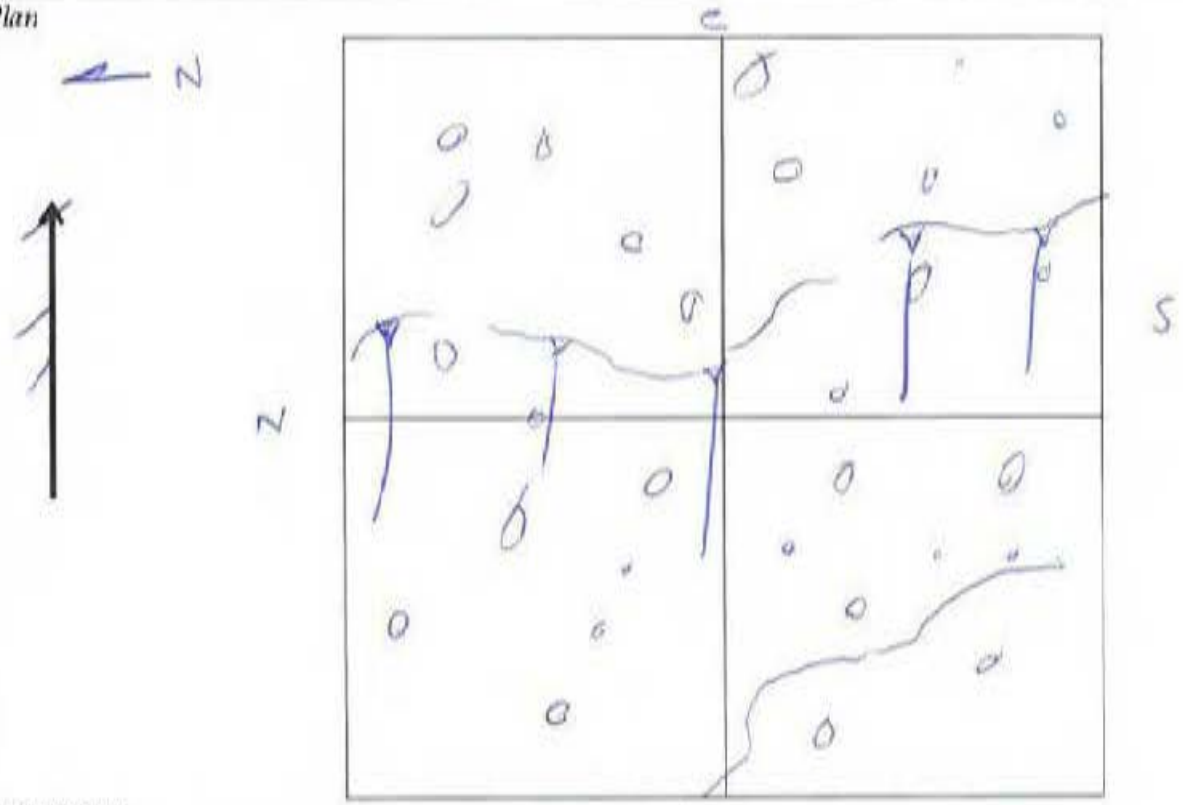
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. ABOVE THIS PIT WERE SOME SMALL GRASSES. LOCATED ON LOWER SLOPE - 10-15m NORTH OF SMALL CREEK. LIGHTISH BROWN IN COLOUR
A1 (A)	(1) (0-35cm)	SILTY LOAM, FINE GRAINED W LARGE INCLUSIONS OF SILT STONE + FINE GRAVELS (60%). ANGULAR + SUB ANGULAR. LIGHT BROWN.
A2 (B)	(1)→(4) (35cm)	TRANSITIONS SLIGHTLY FROM SILTY LOAM TO SILTY CLAY @ GROUND 35cm depth (varying across pit). LIGHT BROWN TRANSITIONING TO MORE RED BROWN TO DEPTH. SILT STONE + STRONG STONE INCREASE W DEPTH (80%). MINOR COMPONENT OF QUARTZ (>1%).
(C)		REDDISH BROWN SILTY CLAY AT BASE. 35 – 40cm VARYING ACROSS DEPTH. FINE GRAINED WITH LARGE INCLUSIONS OF SILT STONE (20-50mm) + IRONSTONE (> 10-20 mm) THROUGHOUT AND INCREASING @ BASE (80%).

Description of material below B or the limit of excavations

REDDISH BROWN SILTY CLAY TO SILT STONE + STRONGSTONE AT BASE.

Plan



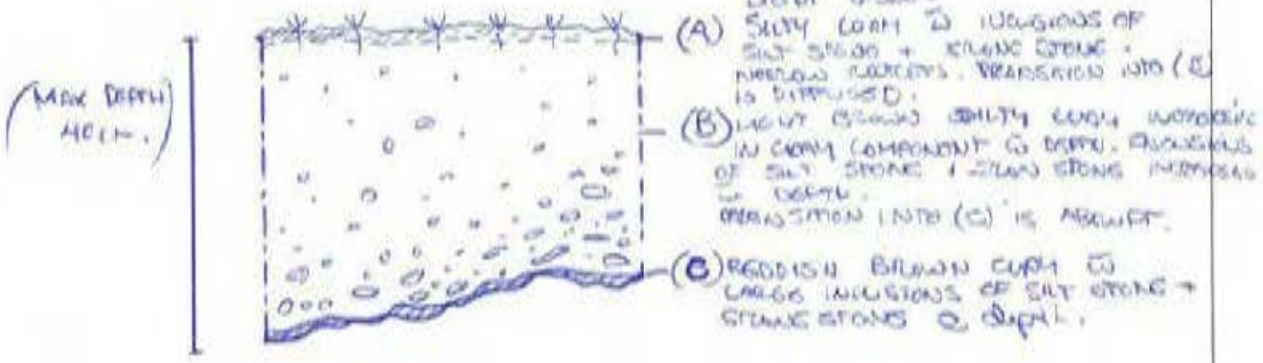
Spit drawn:

* CLAY BASE SLOPES GENTLY TOWARDS THE WEST.

Section Plan N

Face: NORTHERN SECTION

Scale: 1:10cm.



Key

= ROOTS + ROOTLETS

= SILTY CLAY BASE

= SILT STONE + STONE STONE

= V. MINOR ORGANIC COMPONENT

Further descriptions and relationships to other TU

TU: 116 POSITIONED APPROX. 10-15m NORTH OF SMALL CREEK.

TU 116 ALSO POSITIONED APPROX 5 METRES FROM DRIP LINES TO THE SOUTH.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211.197
Excavators	AP, James, Dillon	Date 20105/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 30	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		(A1) A2 B Other			
2		A1 (A2) B Other			
		A1 A2 (B) Other			
4		A1 A2 (B) Other			
5		A1 A2 (B) Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	100mm thick soft mid brown silty loam. occa rock diabase - merging into A2.
A2	2	100mm Pale grey brown silty loam + clear onto B1.
B1	3+4+5	Fine orange silty sand. clear onto C.
~~B~~ C	5	Pale olive sandy clay w/ mars. ironstone flecks.

Description of material below B or the limit of excavations

Plan

500

500

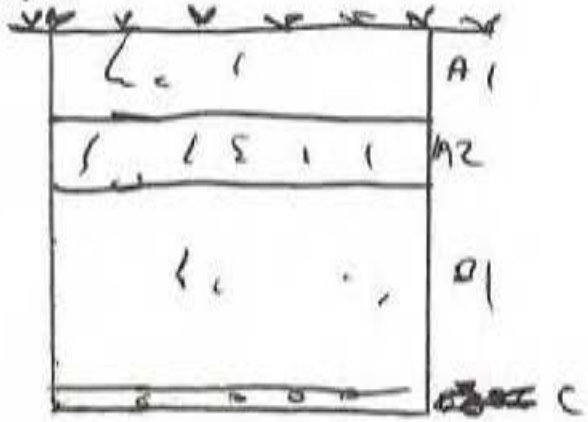
500

Spit drawn: 500

Section Plan

Face: N

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	198 – Zone 4
Excavators	Imigine Sebastian Chris	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	(Comerford)		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

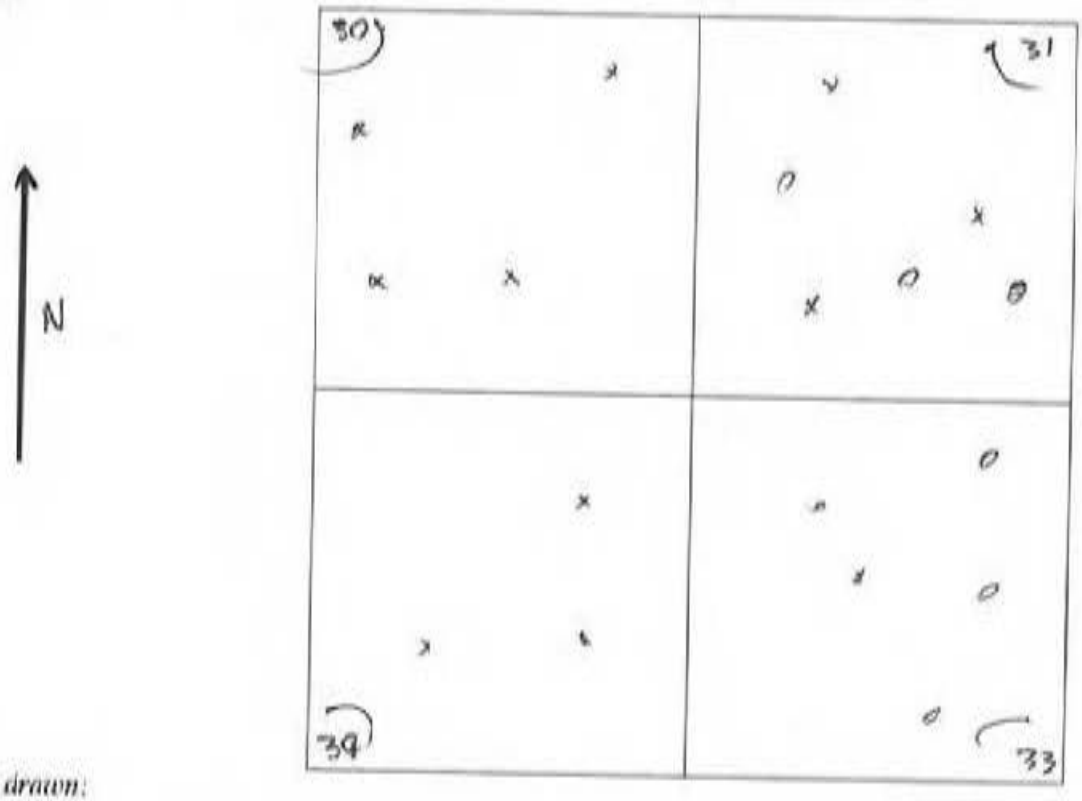
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100mm	(A1) A2 B Other			
2	180mm	A1 (A2) B Other			
	100mm	A1 (A2) (B) Other			
4	40mm	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg, Gravels, sand, litter, evidence of disturbance etc. grasses, scat and other organic materia
A1	1	silty clay loam light Compaction Reddish brown silt/stone and ironstone gravels, pebbles with bioturbation from ants, insects and grubs Continuing to spit 2
A2	2	continuation of spit 1 changing abruptly around 280mm there the change is also signified by an absence of gravels above
	3	silty clay red, Compact with some fine grass roots, insect activity, changing to more clay, red to base clay
	4	onto base clay slightly lower in the south

Description of material below B or the limit of excavations

Plan

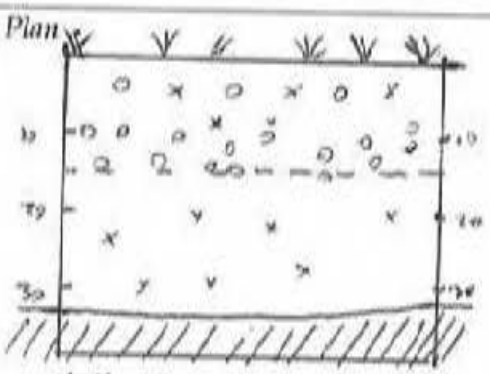


Spit drawn:

Section Plan

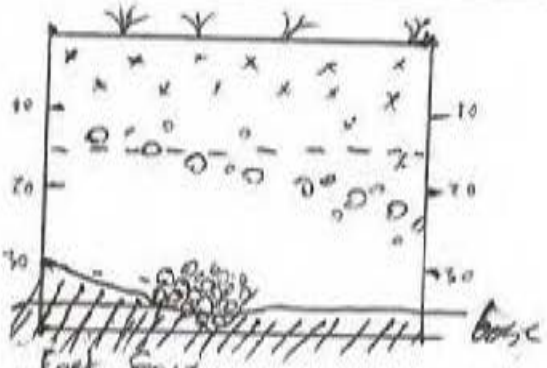
Face:

Scale:



North face

clear change due to an decrease in gravel lense at approx 18



East face

1st, spit silty, gravely with fine roots

2nd, distinct gravel Horizon

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	199-211
Excavators	Sebastian Chris Imogen	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing	☐☐☐☐☐☐☐
Soil landscape	OAKVILLE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

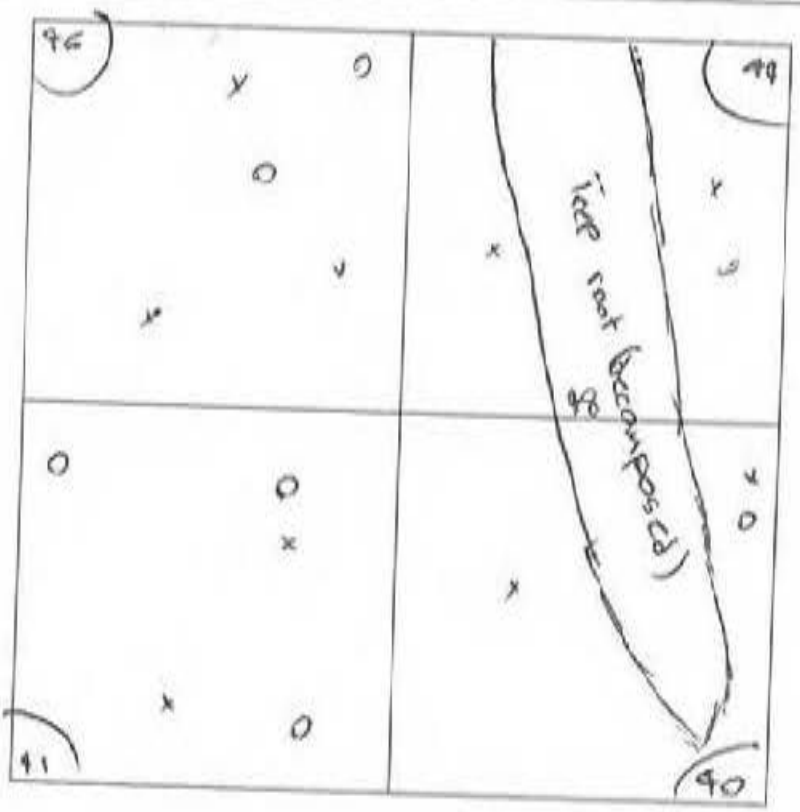
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2		A1 A2 B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. gravels, goose poos, animal waste (scat)
~~A1~~ A2	1	silty clay loam, lightly compact reddish brown, bioturbation includes insect activity, grass roots. siltstone + ironstone gravel 25-95% continuing onto spit 2
A2	2	Silty clay loam, lightly compact, Brownish Red clay bioturbation includes, insect activity, grass roots, siltstone, ironstone, gravel 25-45 %
	3	silty clay loam, fine gravel, silt stone and iron stone, ~~Moist~~ Friable, lightly compacted, insect, fine root, worm activity, browny red clay clear change (absence of larger gravels).
	4	Spit 3 continues in 30:1 type to approximately 40-43cm, sharp change to a compact silty clay, disturbed by the decomposed tree root on to base clay.

Description of material below B or the limit of excavations

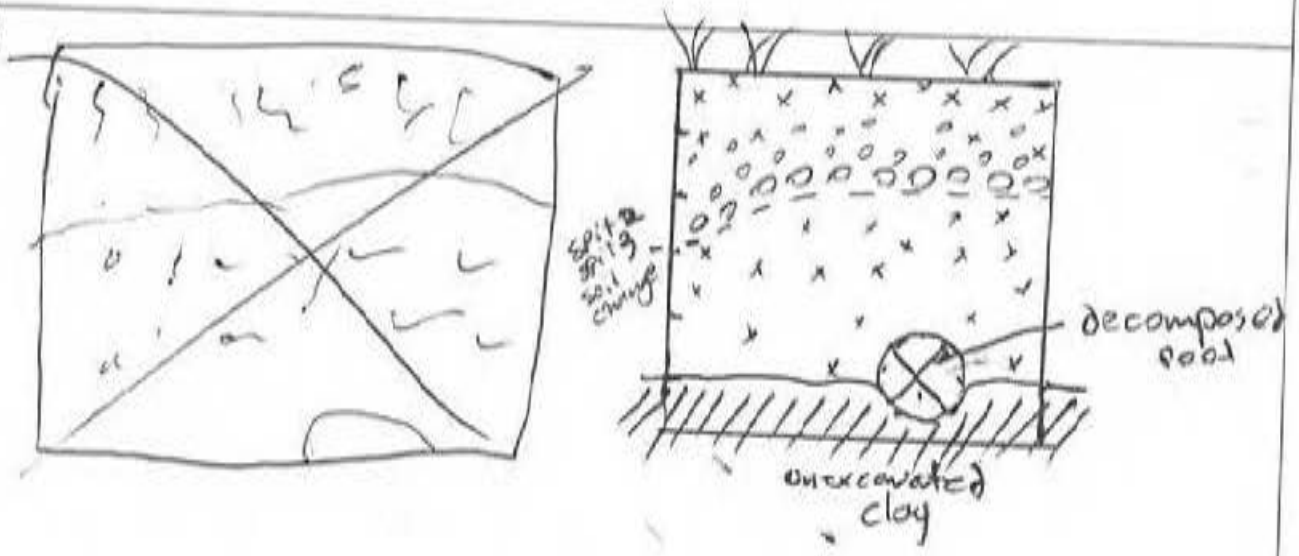
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Zone 11 TU: 200
Excavators	Rebecca Vartto / Marnie + Norm Freeman	Date 20.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	Heavy Land Clearing, grazing, grass (Humic)
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Comerford / Oakville (Dudauman Creek)		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 25 %	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0 → 50–100 mm	(A1) A2 B Other			Ø
2	100 → 200 mm	A1 A2 (B) Other			Ø
	200 → 3500 mm	A1 A2 B Other (C)			Ø
4	800 → 3800 mm	A1 A2 (C) Other			Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

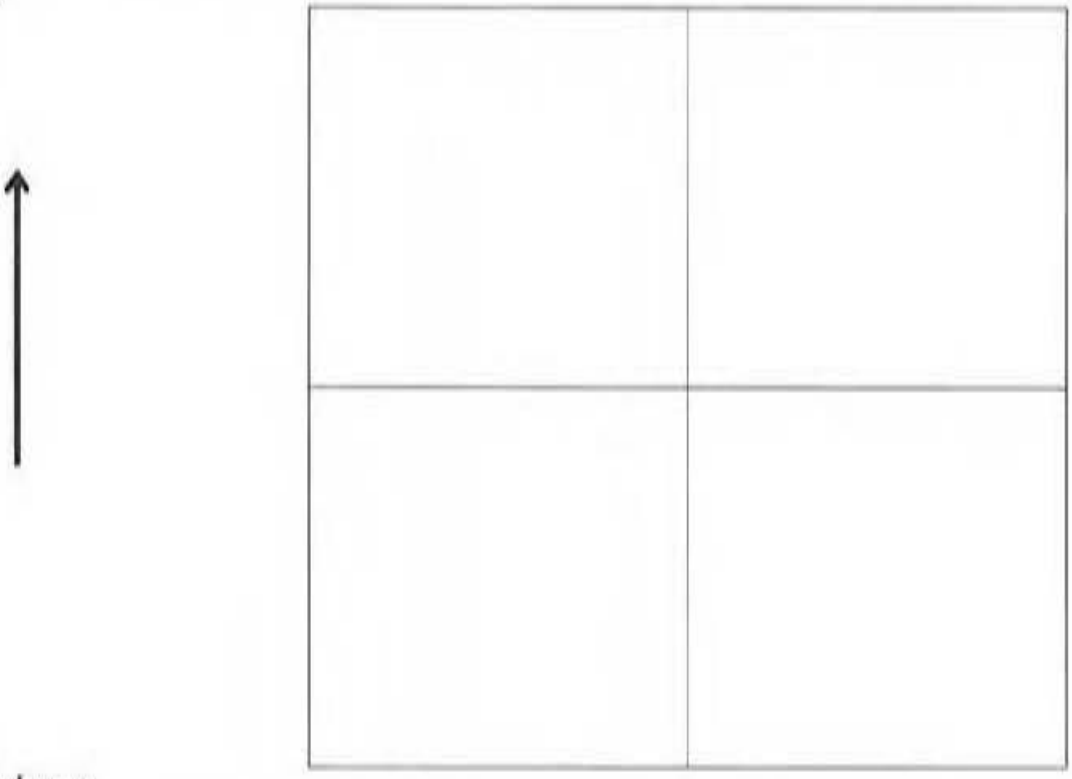
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Above pit is some small grasses - lots of Rock Light brown in colour. 20-30 not from Creek Bed- Silty Loam - Volcanic rocks
(A1)	0-100 1500 mm	THIN SECTION OF LIGHT BROWN SILTY LOAM TO FINE GRAINS, LOOSE → COMPACTED DEPTH. ROOTS + ROOTLETS LESSENING TO DEPTH. TRANSITION IS DIFFUSED TO GRADUAL INTO (C)
A2 (B)		SILTY LOAM, REDDEN BROWN, FINE GRAINED TO LARGE INCLUSIONS OF: SILTSTONE, SANDSTONE, (SIGNIFICANT VOLCANIC ROCK (INCREASING TO DEPTH). ROOTS LESSENING TO DEPTH.
(C)		ABRUPT TRANSITION INTO (C). REDDISH STICKY COMPACT CLAY. FINE GRAINED & Slightly MOTTLED.

Description of material below B or the limit of excavations

LIMIT OF EX @ 35-38cm WITH RED CLAY BASE.

Plan

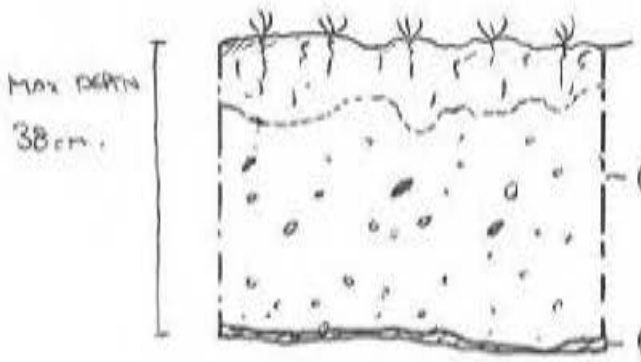


Spit drawn:

Section Plan

Face: ~~WESTERN~~ NORTHERN SECTION

Scale: 1:10 cm



(A) SILTY LOAM W ROOTS + RACICELS TRANSITION INTO (B) DEFINED.

(B) SILTY LOAM W INCREASE OF CLAY IN DEPTH. INCLUSIONS OF SILTSTONE, SANDSTONE/RECRYSTOMORPHIC NODULES TRANSITION INTO (C) IN ABRUPT.

(C) RED STICKY CLAY, COMPACT TO V. MINOR INCLUSIONS OF SILTSTONE + RECRYSTOMORPHIC NODULES.

KEY. = ORGANIC/ROOTLETS. = SILTSTONE + RECRYSTOMORPHIC NODULES. = ROTOSOL CLAY = VOLCANIC ROCK INCLUSIONS.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZU.201
Excavators	AP / James Dillon	Date 20105/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	(N) E S W	Slope % 30

EXCAVATION wet sieved (dry sieved)

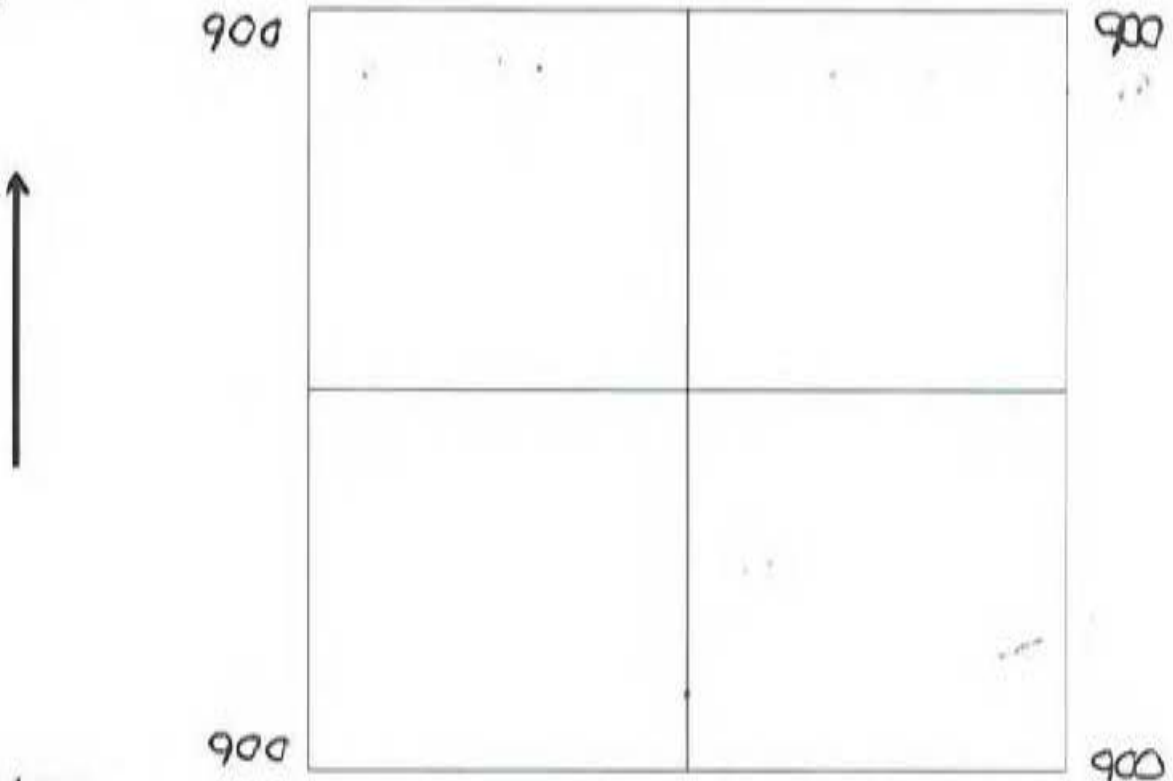
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6	100	A1 A2 B Other			
7	100	A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	100m thick MOIST Dark Grey Brown Silty loam plough soil, occa. root disturbance. Clear to A2 sct.
A2	2+3	100mm thick light grey silty loam. occa. root disturbance. clear to B1. Soft.
B1	3+4+5+6	Bright orange fine silty sand / silt. clear to B2
B2	7+8	Mid yellow reddish brown silty clay. occa. small ironstone bays. clear to B3.
B3	9	Pale white silty sandy clay. INDURATED. comm. ironstone bays - exc. end due to max depth reached.

Description of material below B or the limit of excavations

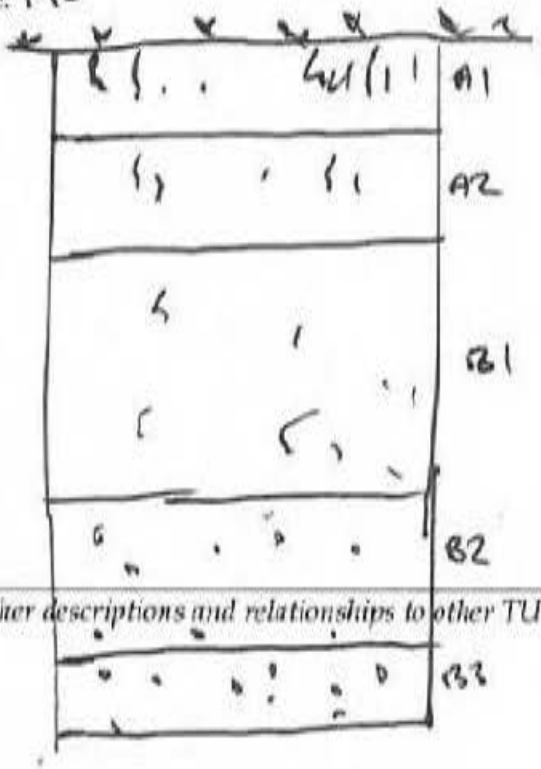
Plan



Spit drawn:

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # / PHOTO #	ZU 201
Excavators	AR	Date 20/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

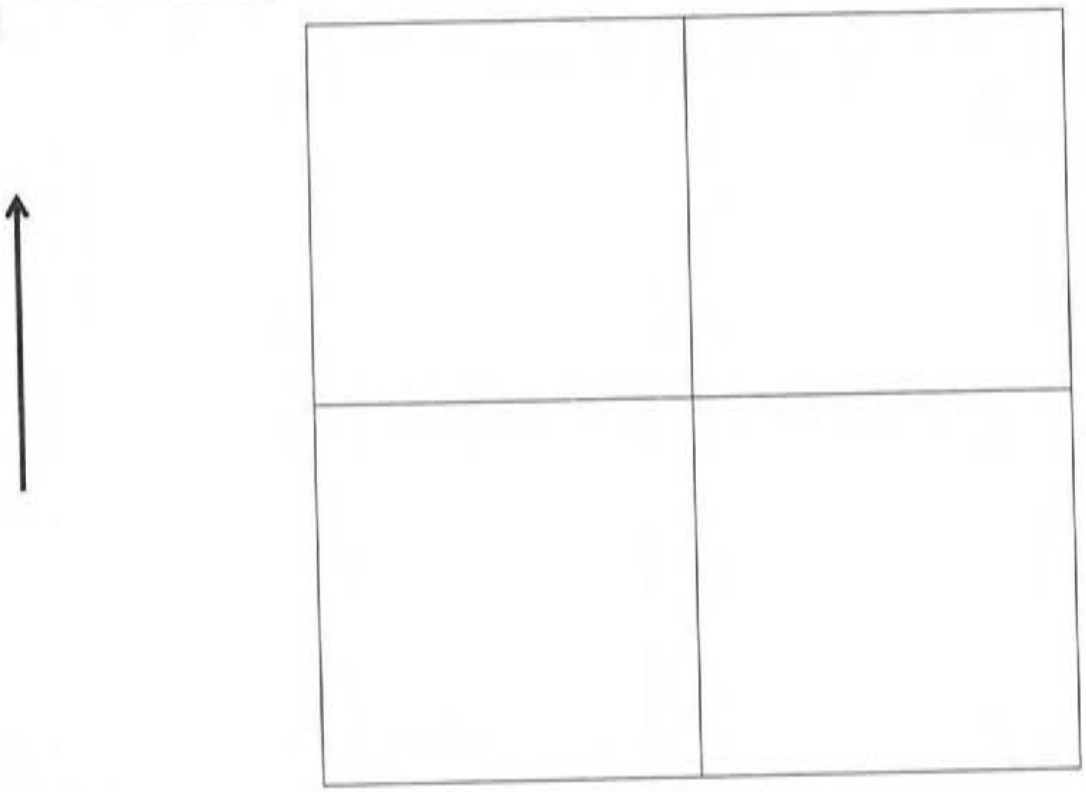
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other			
2	100	A1 A2 B Other			
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	207 Zone 11
Excavators	SOB [redacted] Jessaca Wigmore	Date 22/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	✓
Worthy of expansion? How?	✓
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting [redacted]	Northing [redacted]	
Soil landscape	Comeroo		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope %	

EXCAVATION wet sieved dry sieved

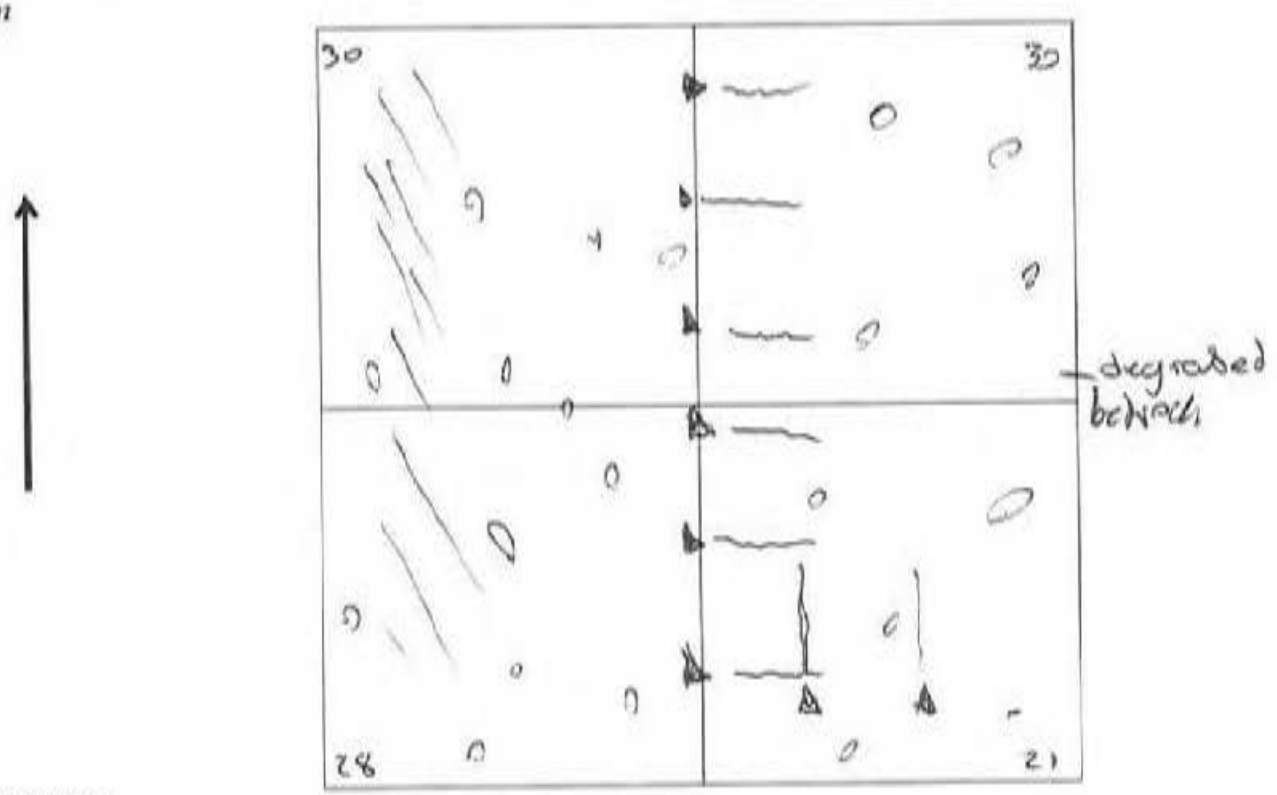
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other		✓	0
2	100	A1 A2 (B) Other		✓	0
	100	A1 A2 (B) Other		✓	0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	1	Eg. Gravels, sand, litter, evidence of disturbance etc. Scrub, grasses and clear signs of erosion
A1	1	Silt, sandy loam, compact composition includes 80% degraded bedrock granite, ironstone, siltstone, fine grass roots + causing some further disturbance to the bedrock
A2	2	same as above, stone is crumbly disturbed geology silty topsoil less roots granite siltstone, ironstone,
	3	limit of excavation [redacted] same as above bedrock layer gravel

Description of material below B or the limit of excavations

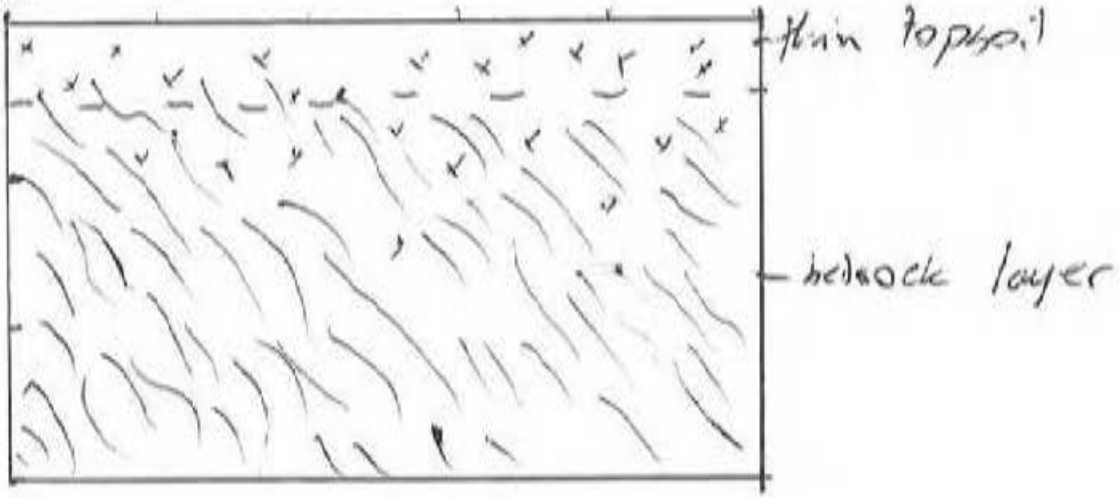
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

degraded bedrock, rubbles with crushed worn of broken gravels making upto 90% composition, there is silty loam ~~fine~~ mixed silt in the otherwise deposit, likely due to posturing of the survey area

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211/203
Excavators	AV, JOMS, DILCA	Date 22/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 40	

EXCAVATION wet sieved (dry sieved)

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	A1 A2 B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400				

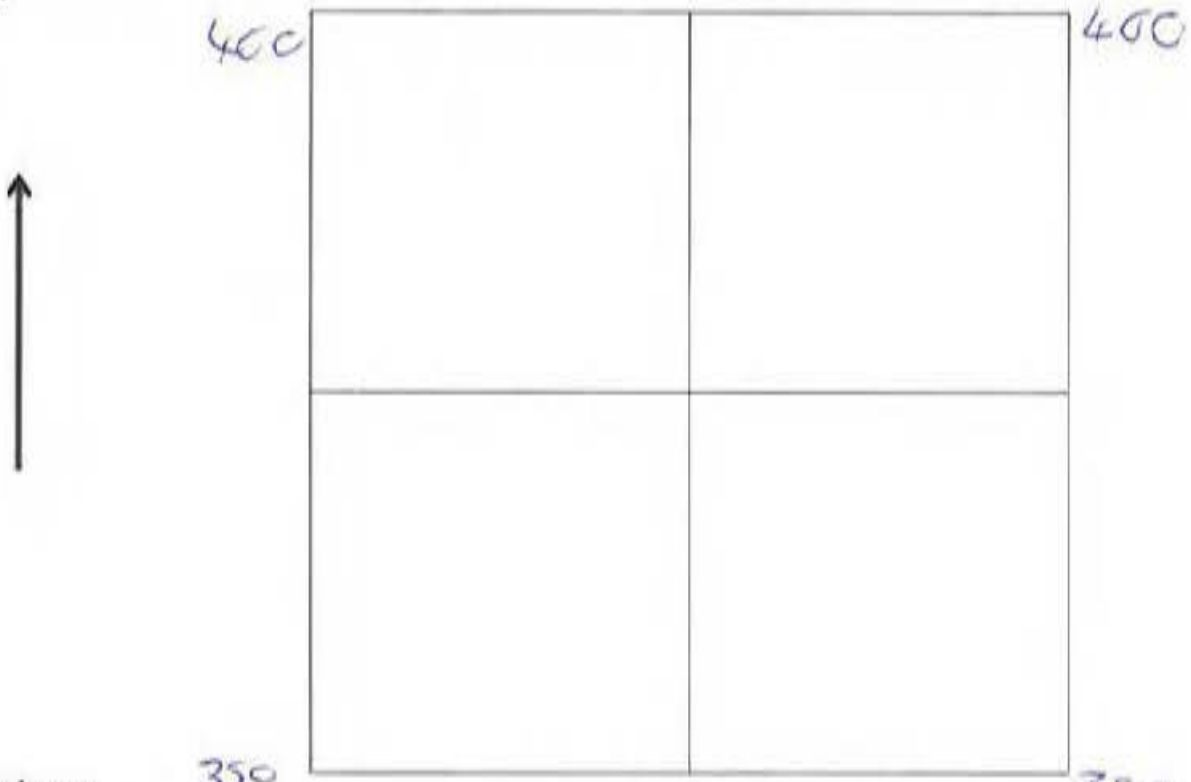
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg, Gravels, sand, litter, evidence of disturbance etc. GRASS, loose litter
A1		130cm Yellow Soft med brown silty sandy topsoil - occ. rock, occ. stick debris cm 15.
A2 B		Pale grey orange clayey silt w/ ceramic shard pieces and iron clay nodules

Description of material below B or the limit of excavations

Pale grey degraded bedrock.

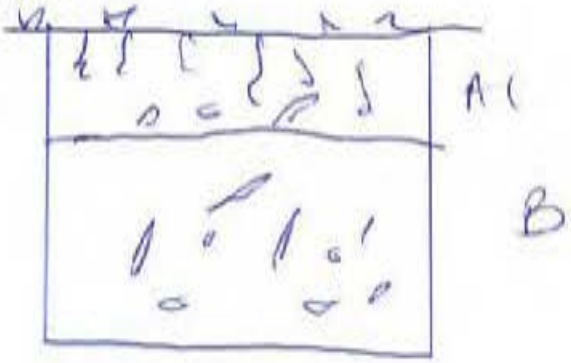
Plan



Spit drawn: END

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # 209 PHOTO # Zone 11
Excavators	Seb Imogine Chris	Date 20/5/19

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

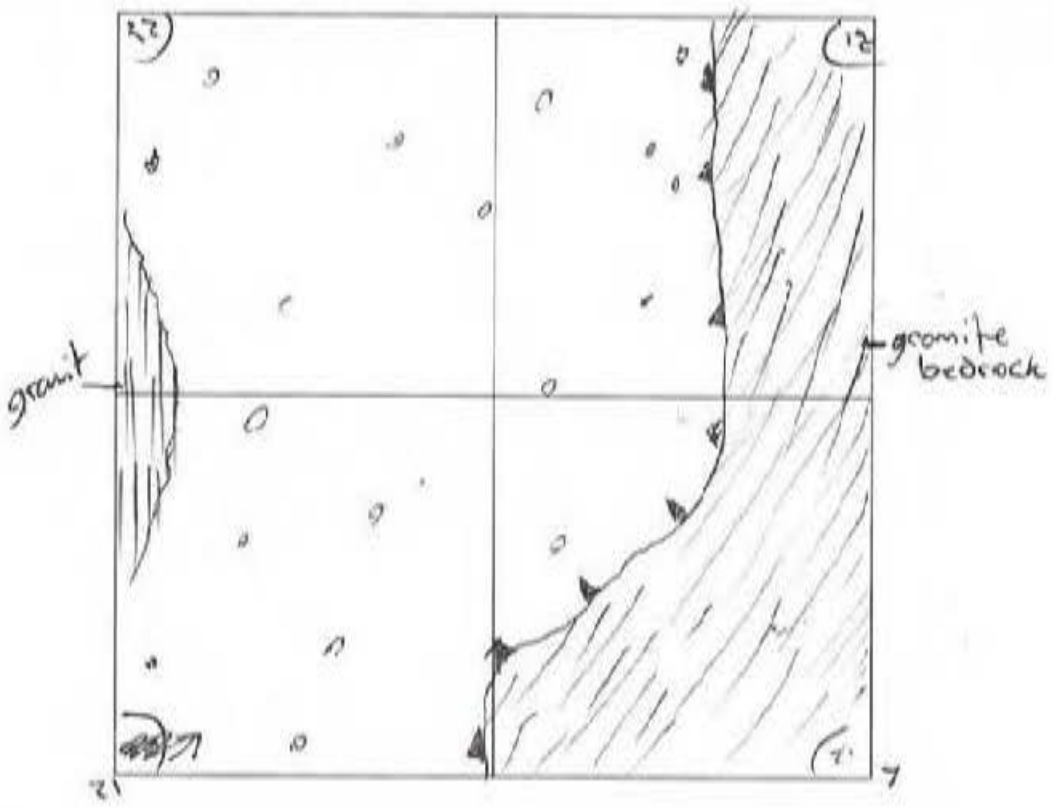
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100mm	A1 (A2) B Other			
2	100mm	A1 A2 (B) Other			
	30mm	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	Surface	Eg. Gravels, sand, litter, evidence of disturbance etc. Small shrubs, grasses, signs of grazing animals
A1	1	brown silty clay loam topsoil, ~~very~~ approx 5cm onto degraded granite bedrock, areas highly eroded
A2	2	Contuation into crumbly gravelly degraded granite, limit of site on the eastern section
	3	limit of excavation, degraded grated

Description of material below B or the limit of excavations

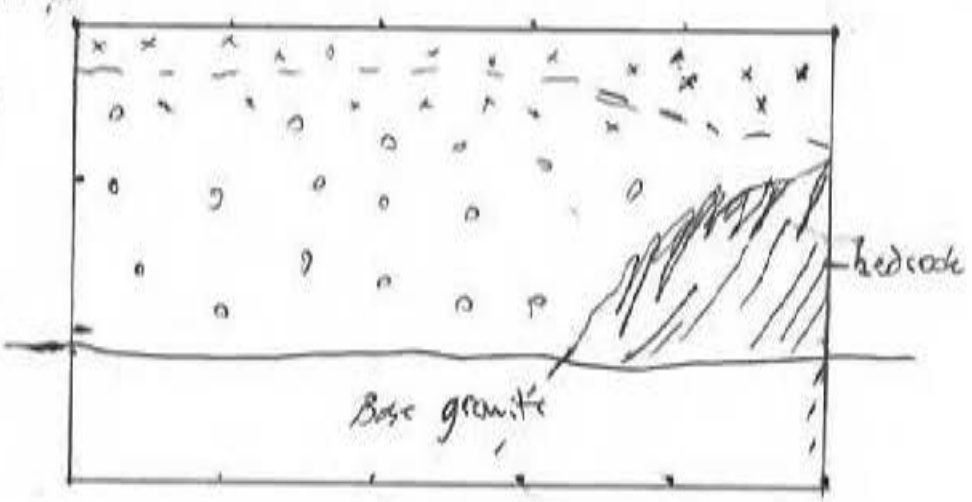
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11 TU: 205
Excavators	REBECCA V. // JOSH, MARNIE & DONNA ERGEIAN	Date 22.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	NATURAL ERASIAN
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐/☐☐☐	Northing ☐☐/☐☐☐☐	
Soil landscape	COOKFORD // ORAKVILLE - PF WORKED LOWER MID SLOPE OF HILL		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope %	20 - 30 %

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	0-100mm (CM/MES).	A1 (A2) B Other		V. SMALL QUARTZ FRAGMENTS (NATURAL + NON CULTURAL.)	Ø
2	100-200mm	A1 A2 (B) Other			Ø
	200-300mm	A1 A2 (B) Other → (C) @ BASE.			Ø
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

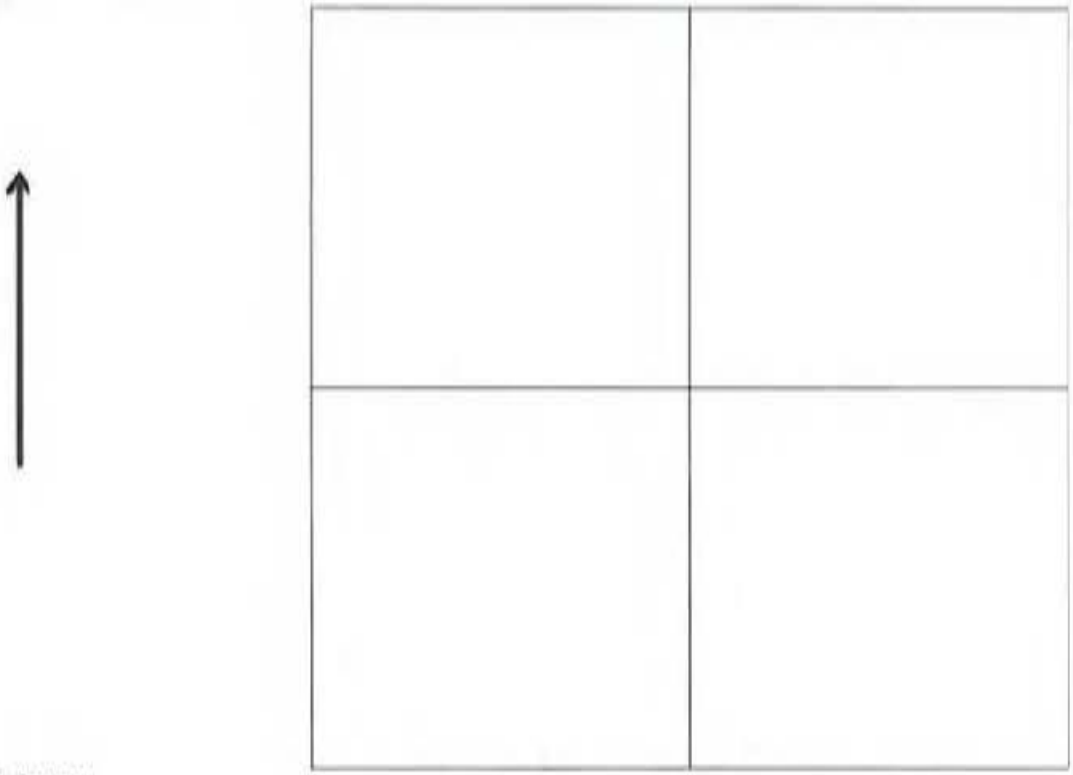
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. LOCATED ON LOWER MID SLOPE WITHIN MODERN AREA OF SHRUB (SANDSTONE + SILTSTONE) BOULDERS VISIBLE ATOP SURFACE. LOW LYING NATIVE BUSHES SURROUNDING IMMEDIATELY
~~A1~~ A2		V. ERODED THIN LENSE OF (A2) SANDY SILT INTERMIXED W/ V. DEGRADED SILTSTONE + SHALES (80-85%) AND INCREASING W/ DEPTH. BROWN IN COLOUR, FINE GRAINED + NUMEROUS ROOTLETS THROUGHOUT.
~~A2~~	B	TRANSITION INTO (B) IS GRADUAL TO ABRUPT. SILTY SAND W/ INCREASING AMOUNTS OF DEGRADED BEDROCK W/ V. OCCASIONAL INCLUSIONS OF QUARTZ (<3%). LESSENING W/ DEPTH.
	C	TRANSITION INTO (C) IS GRADUAL TO ABRUPT. SILTY SAND LESSENS DRAMATICALLY INTO A HORIZONTAL SERIES OF DEGRADED BEDROCK. YELLOWISH / RED BEDROCK INTERMIXED W/ RED SILTY SAND = LIMIT OF EX.

Description of material below B or the limit of excavations

AS ABOVE ↑

Plan

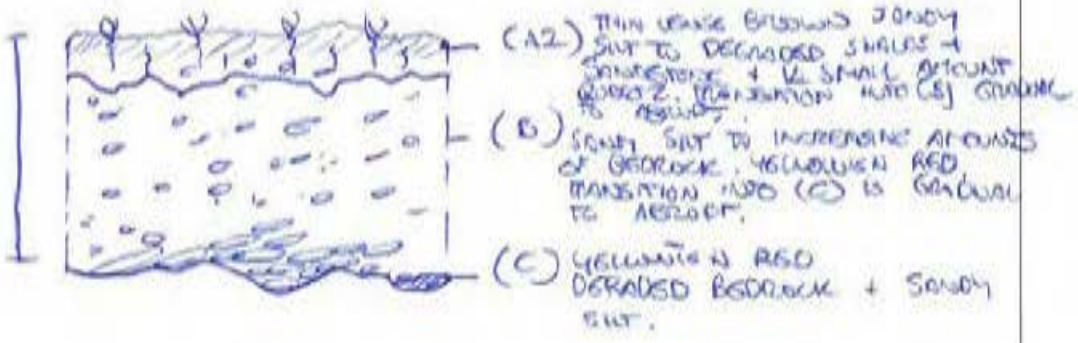


Spit drawn:

Section Plan

Face: WESTERN SECTION

Scale: 1:10 CM



KEY/ = GRASS ROOTS + ROOTLETS = SHALES + BEDROCK = MANY MINOR FINE ROOTLETS.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	Zone 11 Testpit 206
Excavators	Rebecca V. // Marnie + Norman Freeman	Date 21.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	Land clearing, grazing
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting [ ][ ][ ][/][ ][ ]	Northing [ ][/][ ][ ][ ][ ][ ]	
Soil landscape	Comerford / Oakville		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope % 10 %	

EXCAVATION wet sieved (dry sieved)

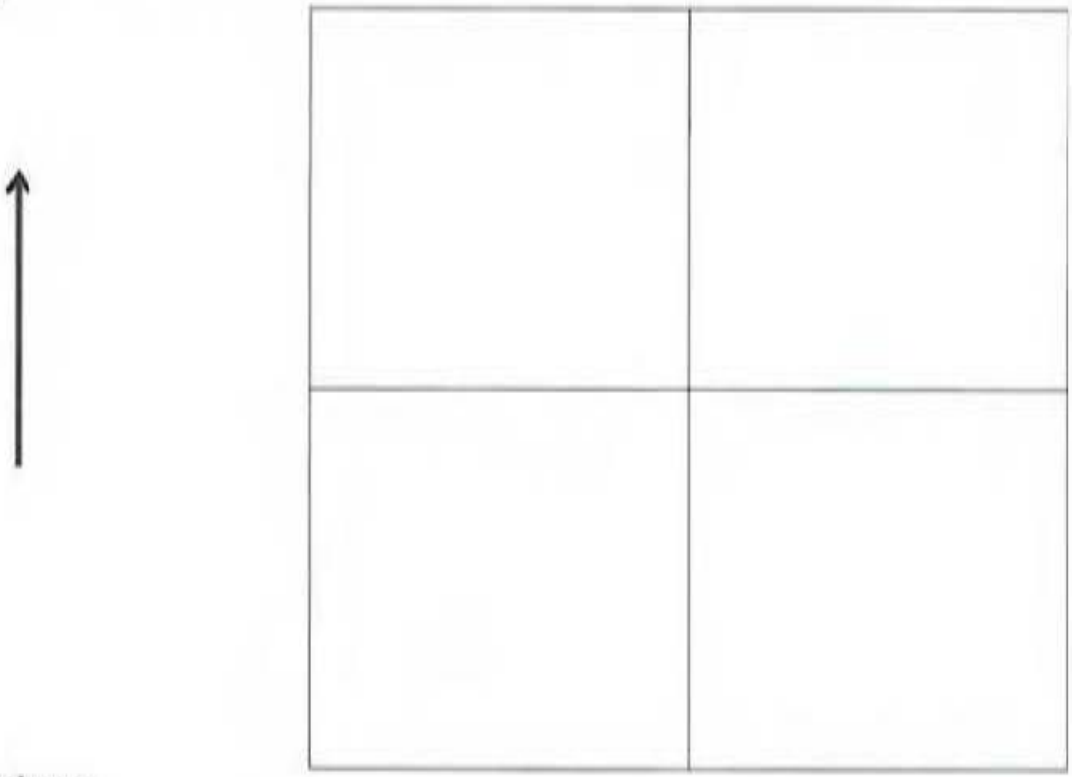
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	~~100~~ 0-100	A1 (A2) (B) Other			Ø
2	100-170	A1 A2 (B) Other			Ø
		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. Light grass covering - High density of siltstone - medium brown in colour - higher part of Hill
~~A1~~ (A)		BEDROCK OF SILTSTONE OR SANDSTONE (?) = STABLE RUNNING IN "SHEET" AND COMPLETE CONGLOMERATE ANGULAR ROCKS. (approx 95%) OF MATRIX. SMALL AMOUNT BROWN SANDY SILT WITHIN BEDROCK.
~~A2~~ (B)		TRANSITIONS INTO MORE DEGRADED AND COMPLETE SANDSTONE/SILTS (?) AT 17cm. THIS PIT WAS STOPPED DUG TO PRESENCE AND DEGRADED NATURE OF ROCK.

Description of material below B or the limit of excavations

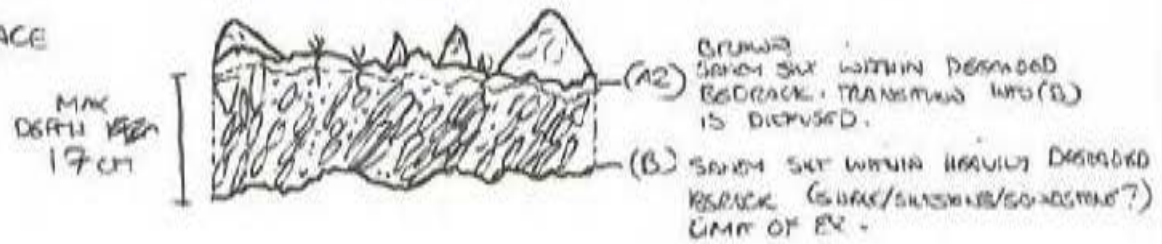
Plan



Spit drawn:

Section Plan

Face: NORTHERN FACE
Scale: 1:10



KEY = SHALES/SILTSTONE SANDSTONE (?) = BROWN SILT = GRASS/ROOTS

Further descriptions and relationships to other TU

PIT LOCATED WITHIN UPPER MID SLOPE OF GENTLE HILL CONTAINING LARGE SCATTER OF ROCK OUTCROP (SHALE/SANDSTONE/SILTSTONE?) VISIBLE ATOP LARGE AREAS OF THE SURFACE.
V. BARREN AND USED FOR CATTLE GRAZING. HEAVILY ERODED LANDSCAPE.

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11 TU: 207
Excavators	REBECCA V. & NORMAN + MARNIE FREEMAN	Date 21.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	EROSION + CATTLE GRAZING.
Worthy of expansion? How?	
Plan #	-
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	COOMBTHORD // OAKVILLE		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N (E) S W	Slope %	5–10%

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0–100–150 cm	A1 (A2) (B) Other	High Concentration of degraded shales increasing to base.		Ø
2	100 → 200 mm	A1 A2 B Other			Ø
	200 → 300 mm	A1 A2 B Other			Ø
4	300 → 3400	A1 A2 (B) Other (C)			Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

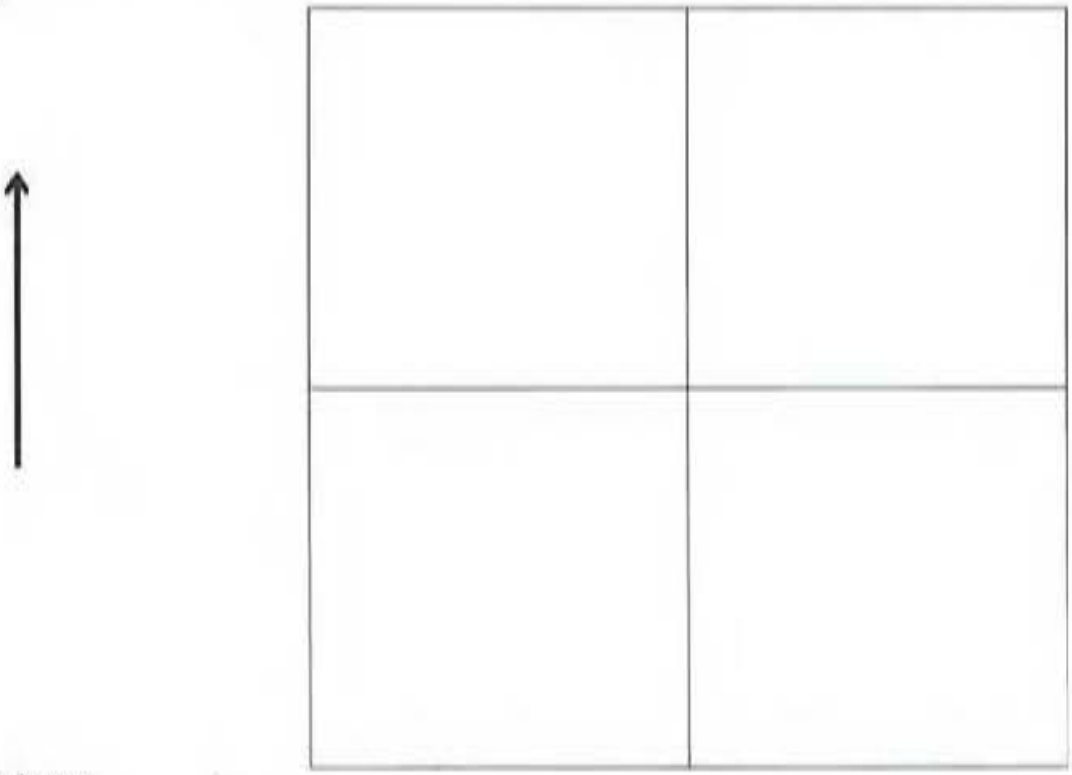
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
~~A1~~	A2	VERY ~~THIN~~ LENSE OF BROWN SANDY SILT. ~~TO~~ W LARGE INCLUSIONS OF DEGRADED SHALES (80–85%) + MANY ROOTLETS THROUGHOUT. TRANSITION IS IS GRADUAL INTO (B)
~~A2~~	B	LIGHT BROWN/PINKISH ~~SILT~~ SANDY SILT W INCLUSIONS OF SHALES + V. MINOR COMPONENT OF QUARTZ INCREASING W DEPTH. TRANSITION INTO (C) IS ~~ABRUPT~~ GRADUAL → ABRUPT.
	C	ORANGE–REDDISH SILTY SANDY CLAY W DEGRADED SHALES LESSENING W EMERGENCE OF CLAY.

Description of material below B or the limit of excavations

LIMIT OF EX DUE TO EMERGENCE OF CLAY.

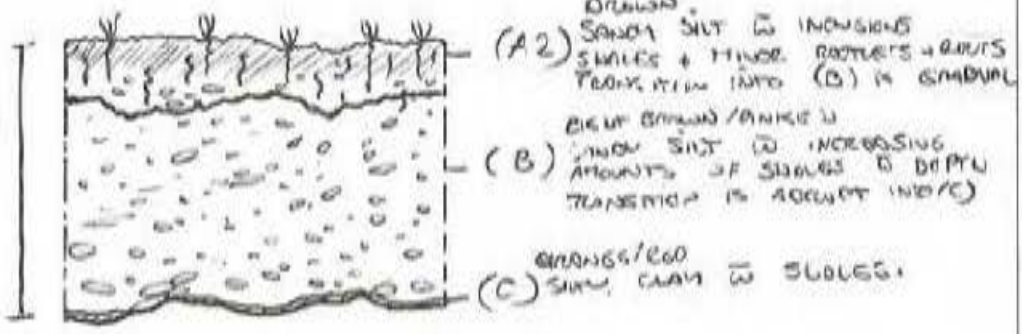
Plan



Spit drawn:

Section Plan

Face: NORTHERN SECTION
Scale: 1:10 cm.



KEY =
- = GLASS + ROOTS
- = SHELLS
- = CLAY
- = MAIN DARKENED AREA W FINE ROOTLETS

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11 TU: 208
Excavators	REBECCA V. + MARNE & NORMAN T.	Date 21.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	
Worthy of expansion? How?	NO –
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape	CROWTHERS // OAKVILLE ON UPPER MID SLOPE OF GENTLE HILL.		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S (W)	Slope % 5–10%.	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	Approx 0→50 & 100→150 (EASTERN SIDE)	A1 (A2) B Other			Ø
2	100 → 200	A1 (A2) → (B) Other			Ø
	200 → 800	A1 A2 (B) Other			Ø
4	300 → 400	A1 A2 (B) → (C) Other			Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

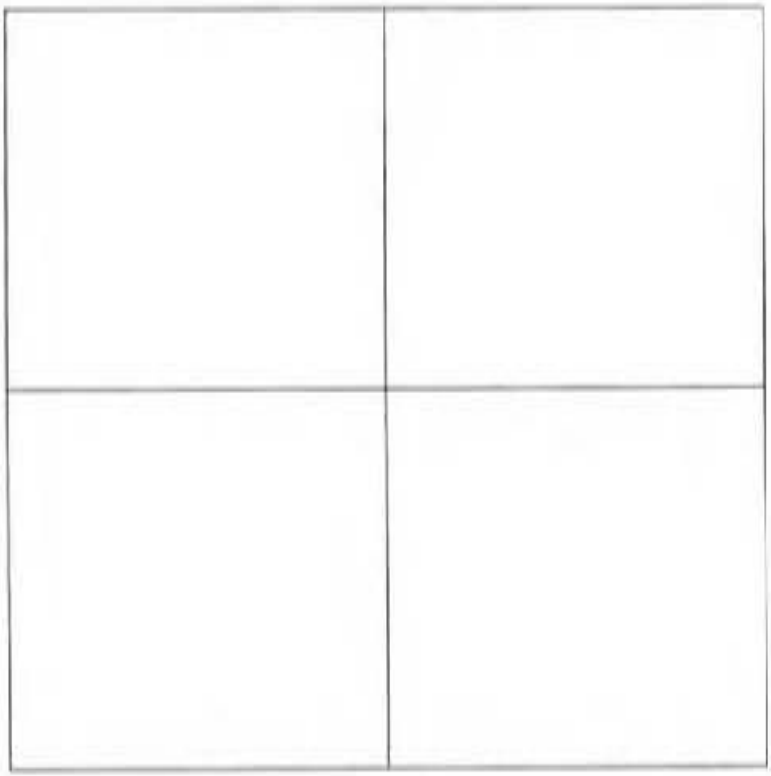
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
	EASTERN SIDE	UPPER MID SLOPE ~~VERY CLOSE~~ WITHIN 10-15M OF GRANITE OUTCROP. GRASS ATOP SURFACE (90% VISIBILITY)
~~A1~~ A2	0-15 cm	SI. BROWN FINE SILT WITHIN VERY ROCKY FILL COMPRISING OF DEGRADED SILTSTONE/SHALE + GRANIT (85%.) + V. MINOR QUARTZ COMPONENT (>1%). V. COMPACT IN PARTS + HARD TO DIG DUE TO THE DEGRADED NATURE OF SHALES.
	WEST 0-10 cm	
A2	(B)	TRANSITION INTO (B) IS GRADUAL.
	15CM - 39CM	LIGHT BROWN/SILIENT PINK SILT INTERMIXED WITH DEGRADED SHALES + SILTSTONE + V. OCCASIONAL QUARTZ.
		BEDROCK INCREASING WITH DEPTH & CLAY COMPONENT. INCREASING IN DEPTH.
	(C)	TRANSITION INTO (C) IS ABRUPT,
		ORANGE REDDISH SILTY CLAY W LARGE ~~HUE~~ INCLUSIONS OF V. DEGRADED AND BROKEN SHALES + SILTSTONE ALL INTERMIXED.

Description of material below B or the limit of excavations

BROKEN SHALES + SILTSTONE INTERMIXED W SILTY CLAY.

Plan

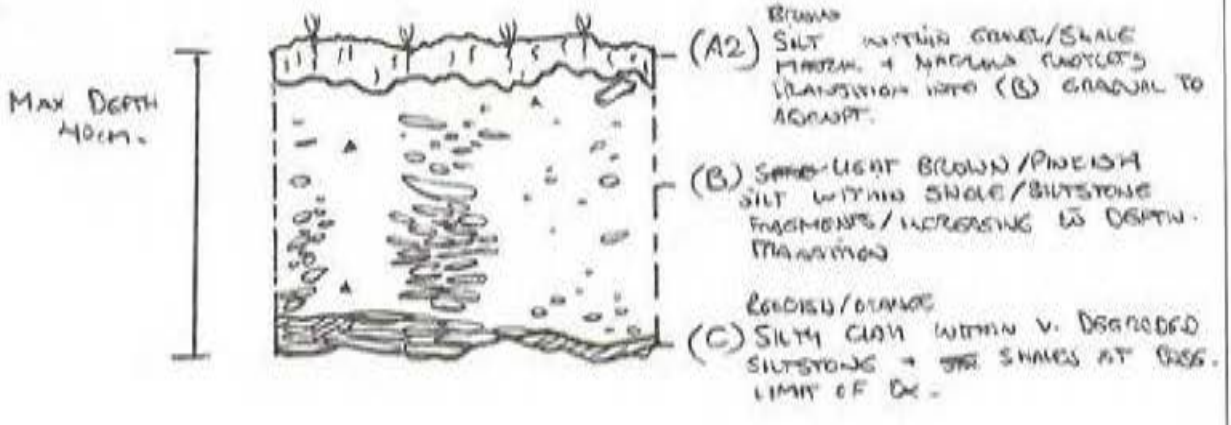


Spit drawn:

Section Plan N

Face: WESTERN SECTION

Scale: 1:10cm.



1661/ = GRASS + ROOTLETS , QUARTZ (NATURAL) = SHALES + SILTSTONES. = SILTY CLAY

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11 TU: 209
Excavators	REBECCA VARTTIO // NORMA & MARVIE FREEMAN	Date 21.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	Ø
Other evidence?	MID SLOPE OF LAND CLEARED AND DEGRADED SURFACE.
Worthy of expansion? How?	NO
Plan #	
Samples (description & number)	Ø

LOCATION

GPS *(for additional TU only)*	Easting	Northing	
Soil landscape	COMERFORD // OAKVILLE = PIT ON MID SLOPE OF HILL CONTAINING GRANITO BED ROCK		
Landform	Creek Bank / Terrace / Flat / (Slope → MID SLOPE) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S (W)	Slope %	5-10%

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-30-50mm Spade → 100mm	A1 (A2) (B) Other		QUARTZ COLLECTED.	Ø
2	100 → 200mm	A1 A2 (B) Other		(MOST PROBABLY NON-ARTIFACTUAL)	Ø
	200 → 300mm	A1 A2 (B) Other			Ø
4	(C) = 300 – 3900 3900 – 400	A1 A2 (B) Other			Ø
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

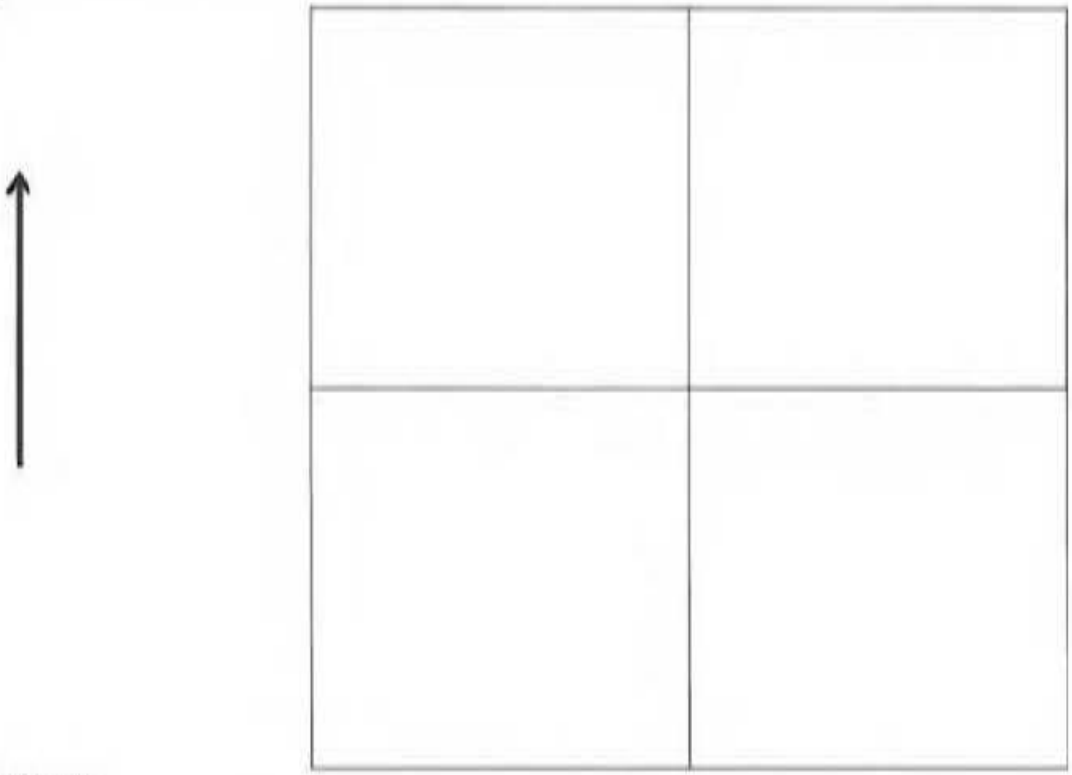
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. HEAVY DEGRADED & ERODED SURFACE. PIT ON MID SLOPE OF HILL. SPARSE LOW LYING GRASSES (VISIBILITY APPROX: 90-95%). LOOSE QUARTZ + GRAVELS ATOP SURFACE.
~~A1~~ A2	FIRT 3-5cm	VERY ERODED AND THIN LENSE OF SILT OVERLYING ANGULAR SILTSTONE + QUARTZ (90%) W NARROW ROOTLETS + V. SMALL HUMIC COMPONENT. BROWN, FINE GRAINED. TRANSITION INTO (B) IS GRADUAL.
~~A2~~ B	5cm → 38 cm	SLIGHTLY SAND SILT WITHIN NEVIUM DEGRADED. SILTSTONE & V. OCCASIONAL QUARTZ. SILTSTONE COMPRISES 90-95% OF MATRIX. SILT FINE GRAINED. SOME SMALL CONCENTRATIONS OF YELLOWISH CLAY W DEPTH. TRANSITION: (C) IS ABRUPT.
C	38 → 40cm	YELLOW/REDDISH EA SILTY CLAY INTERMIXED W DEGRADED ~~SILTSTONE~~ SILTSTONE AT BASE. V. COMPACT W MANY FINE GRAVELS (SILTSTONE THROUGHOUT) LIMIT OF EX. DUG TO CLAY + DEGRADED SILTSTONE SHEET AT BASE.

Description of material below B or the limit of excavations

YELLOWISH/RED SILTY CLAY W DEGRADED SILTSTONE.

Plan

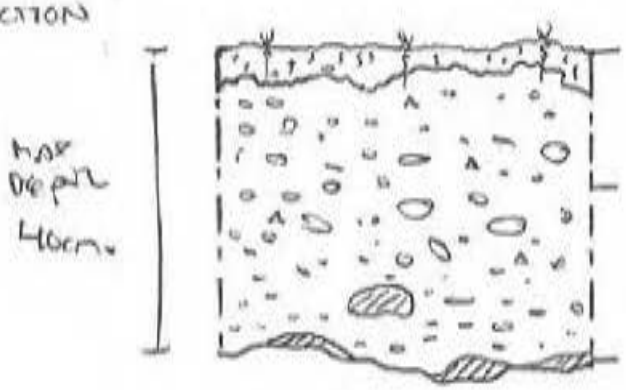


Spit drawn:

Section Plan → N

Face: WESTERN SECTION

Scale: 1:10 cm.



Key/ = YELLOWISH CLAY; = SMALL + ROOTLETS; = SILTSTONE; = QUARTZ FRAGMENTS

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	210 Zone 11
Excavators	Seb- chris imogen	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape	Comer Ford		
Landform	Creek Bank / Terrace / Flat / (Slope) Ridge Line / (Hill Crest) / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

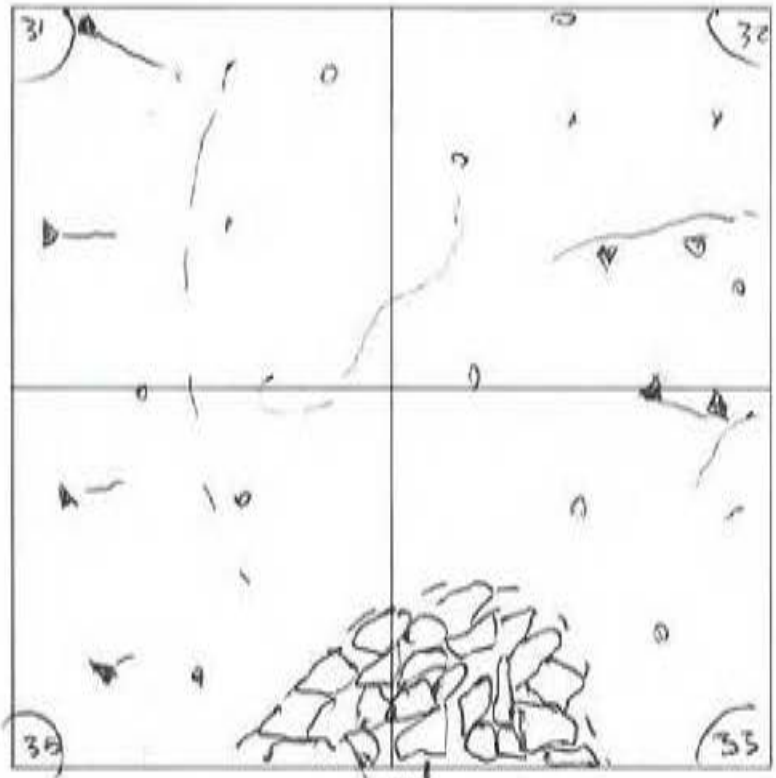
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100mm	A1 (A2) B Other			
2	100mm	A1 A2 (B) Other			
3	100mm	A1 A2 (B) Other			
4	50mm	A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer	1	Eg. Gravels, sand, litter, evidence of disturbance etc. gravels degraded granites quarts and siltstone is 80% across site
A1	1	silt/quartz granite siltstone sand mixed with flakes of rocks stones granites are an 80% spread over site
A2	2	changes to a yellowish red brown friable silt with continued 80% scattered stone granite and siltstone inclusions clearly naturally occurring
	3	transitional layer of silty clay compact with similar inclusions plus siltstone gravels onto 70 base clay
	4	only was 5cm base clay yellowish red mottled with siltstone embedded + other gravels

Description of material below B or the limit of excavations

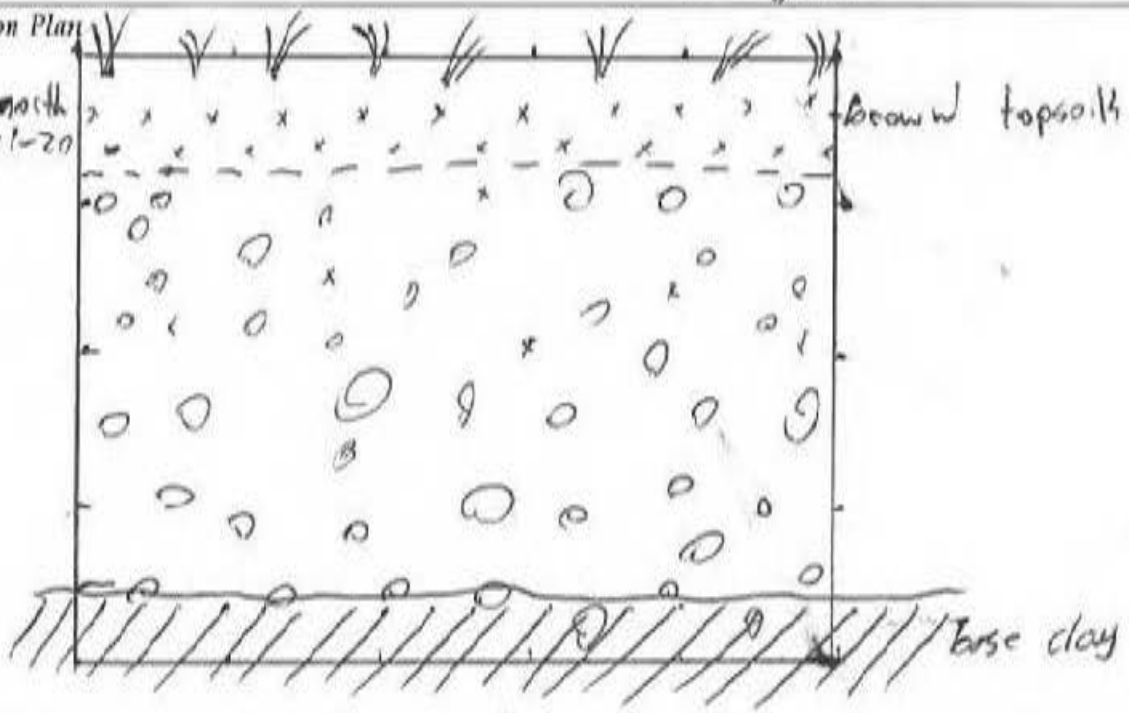
Plan



Spit drawn:

Section Plan

Face: north
Scale: 1-20



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211 - Zone 11
Excavators	Seb Imrie Chris	Date 20.5.19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐
Soil landscape		
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / (Hill Crest) / Swamps / Depressions / Rock Outcrops / Other	
Aspect	N E S W	Slope %

EXCAVATION wet sieved dry sieved

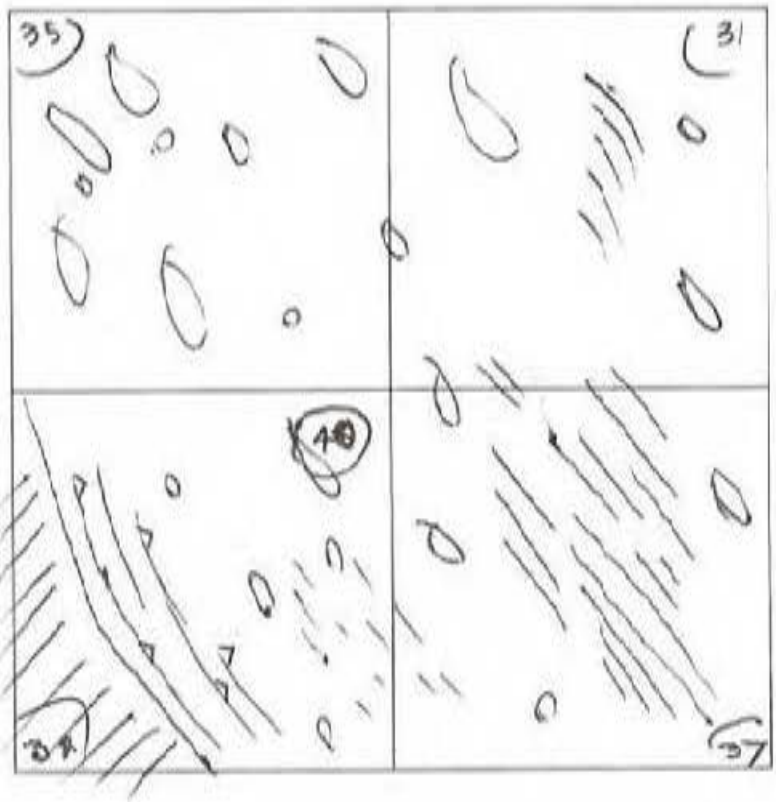
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100mm	(A1) A2 B Other			
2	100mm	A1 (A2) B Other			
	100 mm	A1 (A2) B Other			
4	80 mm	A1 A2 (B) (Other)			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. igneous rock scatter, eroded
A1	2	Sandy Clay, Friable, Compact Site Composed of mostly Stone Fragments 80%+ approx 100mm by 100mm reddish brown
A2	2	fine silts intermixed with degraded granite quartz and siltstone shale and fragments. 80% spread no changes to soil surface vegetation had roots running down approx 200mm
	3	continuing 80% degraded stone, granite bedrock, silt with fines from decomposing bedrock
	4	onto a C Horizon. limit of excavation limited granite plated bedrock

Description of material below B or the limit of excavations

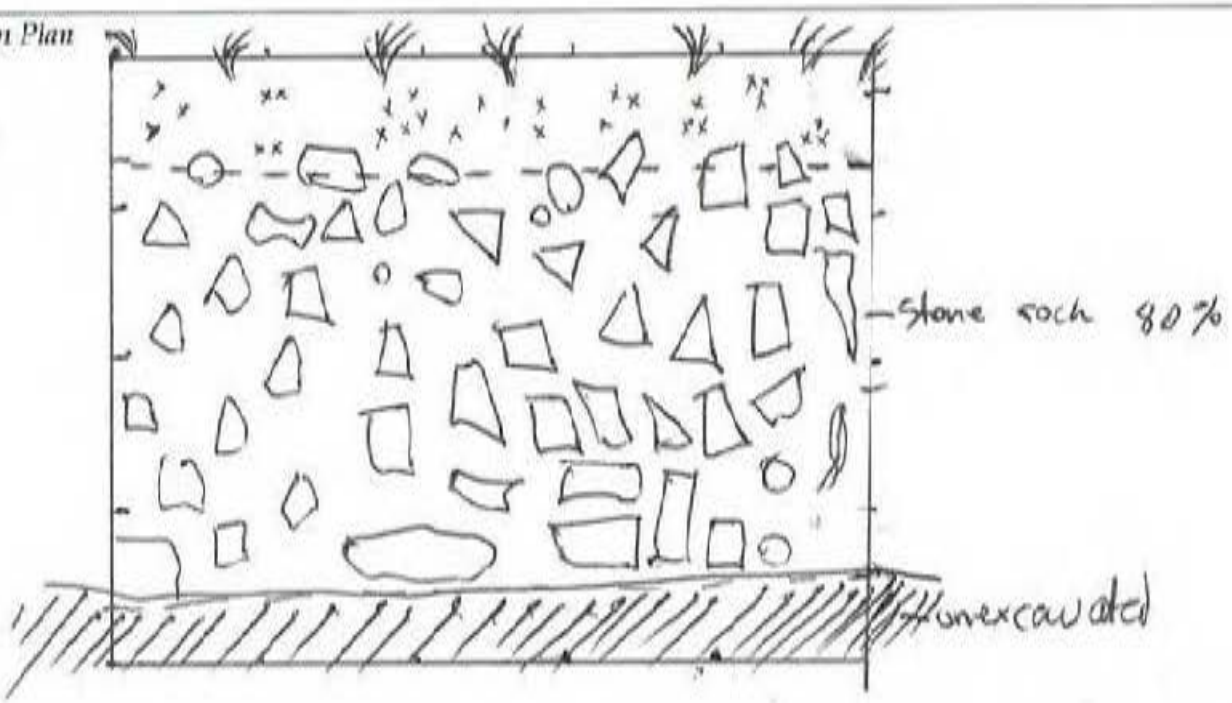
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

silts, occasional, topsoils almost non existent

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal **Aboriginal Excavation – Job #:17-0169A**		**TEST UNIT # PHOTO #**	212 Zone 11
Excavators	Sebastian Chris Imigine	Date 20/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

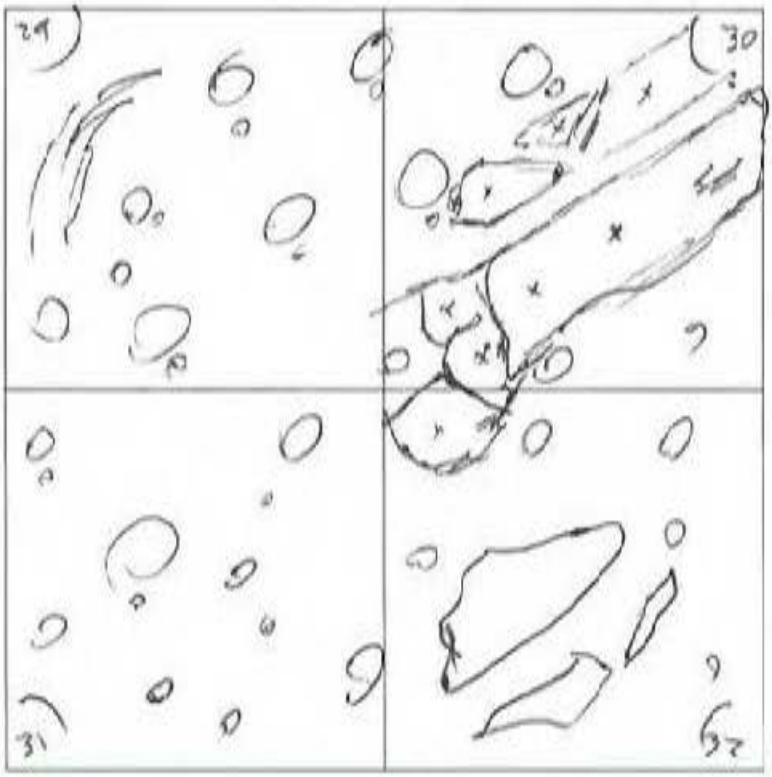
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		A1 (A2) B Other			0
2		A1 (A2) (B) Other			0
		A1 A2 (B) Other			0
4		A1 A2 (B) Other			0
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	silt, gravels + ironstone, siltstone, granite fragments upto 10×8cm Eastern face has siltstone bedrock outcrop into section gravels throughout of the same material
A2	2	silt, composed 80% of stone bedrock fragments, erosioned eastern face outcrop continues into Spit 3
	3	onto degraded bedrock + crumbling silty clay the outcrop also continues to wards the west section. limit of excavation

Description of material below B or the limit of excavations

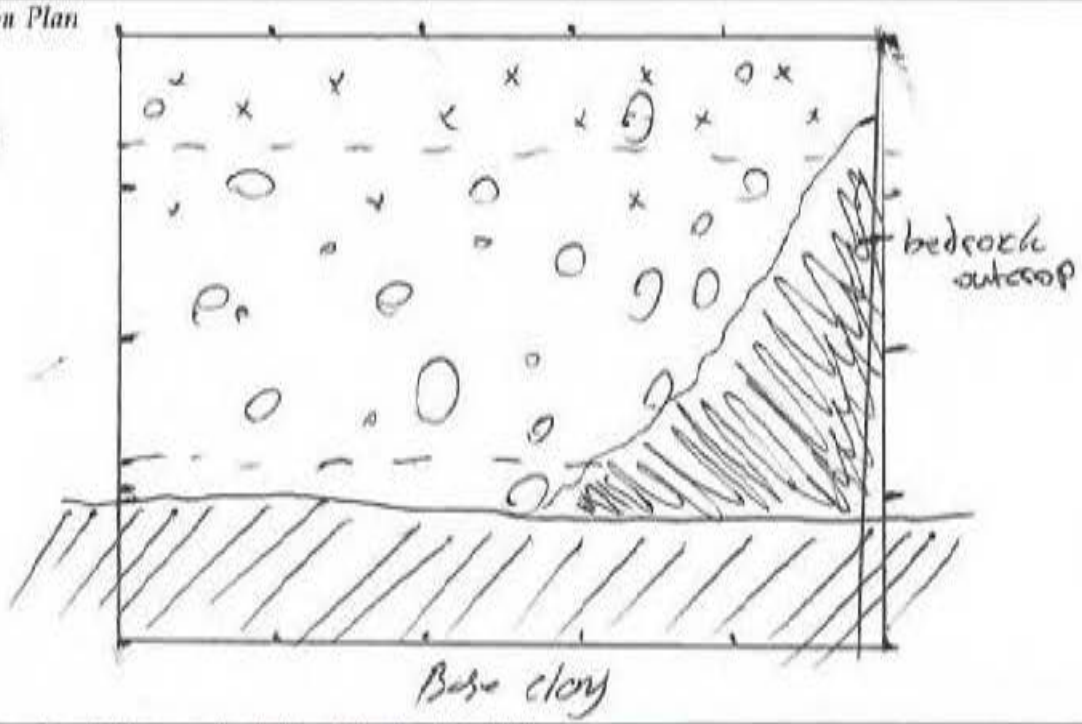
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11, TU. 213
Excavators	SARAH, LORRAINE, LARA.	Date 21/5/2019	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N-NE) E S W	Slope %	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon (c. 10-15 cm)	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1 (0-10)	100	(A1) A2 B Other			N/A
2 (10-20)	100	(A1) (A2) B Other			N/A
(20-30)	100	A1 (A2) B Other			N/A
4 (30-40)	100	A1 (A2) B Other			N/A
5 (40-50)	100	A1 (A2) (B) Other			N/A
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

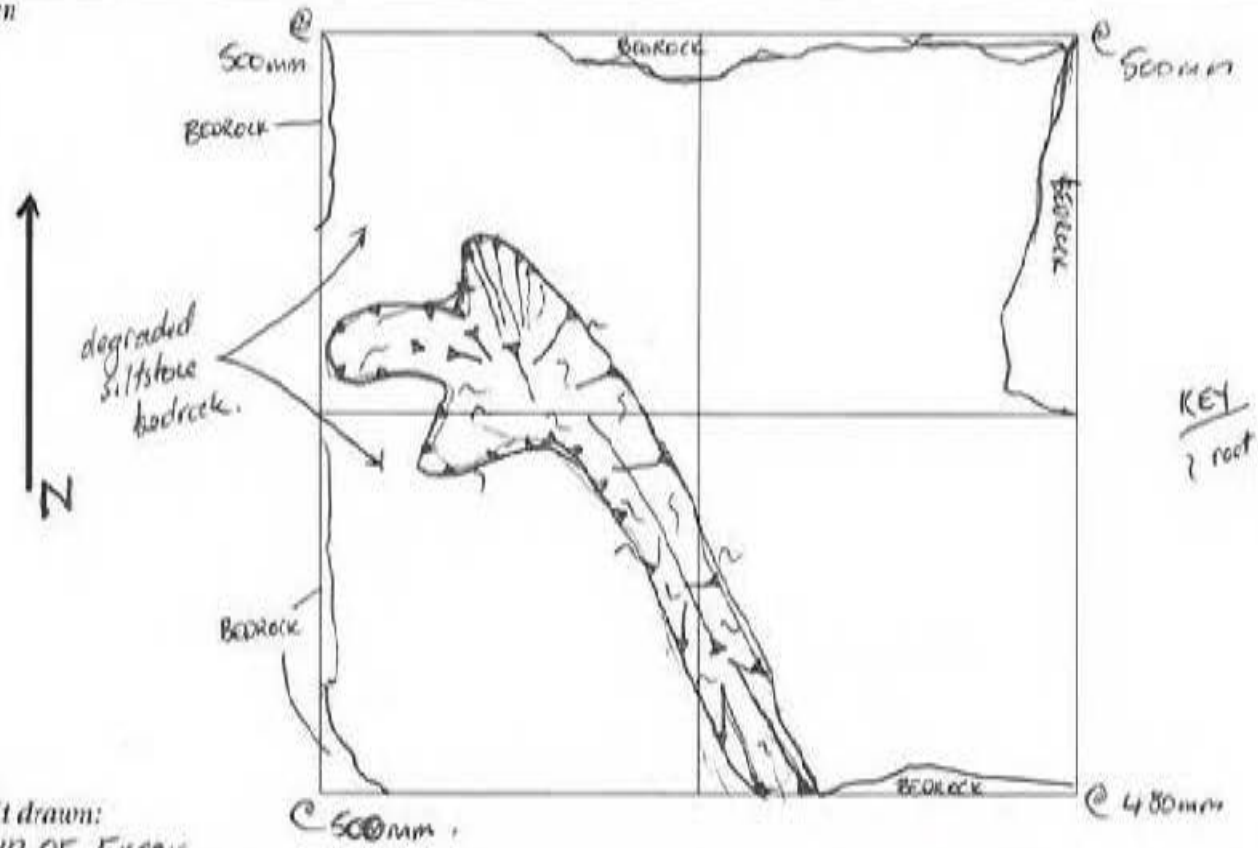
SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = sparse to moderate grass/weed cover; fine humic component.
A1	SPIT 1	A1 = Slightly yellowy brown fine, soft sandy clay loam. Very fine to fine root inclusions c. 40%. Yellow and white siltstone inclusions, fine to coarse gravel and cobbles c. 40-50%. Fine charcoal inclusions c. <1%. A1 deposit present to depth of c. 10-15cm, varies according to side of TU. Deeper (c. 15cm) on the N+N sides of the TU.
A2 + A1	SPIT 2	A clear horizon change to A2 below at c. 10-15 cm to medium change occurs over 2-3cm width depth. A2 = a mid grey brown, soft, fine silty clay loam. Fine charcoal inclusions c. 5%. Fine to very fine root inclusions c. 40%. Yellow siltstone fine to coarse gravel + cobble inclusions c. 40-50%. Fine quartz gravel inclusions very rare.
A2	SPIT 3	As spit 2 above; fine to very fine root inclusions c. 25% - 40%. Fine charcoal inclusions c. 2%, coarse charcoal inclusions rare. Siltstone cobbles + fine to coarse gravel c. 40%. Degraded pinkish-orange siltstone chunk degraded in N section, and degrading siltstone bedrock (yellow/pink/white) in N section/N side of TU/S + S section of TU also the NW corner of TU.
A2	SPIT 4	As spit 3 above; root inclusions (fine to very fine) c. 10-15%. Charcoal inclusions (fine) c. <1%. Siltstone fine to coarse gravel + small cobbles c. 15% degrading siltstone bedrock (yellow/white/pink) present on all edges of TU. and the base are not degrading bedrock!
A2	SPIT 5.	As spit 4 above. Very fine to fine root inclusions c. 5%, charcoal (fine) inclusions <1% (rare). Siltstone fine to coarse gravel + cobbles c. 5-10%. Degrading siltstone bedrock / siltstone bedrock fragments present along all edges of TU. A black, fine silty stripe of c. 5cm long x 15cm wide, running N-S through (approx.) centre of TU, on excavation, appears to be where a tree root once
BASE		Description of material below B or the limit of excavations Spit with decayed bone fragments and very fine roots (c. 5-10%) present. At depth of 50cm, a degraded siltstone bedrock, friable and crumbly.
BASE =		Yellow/pink/white/orange degraded/decayed siltstone bedrock. Friable and crumbly, some larger chunks intact. A silty stripe (black, soft), where a tree root once sat (see above). Excavated [illegible]

degrading siltstone bedrock (yellow/pink/white) visible along S section and present along S edge of TU.

black silt stripe extended to SE corner, divert is N section to S section

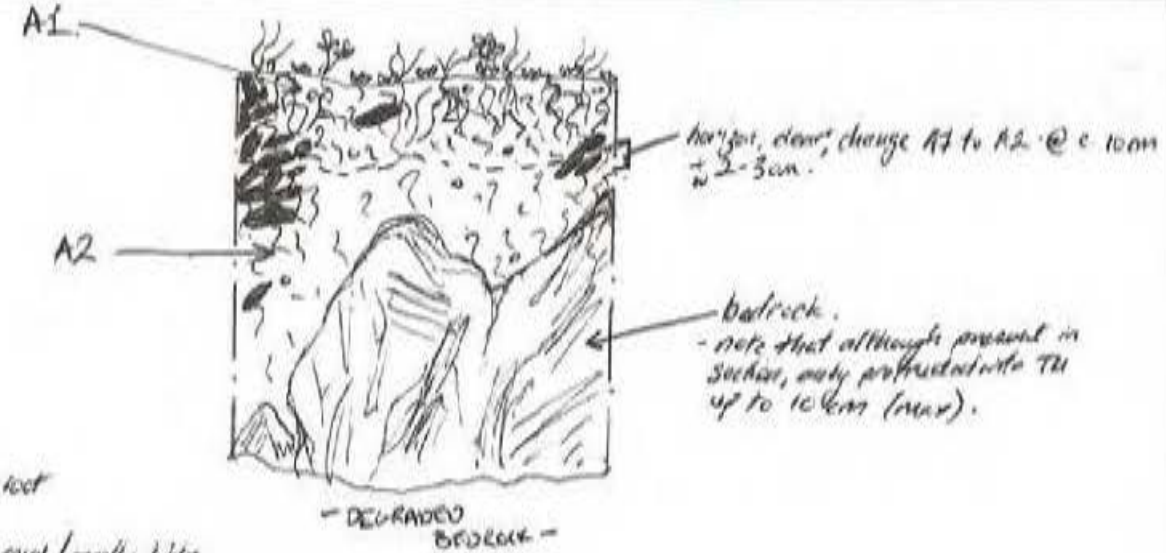
Plan



Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:10



KEY:

? very fine to fine root inclusions.
● Stable Silt/s tone gravel/small cobbles.
○ charcoal inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211, 214
Excavators	AP, Jane Pilley	Date 21/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope % 20	

EXCAVATION wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6	100	A1 A2 B Other			
7	40	A1 A2 B Other			
Totals	640				

SOIL DESCRIPTION

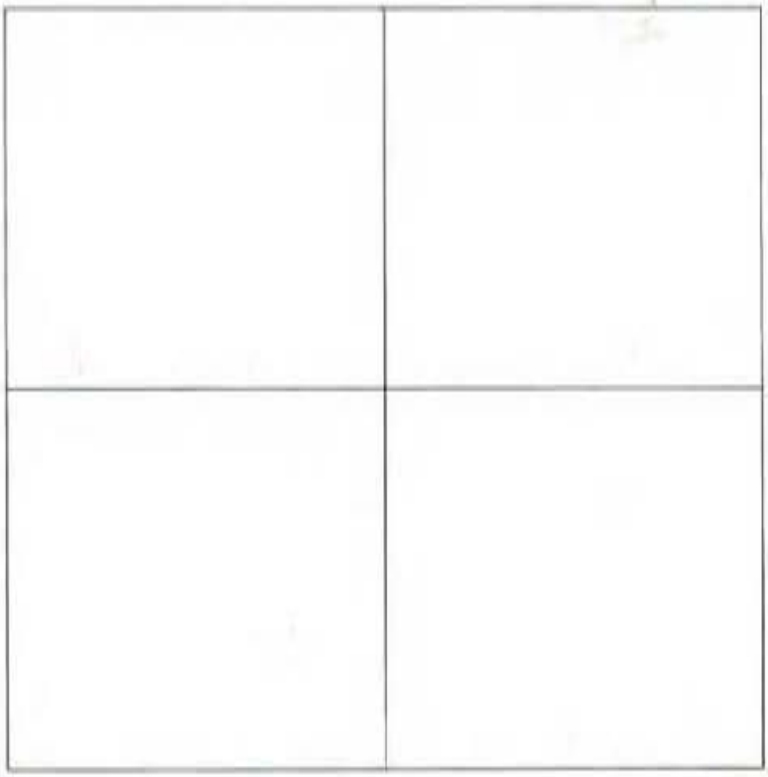
Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
~~A1~~		
A2	140 1-2	140cm Brn sandy silty topsoil, occ root disturbance, freq flat shale pieces.
B	2-~~7~~	orange grey sandy w/ freq shale pieces clay at base.

Description of material below B or the limit of excavations
Degraded bedrock

Plan

540

540



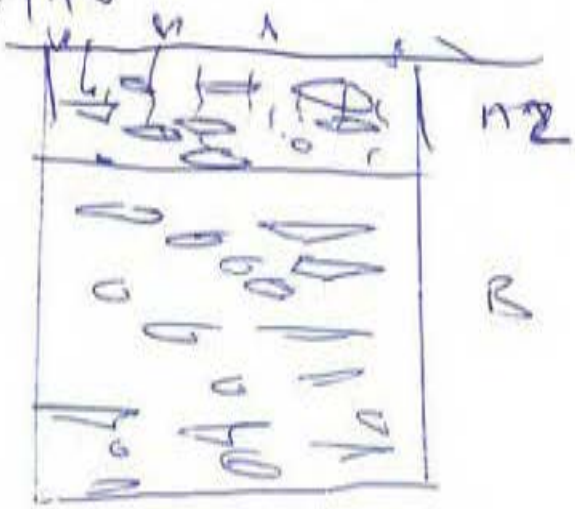
Spit drawn: 640

510

Section Plan

Face: W

Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	ZONE 11, TU 215
Excavators	SARAH, ADAM, LARA, LORRAINE	Date 21/5/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	0
Other evidence?	N/A
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N-NE) E S W	Slope %	

EXCAVATION wet sieved dry sieved

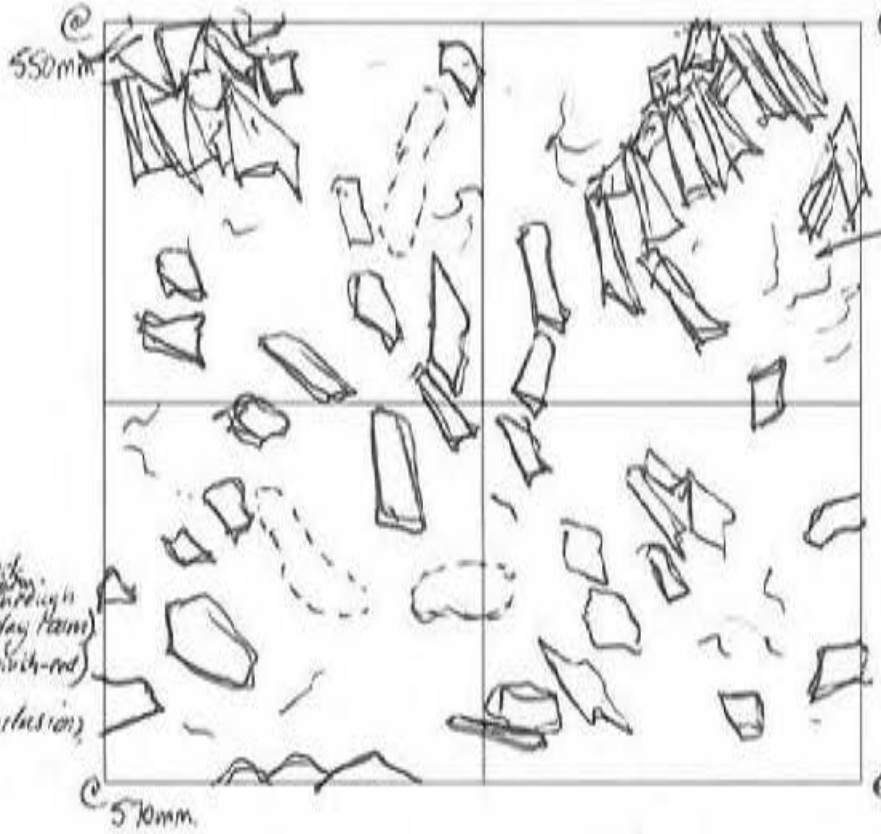
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
0-10 1	100	(A1) A2 B Other			N/A
10-20 2	100	A1 (A2) B Other			N/A
20-30	100	A1 (A2) B Other			N/A
30-40 4	100	A1 (A2) B Other			N/A
40-50 5	100	A1 (A2) (B) Other			N/A
6	70 (max)	A1 A2 (B) Other			N/A.
7		A1 A2 B Other			
Totals	570 (max).				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. SURFACE = sparse to moderate grass and weed cover, fine humic component. A1 = a mid yellowish-brown, fine, soft sandy clay loam. Very fine to fine root inclusions c. 40%.
A1	SPIT 1	Siltstone gravel (fine to coarse) + cobbles c. 40%. Clear horizon change to more reddish coloured A2 at c. 10cm depth, ~~varying from~~ (c. 9–13 cm depending on part of TU).
A2	SPIT 2	A mid, slightly reddish-brown fine, soft sandy clay loam. Fine to very fine root inclusions c. 25–40%. Fine to coarse siltstone gravel + cobbles c. 50%. Slightly increasing clay content w depth, and deposit increasingly red with depth, & diffuse horizon, c. 15–40 cm depth.
A2	SPIT 3	As spit 2 above but increasingly red in colour and slightly more clayey. Very fine root inclusions c. 20%. Siltstone gravel (fine to coarse) + cobbles c. 40–50%. Clear horizon change at c. 35–40cm to more compact, red sandy clay loam, increas
A2	SPIT 4	As spit 3 above, increasingly red in colour + slightly increased clay content. Fine root inclusions c. 10–15% Siltstone gravel (fine to coarse) + cobbles c. 25–40%. ~~clear horizon change at a~~ Compact, rather than "soft, with a higher clay content.
A2 B.	SPIT 5	As spit 4 above, compact, red, sandy clay loam. Very fine root inclusions c. 2–5%. Siltstone fine to coarse gravel + cobbles ~~c. 15%~~ c. 15%.
Description of material below B or the limit of excavations		
B/C	SPIT 6	As spit 5 above. Very fine root inclusions c. 1–2%. Comes down to a degraded bedrock at c. 550mm (corners) and c. 600–640 in centre of TU.

BASE = A degraded siltstone bedrock and compact, red, sandy clay loam, with small patches of a brown-red sandy (friable) clay. Very fine root inclusions c. 1–2%.

Plan

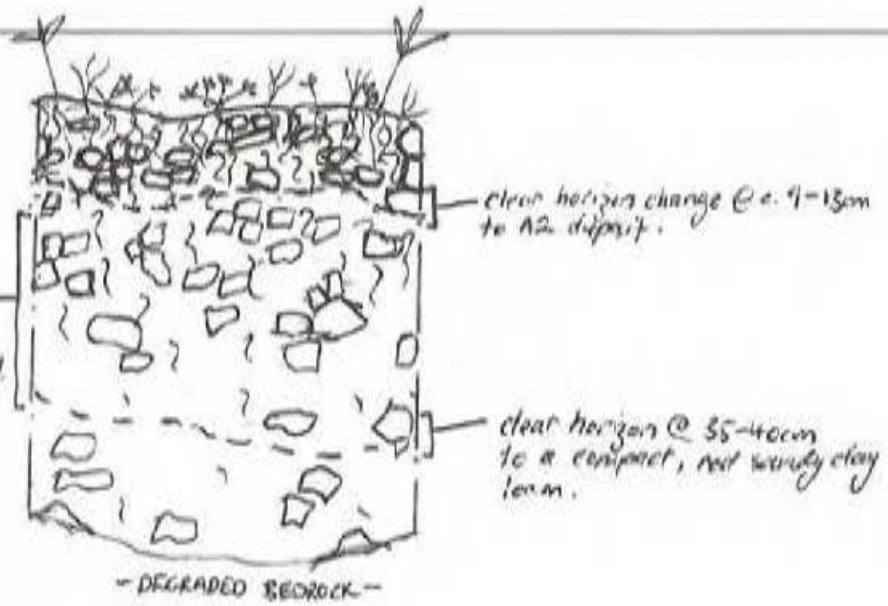


KEY:
- Siltstone bedrock (where it shows through the red sandy clay loam)
- Sandy clay (brownish-red)
- ? very fine root inclusions

Spit drawn:
END OF EXCAV.

Section Plan

Face: N
Scale: 1:10



KEY:
- siltstone cobbles/gravel
- ? fine to very fine root inclusions.

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211216
Excavators	AR, James, Dillon	Date 21/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS *(for additional TU only)*	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 4 0	

EXCAVATION wet sieved (dry sieved)

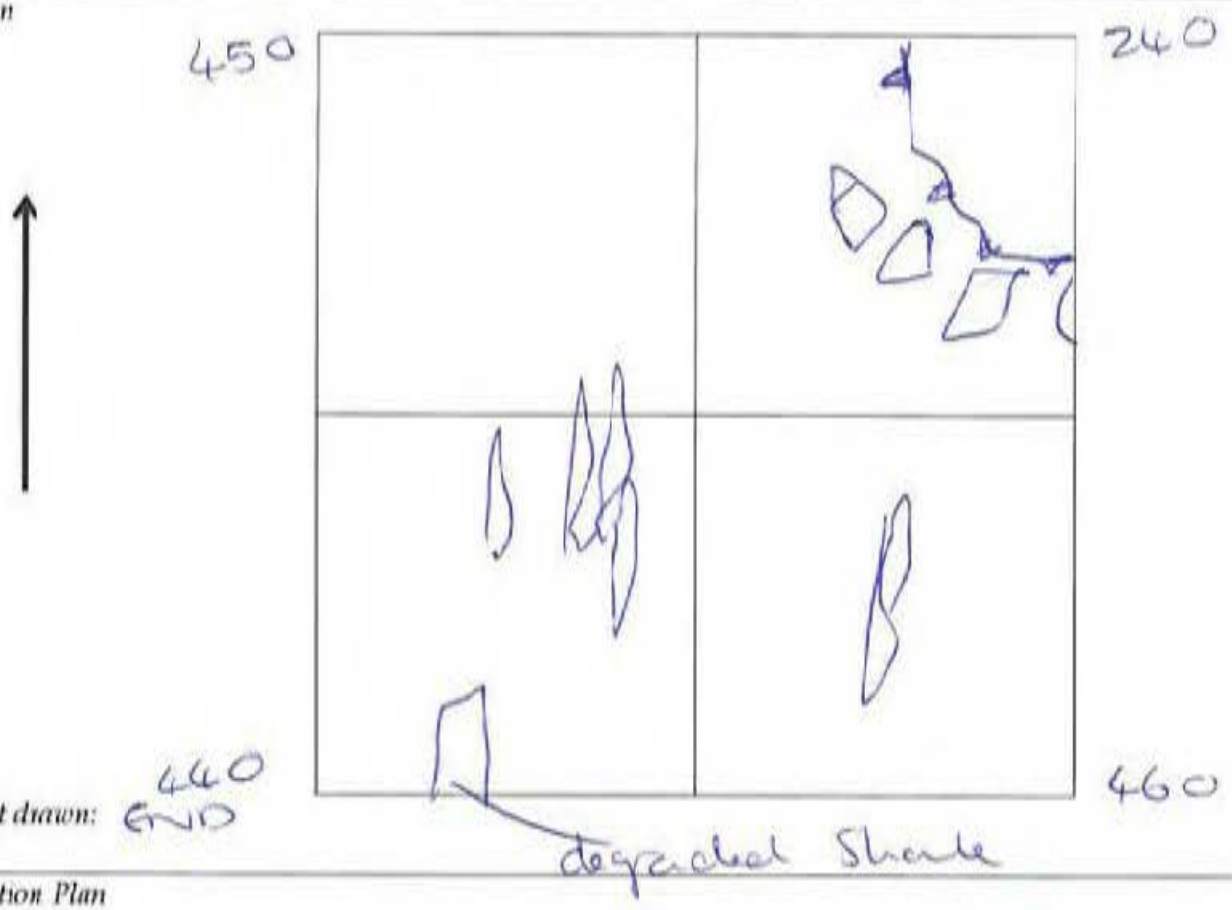
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other			
2	100	(A1) A2 B Other			
3	100	A1 A2 B Other			
4	100	A1 A2 B Other			
5	100	A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	500				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1 M1		170mm Mid DRY MID BROWN SANDY SILTY TOPSOIL, FREQ. RED AND PURPLE FINE STONE PIECES, OCCT ROOTS.
A2 B		ORANGE SANDY COARSE GRAVEL. FREQ RED and PURPLE FINE STONE PIECES. CLEAR onto degraded STONE Pedocrete
B		

Description of material below B or the limit of excavations

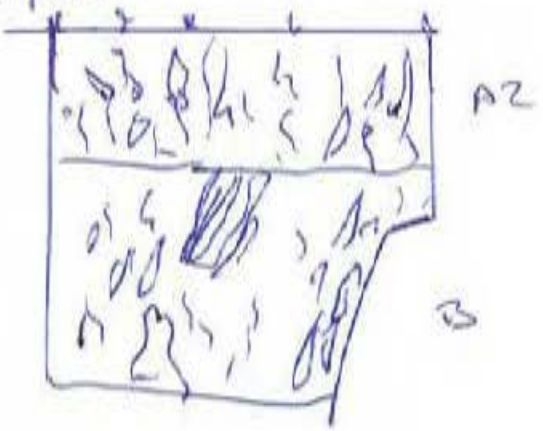
Plan



Spit drawn: END

Section Plan

Face: N
Scale: 1:10



S = sands
Δ = shale

Further descriptions and relationships to other TU

Project Name: ARTC Inland Rail Phase 2 Illabo to Stockinbingal Aboriginal Excavation – Job #:17-0169A		TEST UNIT # PHOTO #	211-217
Excavators	AP, James, Dilla	Date 21/05/19	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	
Other evidence?	
Worthy of expansion? How?	
Plan #	
Samples (description & number)	

LOCATION

GPS (for additional TU only)	Easting ☐☐☐☐☐☐	Northing ☐☐☐☐☐☐	
Soil landscape			
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	(N) E S W	Slope % 30	

EXCAVATION wet sieved dry sieved

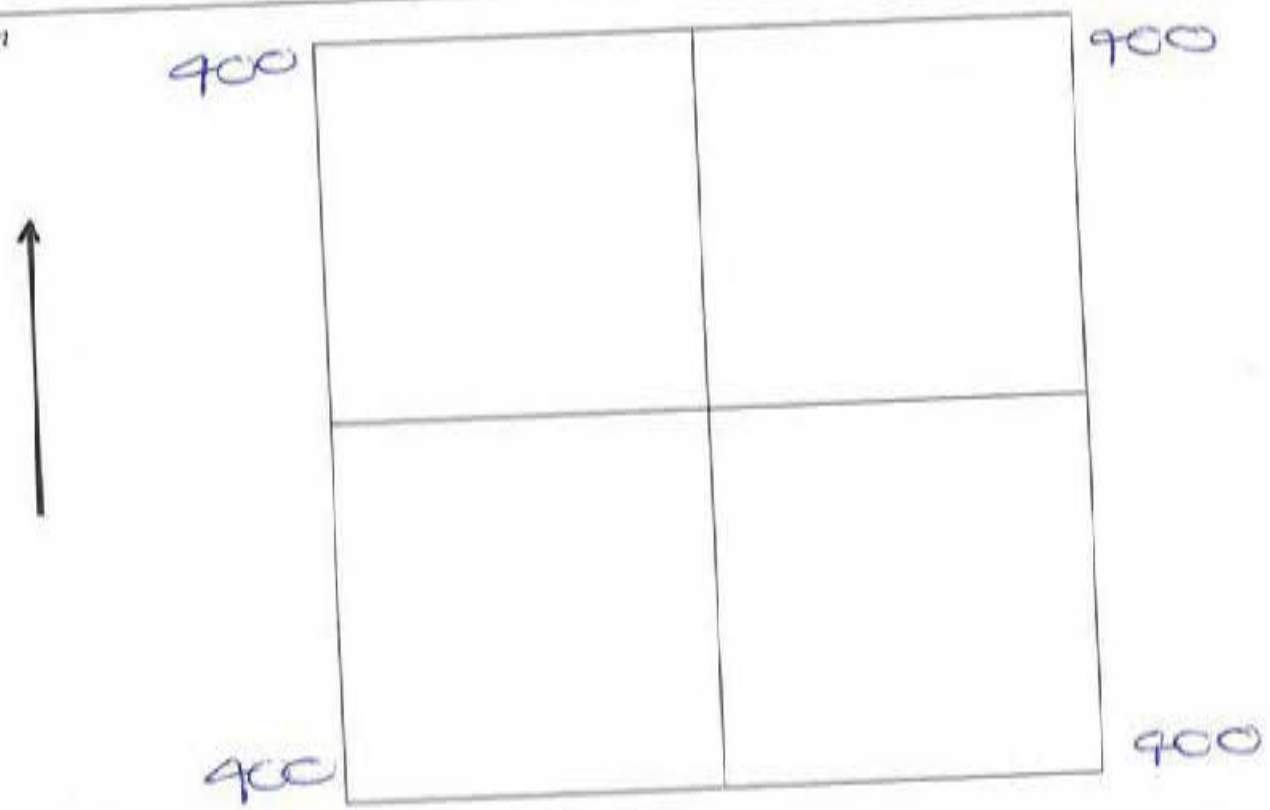
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1 (A2) B Other			
2	100	A1 (A2) B Other			
3	100	A1 A2 (B) Other			
4	100	A1 A2 (B) Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	400				

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle. Eg. Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		GRASS
A1		
A2	1+2	220 mm M-L light orange brown Sandy SILT, SOA. OCCA. root disturbance. Occa. small angular Grey GRAVEL <5mm. Clear into B.
B	3+4	Bright red orange coarse clayey SAND, FREQ white angular gravel inclusions <5mm. Clear into E-

Description of material below B or the limit of excavations
INDURATED BRIGHT RED CLAY W/ OCCA. PEBS. DEGRADED SHALE

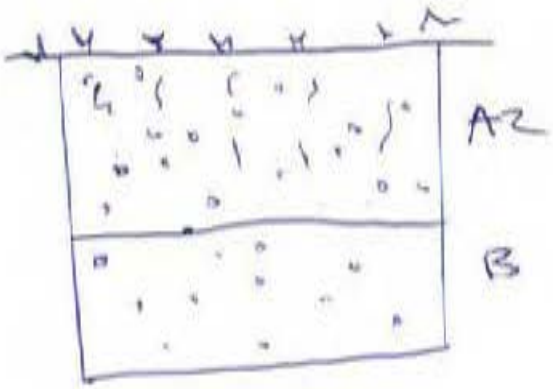
Plan



Spit drawn: END

Section Plan

Face: N
Scale: 1:10



Further descriptions and relationships to other TU

Project Name: ARTC 128 Revised Alignment — TEST UNIT # 218

Aboriginal Excavation — Job #: 17-0169B — PHOTO #

Excavators: MR, KF, MF & LP — Date: 4-4 December 2020

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	1
Other evidence?	
Worthy of expansion? How?	
Plan #:	Samples (description & #):

LOCATION

GPS (for additional TU only)	Easting: ☐☐☐☐☐☐ Northing: ☐☐☐☐☐☐☐
Soil landscape	
Landform	Creek Bank / Terrace / Flat / (Slope) / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other
Aspect	N E (S) W Slope % 12

EXCAVATION

wet sieved dry sieved

Soil #	Depth (mm)	Soil Horizon				Munsell & pH	Features – Special Features	Aboriginal Objects #
1	100	(A1)	A2	B	Other	10YR 6/2 Light brownish grey		0
2	100	A1	(A2)	B	Other	10YR 6/1 Grey		1
3	50-80	A1	(A2)	B	Other			0
4		A1	A2	B	Other			0
5		A1	A2	B	Other			
6		A1	A2	B	Other			
7		A1	A2	B	Other			
Totals								1

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the humanity.)
Surface Layer		Eg. Gravels and, litter, evidence of disturbance etc. Clay
A1	0-10 1	Silty clay with gravel inclusions (<5%). Fine grass root inclusions.
A2	10-20 2	Silty clay with gravel inclusions (<5%). Differentiated from A1 by more [illegible] and [illegible] than A1. Lower density than A1. Yellow clay. (>10cm)
B		Clay

Description of material below B or the limit of excavations

Plan

2.50 metres

2.50 metres

N

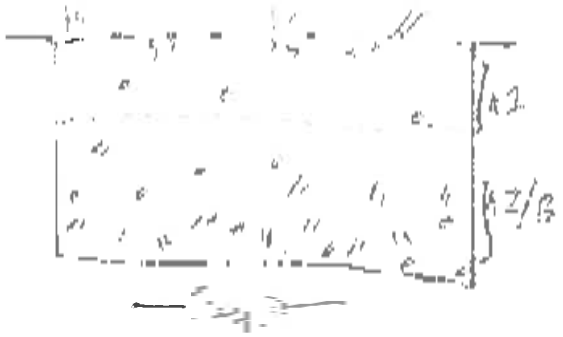
2.80 metres

Spit datum: 0 end of excavation

Section Plan

Feet: 5

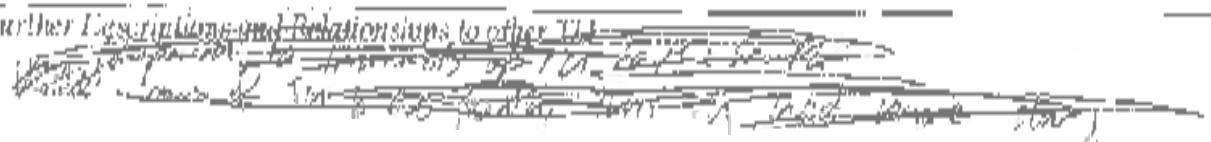
Scale:



Clay

Brownish

Further Descriptions and Relationships to other TUs



Compared to TU 1 context 1 in the south, the TU 2/9 + Z19 had more inclusions gravels sand clays was probably extended to form into the clay. Where the trench was located in Spit 2 was already the base of the soils

Project Name: ARTC I2S Revised Alignment
Aboriginal Excavation — Job #: 17-0169B

TEST UNIT # 219
PHOTO #

Excavators: ML, KT, NF, CLF

Date: December 2017

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 1

Other evidence?

Worthy of expansion? How?

Plan #:

Samples (description & #):

LOCATION

GPS (for additional TU only) Easting: [ ][ ][ ][ ][ ][ ] Northing: [ ][ ][ ][ ][ ][ ][ ]

Soil landscape:

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W | Slope % <10°

EXCAVATION

wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features + Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other	5/4 7.5 YR		
2	100	A1 A2 B Other	6/4 10 YR		1
3	100	A1 A2 B Other			
4	50	A1 A2 B Other	5/2 10 YR		
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.)
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc.
A1	1	SILTY CLAY LOAM 5 FINE ROOT INCLUSIONS.
A2	2	SAME AS, MORE BLEACHED ~20% FE STONES. MORE CLAY CONTENT.
	3	SAME AS
	4	CLAY WITH 40% FE STONES.
B		SAME AS SPIT 4.

Description of material below B or the limit of excavation:

Plan

@350 mm

@300 mm

~300mm

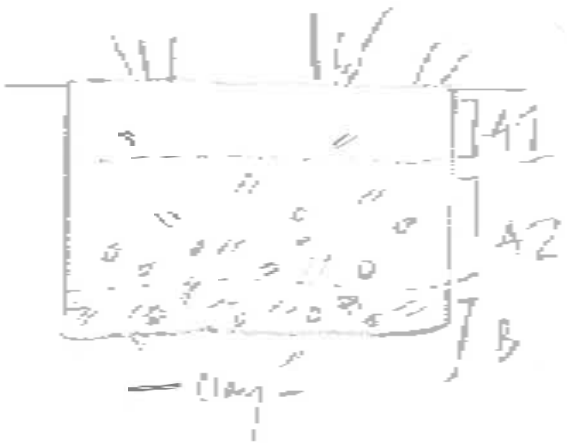
~300mm

Spit drawn: @ end of excavation.

Section Plan

Face: N

Scale: 1 : 10mm



clay

brickwork

Further Descriptions and Relationships to other TU

Very similar to 218. - again, pole probably excavated too far into clay.

End of ex.

Project Name: ARTC 129 Revised Alignment
Aboriginal Excavation — Job #: 17-0169B

TEST UNIT # 220
PHOTO #

Excavators: ADRIAN, BRAD, NIKITA, ELISE | Date: 8/12/20

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects:
Other evidence?
Worthy of expansion? How?
Plan #:
Samples (description & #):

LOCATION

GPS (or additional TU only): Easting [ ][ ][ ][ ][ ] Northing [ ][ ][ ][ ][ ][ ][ ]

Soil landscape: OAKVILLE

Landform: Creek Bank / Terrace / Flat / Ridge / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W | Slope %: STEEP

EXCAVATION

wet sieved dry sieved

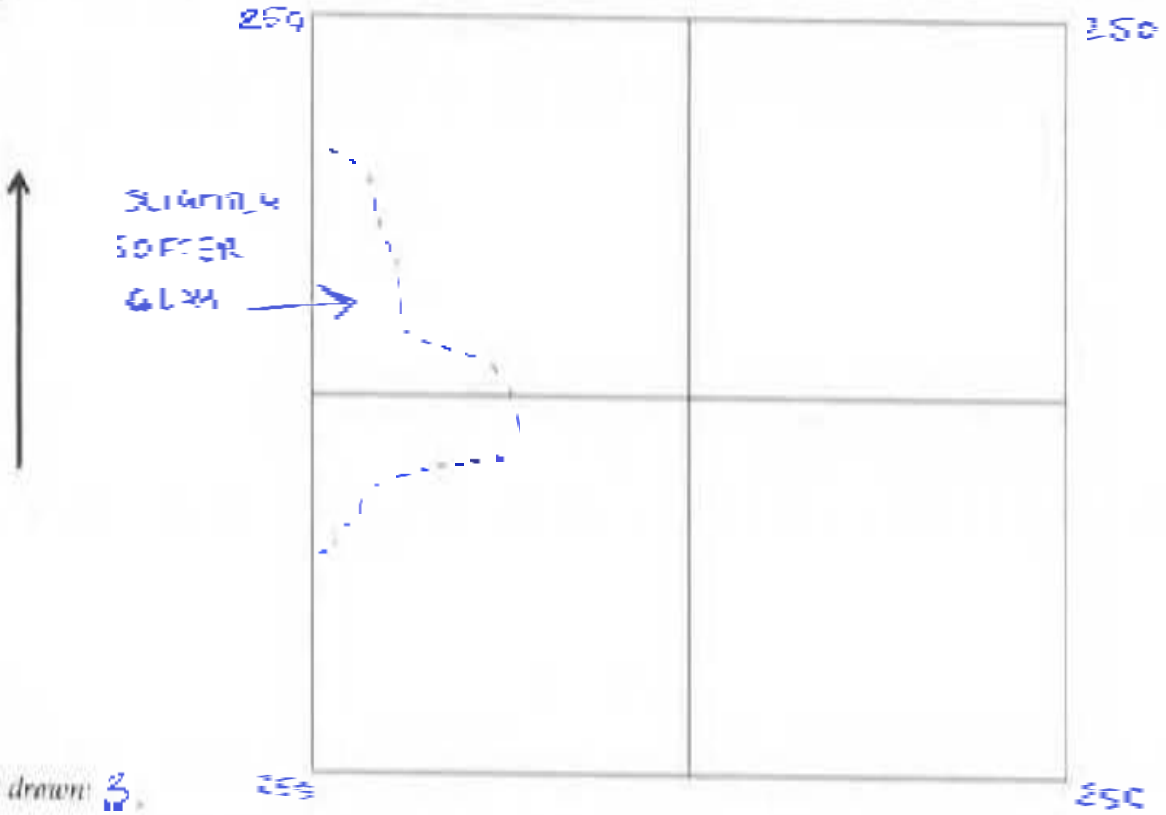
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items (Manuports & Special Interest)	Aboriginal Objects #
1		A1 A2 B Other			
2		A1 A2 B Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, differences in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the excavation.) Eg. Gravels, sand, litter, evidence of disturbance.
Surface Layer		SPARSE GRASS COVER ON EDGE OF VEHICLE TRACK.
A1	1	LIGHT YELLOWISH GREY. VERY COMPACT. SILTY CLAY. SOME SAND. LESS FINE STONES.
A2	2	LIGHT YELLOWISH GREY VERY COMPACT SILTY CLAY. LESS FINE STONES
	3	LIGHT YELLOWISH GREY VERY COMPACT SILTY CLAY. HIGHER CLAY CONTENT THAN SPIT 1 + 2. LESS FINE STONES. EXTREMELY COMPACT PEDS ANGULAR (30-60mm)
B		LIGHT YELLOWISH GREY - VERY BASAL CLAY. SOME AREAS OF YELLOW/BROWN MOTTLING. SLIGHTLY SOFTER THAN

Description of material below B or the limit of excavation:

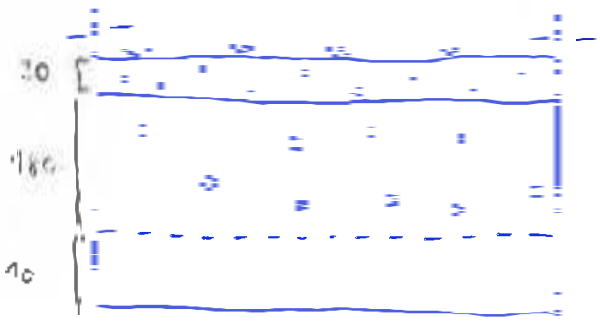
Plan



Split drawn: 2

Section Plan

Face: E
Scale:



E = TROPICAL
S = FE SCENE
— = STRAIGHT SPLICE
---- = CURVED SPLICE

Further Descriptions and Relationships to other TLI

IN THE VEHICLE TRACK, PROBABLY SUPER COMPACT BECAUSE OF THIS

Name: ARTC I2S Revised Alignment

nal Excavation – Job #: 17-0169B

TEST UNIT # 221

PHOTO #

Date

tors

IARY OF EXCAVATION

ount Aboriginal Objects

evidence?

y of expansion? How?

Samples (description & #)

TION

Easting

Northing

dscape

form

Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

ct N E S W Slope %

AVATION wet sieved dry sieved

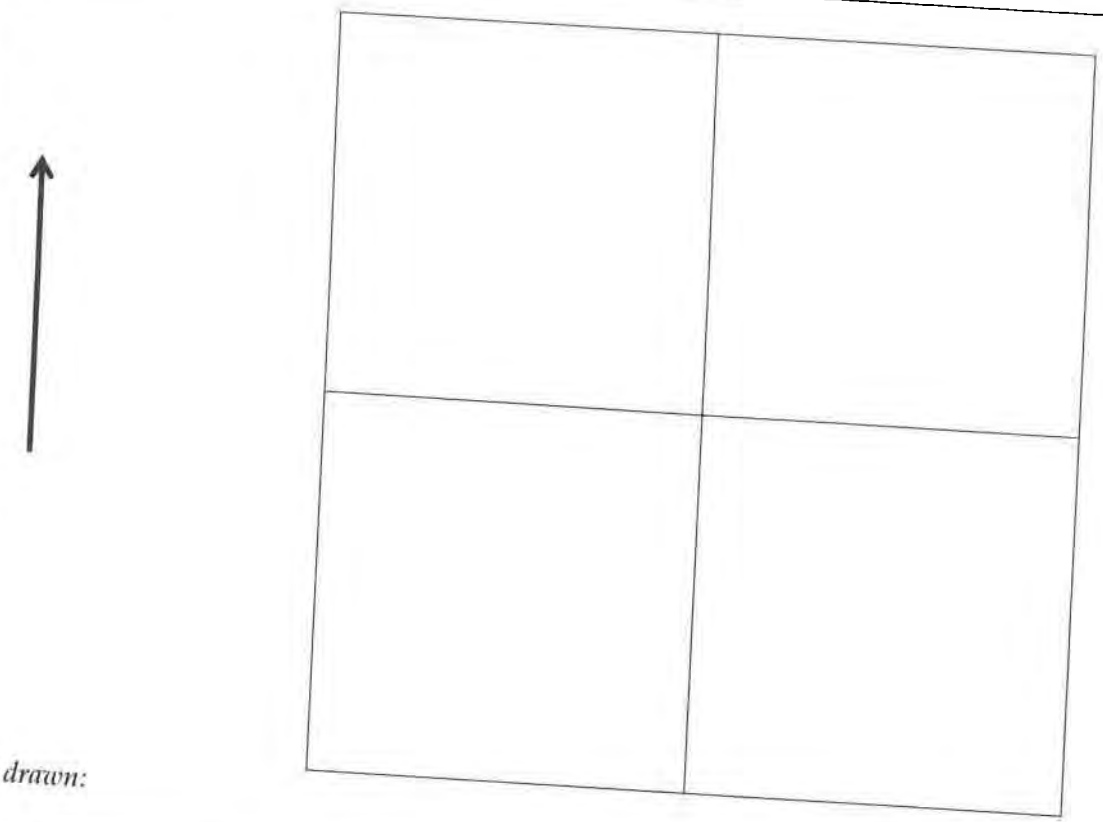
Depth (mm)	Soil Horizon	Munsell & pH	Roots/Features - Special Interest	Aboriginal Objects #
0–100	A1 A2 B Other			
100–200	A1 A2 B Other			
200–300	A1 A2 B Other			
300–400	A1 A2 B Other			
420–450	A1 A2 B Other			
	A1 A2 B Other			
	A1 A2 B Other			

OIL DESCRIPTION

Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from above/below, compaction, particle size, inclusions, depth, disturbance, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. How blended away in the A2 and presence of ironstone gravels and/or clayey layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.) Eg. Gravelly, sand, litter, evidence of disturbance etc.
Surface		
Layer		
A1	40–120	fine clay silty brown colour medium plastic + consistency
A2	120	variable finishing 90–120 no features
	90/120 ↓ 420	sandy compacted, hard, light grey silty loose sand with medium ironstone gravels no artefacts
		no artefacts
		excavation clay content – subsoil
		& brown clay
		grey
B	420+	grey brown clay with some silt + fine mixed ironstone gravels

Description of material below B or the limit of excavation

Plan

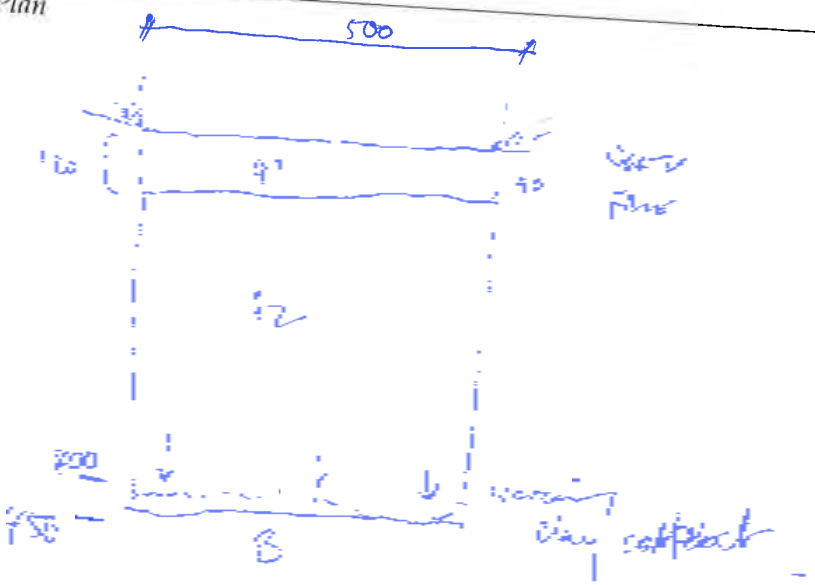


Spit drawn:

Section Plan

Face:

Scale:



Further Descriptions and Relationships to other TU

Project Name: AKTC 125 Revised Alignment
Aboriginal Excavation — Job #: 17-0169B

TEST UNIT #
PHOTO #

Excavators: MR DE QI

Date:

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: –

Other evidence? –

Worthy of expansion? How? –

Plan #:

Samples (description & #):

LOCATION

GPS (for multiform TU only) Easting: Northing:

Soil landscape:

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Crest / Hillcrest / Saddle / Depression / Rock Outcrop / Other

Aspect: N E S W Slope: 0

EXCAVATION

wet sieved dry sieved

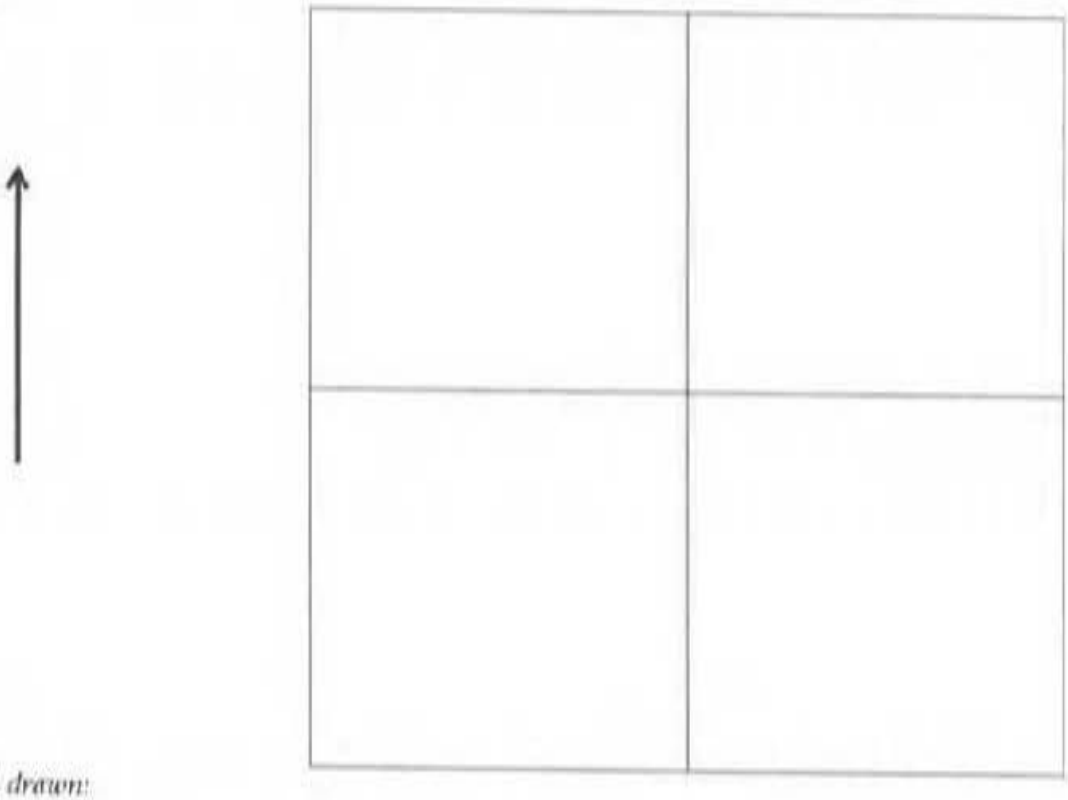
Spit #	Depth (mm)	Soil Horizon	Munsell & grit	Items/Features + Special Interest	Aboriginal Objects #
1	0 – 80/110	(A1) A2 B Other	7.5 YR 5/2 Brown SILT		–
2	80 – 280	A1 (A2) B Other	7.5 YR 7/1 Light Grey SILT + stone		
3	280 +	A1 A2 (B) Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, manganese, carbon, evidence of burning/heating, condition, integrity. Note blackened zones in the A2 and presence of abundant gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle)
Surface Layer		Soil Profile, general litter, evidence of disturbance etc.
A1	1	0 – 80 mm (up to 110 mm) friable brown silt no features.
A2	2/3	80 – 280 mm compacted light grey silt + minstone gravels increasing clay content towards base
(B)		280 + clay – hard (non-plastic) grey/br. clay & silt lenses –
B		

Description of material below B or the limit of excavations

Plan

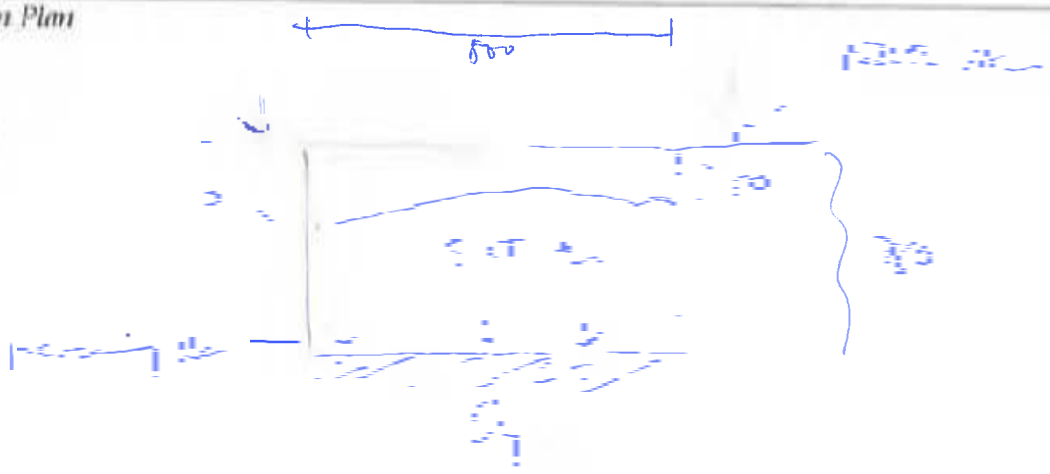


Spit drawn:

Section Plan

Face:

Scale:



Further Descriptions and Relationships to other TU

Project Name: ARTC I28 Revised Alignment Aboriginal Excavation — Job #: 17-0169B		TEST UNIT # PHOTO #	223
Excavators	MR DI QT	Date 5/12/2022	

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	3 Spits 0 artifacts
Other evidence?	
Worthy of expansion? How?	
Plan #:	Samples (description & #):

LOCATION

GPS (to additional decimal)	Easting:	Northing:	
Soil landscape:			
Landform	Crest / Ridge / Flat / Slope / Ridge line / Hill Crest / Swamp / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	

EXCAVATION wet sieved dry sieved

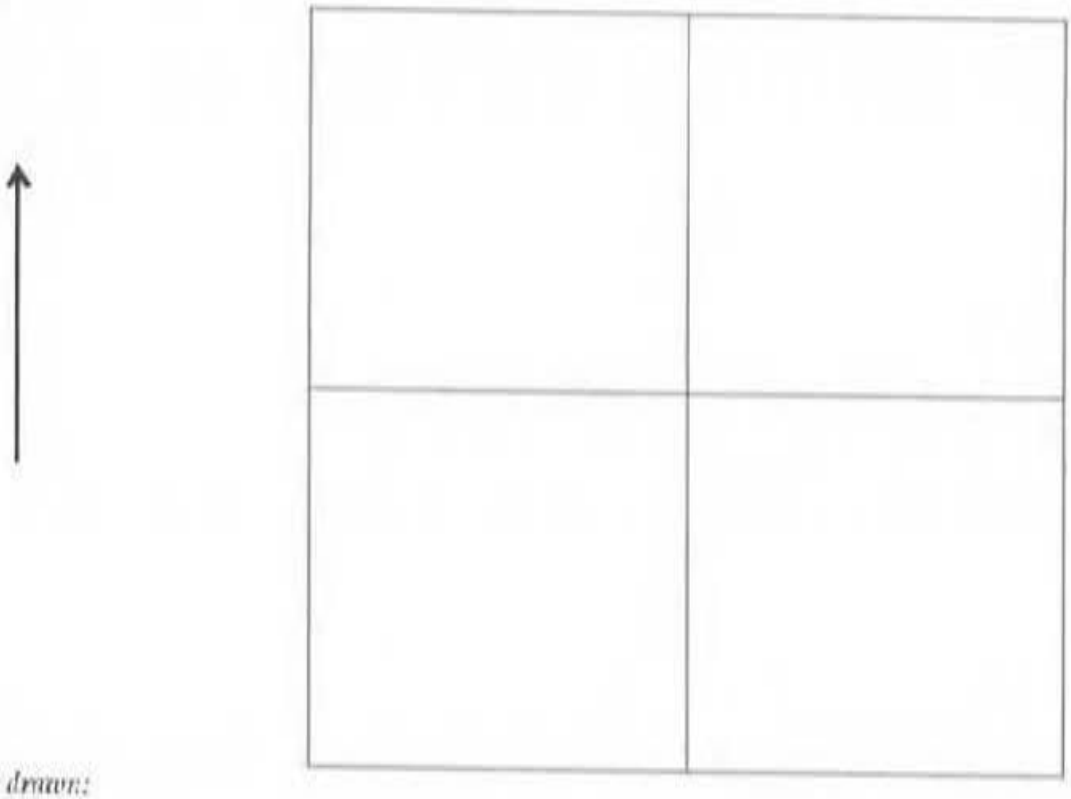
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Artefact Attributes – Special Features	Aboriginal Objects #
1		A1 A2 B Other			
2		A1 A2 B Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/heating, condition Integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All or most tend to be zones of artefact accumulation and the base of the biomantle.)
Surface Layer		Eg, Gravels, sand, litter, evidence of disturbance etc
A1		
A2		
B		

Description of material below B or the limit of excavations

Plan

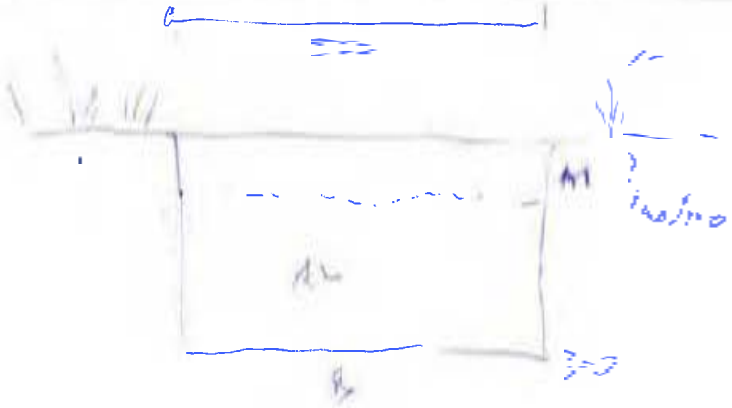


Spit drawn:

Section Plan

Face: N

Scale:



Project Name: ARTC 128 Revised Alignment
Aboriginal Excavation – Job #: 17-01698

TEST UNIT #
PHOTO #

Excavators: MR DI QI

Date: 5/2

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 2 stks

Other evidence? 0 artifacts

Worthy of expansion? How?

Plan #:

Samples (description & #):

LOCATION

GPS (for additional TU only): Easting [ ][ ][ ][ ][ ][ ] Northing [ ][ ][ ][ ][ ][ ][ ]

Soil landscape: [illegible]

Landform: Creek Bank / Terrace / Flat / Slope / Ridge/Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W | Slope %

EXCAVATION

wet sieved dry sieved

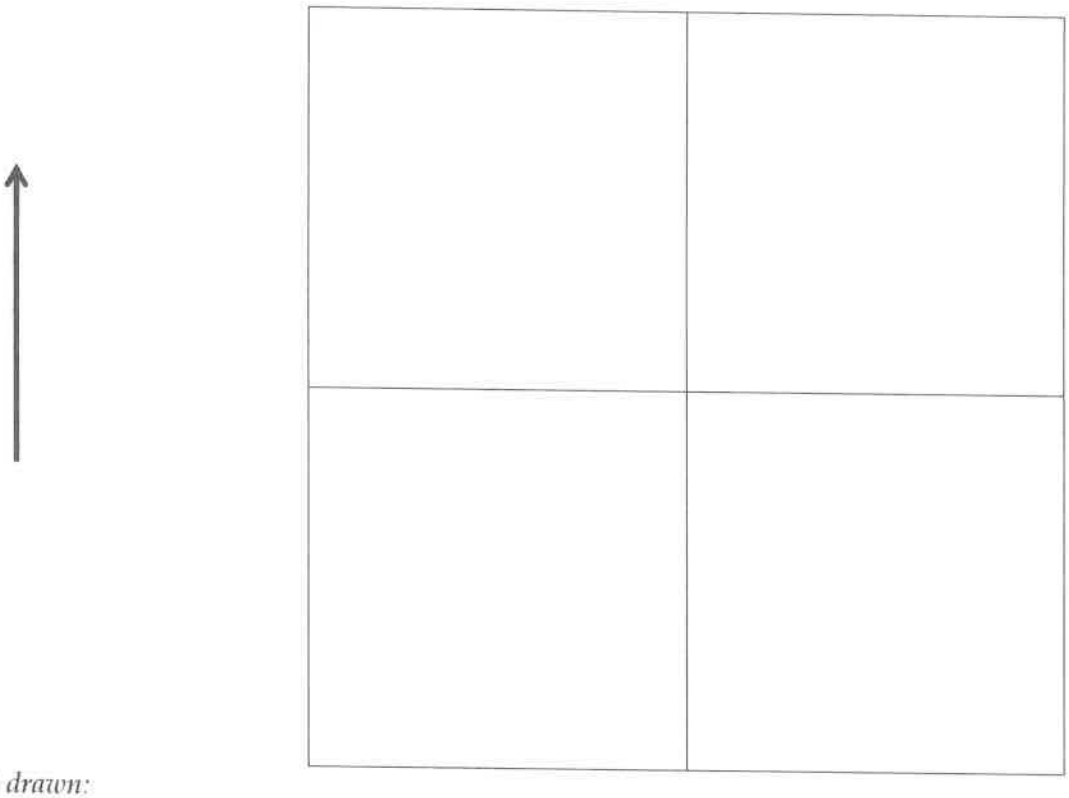
Spit #	Depth (cm)	Soil Horizon				Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	0-100	A1	(A2)	B	Other	10 YR 6/3	Pale Brown	—
2	100-200	A1	(A2)	B	Other	10 YR 6/3	pale B	—
3	200 +	A1	A2	(B)	Other	"		
4		A1	A2	B	Other			
5		A1	A2	B	Other			
6		A1	A2	B	Other			
7		A1	A2	B	Other			
Totals								

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached sands in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artifact accumulation and the base of the bioturbation.)
Surface Layer		(e.g. Gravels, sand, litter, evidence of disturbance etc.
A1		
A2		
B		

Description of material below B or the limit of excavation:

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further Descriptions and Relationships to other TU

Project Name: ARTC 175 Revised Alignment
Aboriginal Excavation – Job #: 17-0169E

TEST UNIT # / PHOTO # 215

Excavators | Date

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 2 + 1
Other evidence? — 3 pcs
Worthy of expansion? How? —
Plan #: | Samples (description & #):

LOCATION

GPS (for multiple UTMs) | Easting | Northing

Soil landscape

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W | Slope % 0-

EXCAVATION — wet sieved / dry sieved

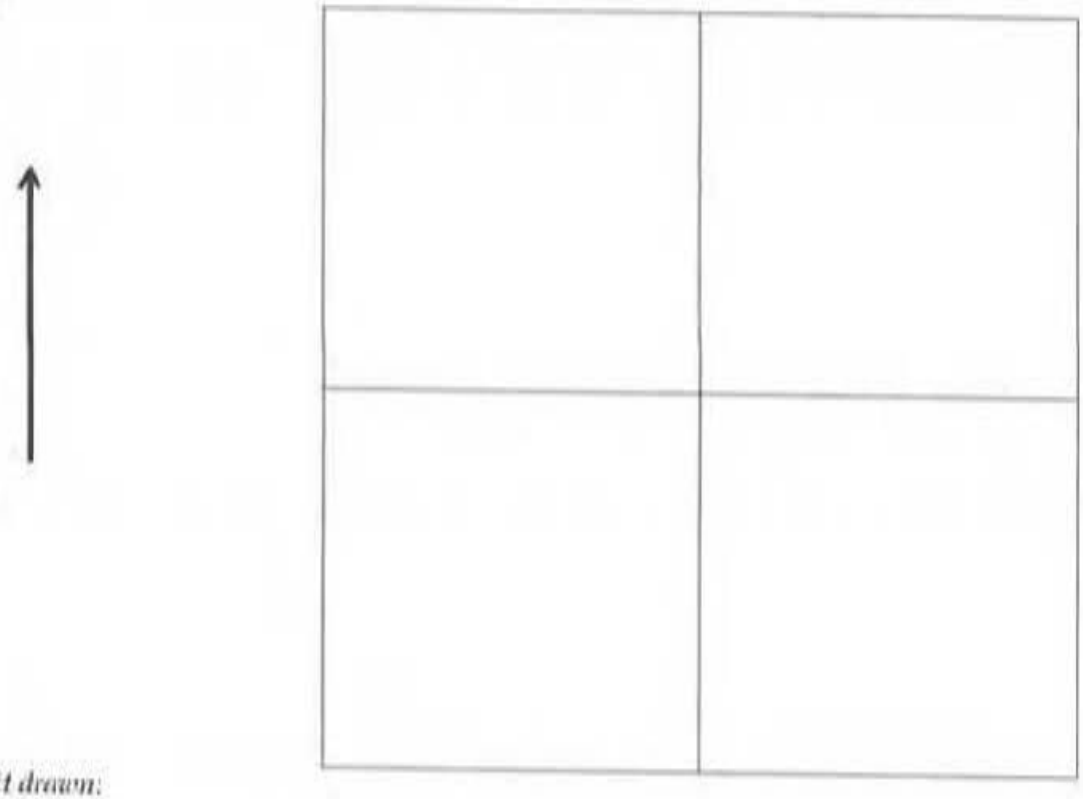
Spit #	Depth (mm)	Soil Horizon	Munsell & ped	Notes/ Features – Special interest	Aboriginal Objects #
1	0-70/80	A1 A2 B Other	10YR 4/4	"Dark yellowish brown"	—
2	80-250	A1 A2 B Other	7.5YR 5/3	"Brown"	1
3	250+	A1 A2 B Other	10YR 5/4	Yellow/brown	
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.) Eg Gravels, sand, loam, evidence of disturbance etc.
Surface Layer		
A1	0-70/80	Light brown, friable silt A1 horizon. Some charcoal flecks no other finds
A2	80-250	light grey compact silt A2 horizon. Contains gravels.
B	250+	grey/brown hard clay – but yellow/brown mottled.
		Artefact = 1 x small QTZ flake. Triangular
B		

Description of material below B or the limit of excavations

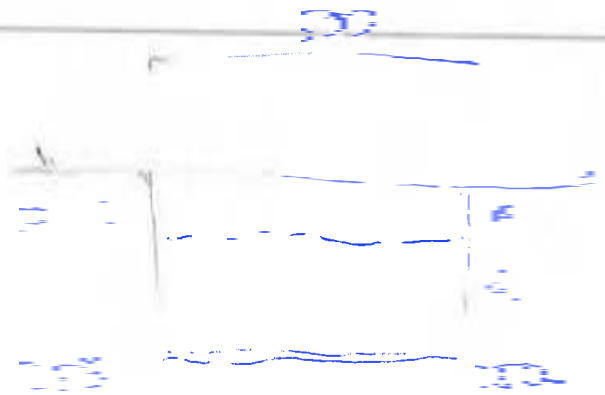
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further Descriptions and Relationships to other TU

Project Name: ARTC 125 Revised Alignment

Aboriginal Excavation – Job #: 17-01693

TEST UNIT # / PHOTO #: 226

Excavators: MT, KF, MF, LT

Date: 3/12/20

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	2
Other evidence?	
Worthy of expansion? How?	
Plan #:	Samples (description & #):

LOCATION

GPS (for additional TU only)	Easting: ☐☐☐☐☐ Northing: ☐☐☐☐☐☐
Soil landscape	BARCOO
Landform	Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other
Aspect	N E S W Slope % ~

EXCAVATION

wet sieved dry sieved

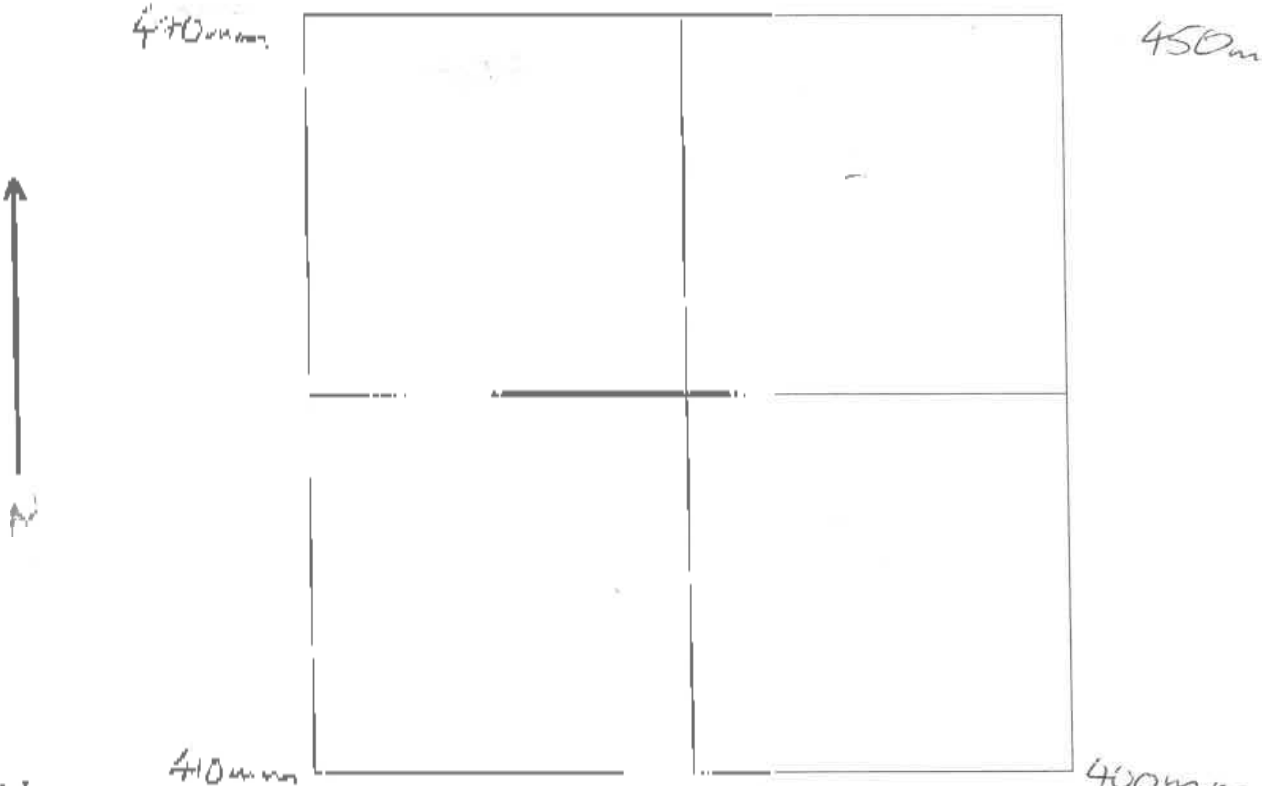
Spit #	Depth (mm)	Soil Horizon			Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	A1	A2	B Other	10YR 5/4 light yellowish brown		
2	100	A1	A2	B Other			1
3	100	A1	A2	B Other	10YR 6/4 Pale brown		
4	150	A1	A2	B Other			1
5	50	A1	A2	B Other	10 YR 5/4 Yellowish brown		2
6		A1	A2	B Other			
7		A1	A2	B Other			
Totals	450						2

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, distribution, charcoal, evidence of burning/ heating, condition, integrity. Note bleached zones in the accumulation and the base of the bioturbation. (If all these need to be noted at another Eg. Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		Grey loam
A1	1	Clayey silt with [illegible] moderately compacted small ironstone inclusions,
A2	2 - 4	Clayey silt, bleached (in comparison with A1 horizon) having clay content.
A2 - B	5	Silty clay, increasing ironstone gravel inclusions (~20%). FC-40cm BGS
B		plastic clay with pockets of silt.

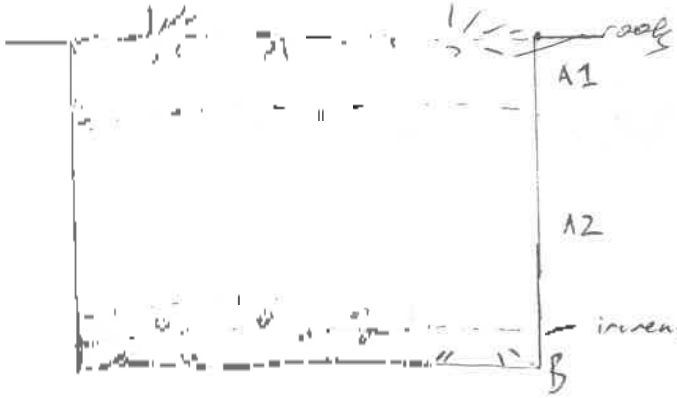
Description of material below B or the limit of excavation:

Plan



Spit dream: (2) end of excavation

Section Plan



Face:

Scale: 1 : 10 cm

[ ] iron stone

[ ] clay

Further Descriptions and Relationships to other TU

Similar to view of pit South (new wall)

Different to those north (base of wall, which are more complete with clay)

Project Name: ARTC I2S Revised Alignment
Aboriginal Excavation – Job #: 17-01693

TEST UNIT # 227
PHOTO #

Excavators: MC, CE, ME, LT

Date: 8/6/2018

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 6

Other evidence?

Worthy of expansion? How?

Plan #:

Samples (description & #):

LOCATION

GPS (for additional / Utility):

Easting: [ ][ ][ ][ ][ ][ ]

Northing: [ ][ ][ ][ ][ ][ ]

Soil landscape:

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W

Slope %:

EXCAVATION

wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon			Munsell & pH (recorded Dry)	Stony Features Special Interest	Aboriginal Objects #
1	100	(A1)	A2	B Other	10YR 6/3 (pale brown)		6
2	100	A1	(A2)	B Other	10 YR 7/2 (light grey)		0
3	100	A1	(A2 B)	Other	10YR 5/3 (brown)		0
4		A1	A2	B Other			
5		A1	A2	B Other			
6		A1	A2	B Other			
7		A1	A2	B Other			
Totals	300						6

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, differences in strata from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones to the extent present of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.) Eg Gravels, sand, loam, evidence of disturbance etc.
Surface Layer		
A1	1	TOPSOIL SILTY SAND, [illegible] (0 - 2mm)
A2	2 - 3	LIGHT GREY SILTY CLAY, BLEACHED, [illegible] CLAY FLECKS (<5%)
		A1 ZONE IN SOME INCLUSIONS CLAY (ON EDGE OF [illegible])
		[illegible] ALSO DARKENED IRONSTONE GRAVEL (<10%)
B		SILTY CLAY, FRIABLE, MEDIUM BASE OF EXCAVATION. MOTTLED

Description of material below B or the limit of excavations

Plan

250

300mm

N

300

250mm

Spit drawn: @ end of ex.

Section Plan

Face: N

Scale:

CLAY

IRONSTONE

Further Descriptions and Relationships to other TU

Similar to TU 226

Project Name: ARTC I25 Revised Alignment
Aboriginal Excavation – Job #: 17-01698

TEST UNIT # 228
PHOTO #

Excavators MF, MR, KS, LF

Date 8/12/26

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 0

Other evidence?

Worthy of expansion? How?

Plan #

Samples (description & #):

LOCATION

GPS (to nearest 10m)

Easting: 5 0 0 0 0

Northing: 0 0 0 0 0 0 0

Soil landscape

Landform: Creek Bank / Terrace / (Flat) / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W

Slope %

EXCAVATION

wet sieved dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features - Special Interest	Aboriginal Objects #
1	100	(A1) A2 B Other	10 YR 5/3 brown		0
2	100	A1 (A2) B Other	7.5YR 7/1 Light grey		0
3	70	A1 A2 (B) Other	(mottled grey + brown)		0
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals	270				0

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, boundaries, vegetation, moisture, stone/gravel, roots, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.)
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS
A1	1	SANDY LOAM TILL FORMED FROM SOFT WEATHERED PERM. GRASS ROOTS
A2	2-3	SILTY CLAY LOAM FIRM STRONG WEDGING, LOWER BOUNDARY INDISTINCT (CLEAR) BLEACHED (BLEACHED) WITH A1. INCREASING CLAY CONTENT AT DEPTH. ROOTS TRACE TO 2 MODERATE
B		FRIABLE, MOTTLED (LAY). BECOME + GREY

Description of material below B or the limit of excavations

Plan

250 250mm

N

250 250mm

Spit drawn: @ End of excavation

Section Plan

Face: N

Scale: 0 100mm

Further Descriptions and Relationships to other TU

Similar to 224 & 227

Project Name: ARTC 12S Revised Alignment

Aboriginal Excavation – Job #: 17-0169B

TEST UNIT # 234

PHOTO #

Excavators: ADRIAN, BRAD NIKITA ELISE Date: 8/12/20

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: —

Other evidence? —

Worthy of expansion? How? —

Plan #:

Samples (description & #):

LOCATION

GPS (for additional TU only)

Easting: 6[ ]1[ ]0[ ]

Northing: [ ][ ][ ][ ][ ][ ][ ]

Soil landscape: OAKVILLE

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W Slope % 0

EXCAVATION

Wet sieved? OPEN dry sieved

IMMEDIATLY ADJACENT TO TREE, PIT OFFSET TO ACCOUNT

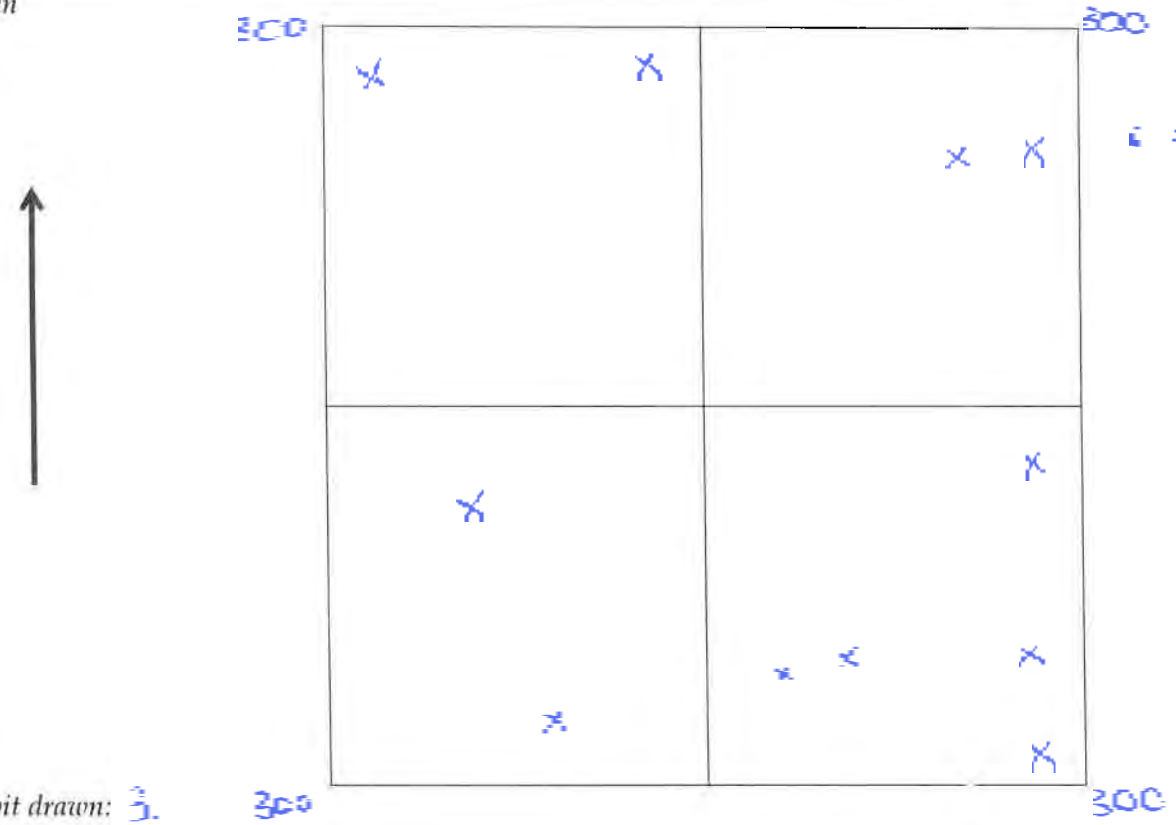
Spit #	Depth (cmbs)	Soil Horizon	Munsell & pH	Items/ features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other	10YR 5/3 5.5		—
2	100	A1 A2 B Other	10YR 5/3 5.5		—
3	100	A1 A2 B Other	10YR 5/3 5.5		—
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil horizon	Strata/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, boundaries, slope, bioturbation, vegetation, roots, charcoal, ash, evidence of burning/ heating, condition, integrity. Note: bleached zone in the A2 and presence of ironstone gravels and/or ortstein layers, clay cemented zones. All of these terms refer to zones of artefact accumulation and the base of the biomantle) Eg. Gravels, sand, litter, evidence of disturbance, etc.
Surface Layer		DENSE GRASS COVER.
A1	1	FRIABLE YELLOWISH GREY SOFT-FIRM DRY SILTY CLAY SOME FE GRAVELS SUBANGULAR (<10mm). SAND
A2	2	MEDIUM YELLOWISH GREY. MODERATELY DRY SILTY CLAY VERY COMPACT ANGULAR PEDS (5-10mm). ANT ACTIVITY. TREE ROOTS EVIDENT.
	3	MEDIUM YELLOWISH GREY. MODERATELY DRY SILTY CLAY VERY COMPACT ANGULAR PEDS (5-10mm). ANT ACTIVITY. TREE ROOTS EVIDENT.
B		SAND BASALTIC AND YELLOWISH GREY, SOME SILT YELLOW MOTTLING.

Description of material below B or the limit of excavations

Plan

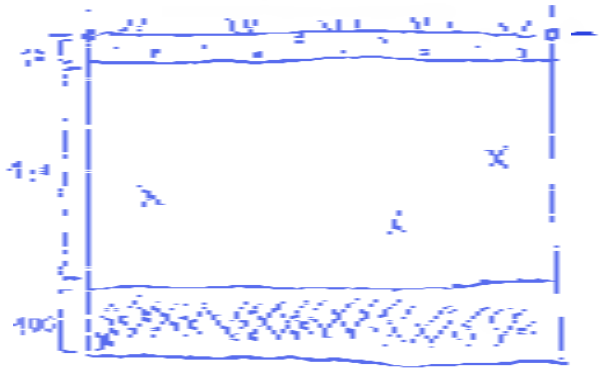


Spit drawn: 3.

Section Plan

Face: ↓

Scale: —



Further Descriptions and Relationships to other TU

Project Name: ARTC I2S Revised Alignment
Aboriginal Excavation – Job #: 17 0169B

TEST UNIT # 235
PHOTO #

Excavators: JANICE, LEANNE, CHRIS, ELISE | Date: 9/12/20

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: —
Other evidence? —
Worthy of expansion? How? —
Plan #: | Samples (description & #):

LOCATION

GPS (for additional TU only) Easting | Northing

Soil landscape: OAKVILLE

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Gully / Depression / Rock Outcrop / Other

Aspect: N E S W | Slope %: 0

EXCAVATION

wet sieved dry sieved

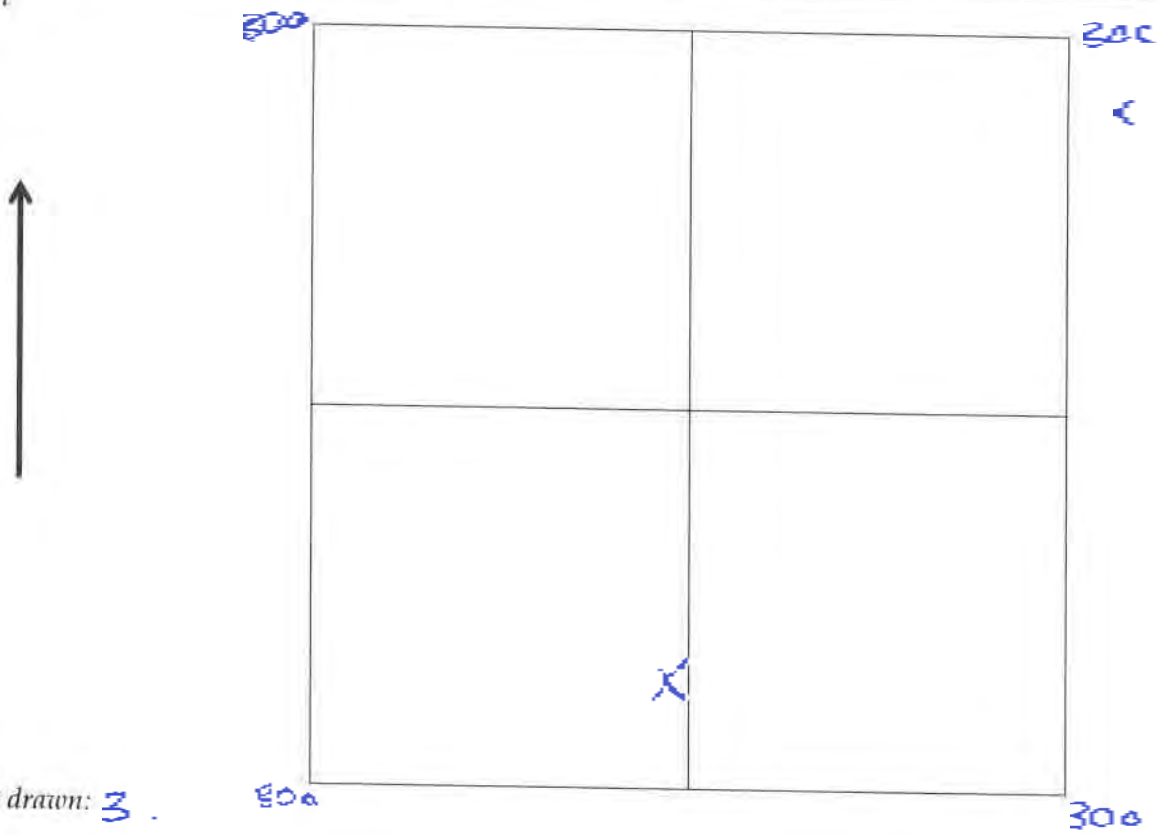
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Natural Features – Special Interest	Aboriginal Objects #
1	100	A1 A2 B Other	4/4 10YR	6	—
2	100	A1 A2 B Other	5/3 10YR	5.5	—
3	100	A1 A2 B Other	5/2 10YR	5.5	—
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil (type, colour, differences in shade from other strata, compaction, particle size, inclusions, depth, disturbance, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layer, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.)
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc. GRASS COVER.
A1	1	COMPACT LIGHT YELLOWISH BROWN SANDY SLT. COMPACT SLAY PEDS (5mm) SOME CLAY
A2	2	COMPACT LIGHT YELLOWISH BROWN SANDY SLT. COMPACT SLAY PEDS (5-30mm) LOTS OF ROOT BIOTURB.
	3	VERY COMPACT. LIGHT OLIVE BROWN SANDY SLT. COMPACT SLAY COMPACT. COMPACT SLAY PEDS (5-80mm) LOTS OF ROOTS
B		NO SUBSOIL CLAY. SAME AS SPIT 3

Description of material below B (or the limit of excavation)

Plan

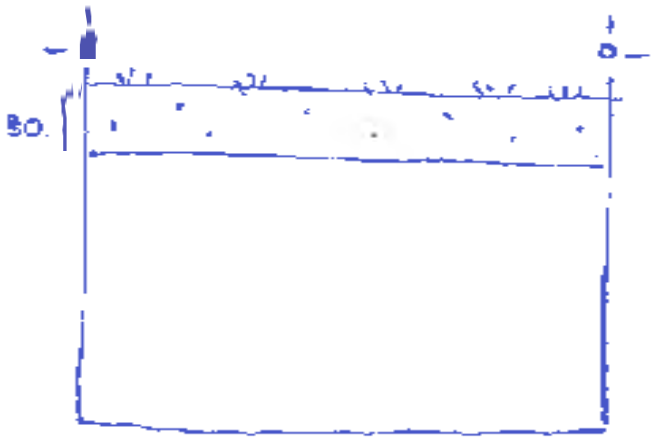


Spit drawn: 3.

Section Plan

Face: N

Scale: —



Further Descriptions and Relationships to other TU

SAME AS TU 234. BUT MORE CLAY CONTENT IN HIGHER SPITS.

Project Name: ARTC 12S Revised Alignment
Aboriginal Excavation – Job #: 17-07693

TEST UNIT #
PHOTO # 236

Excavators: DL DL MR | Date: 9/12

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: -
Other evidence? -
Worthy of expansion? How? -
Plan #:
Samples (description & #):

LOCATION

GPS (for additional TU only) | Easting | Northing

Soil landscape

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W | Slope %

EXCAVATION

wet sieved dry sieved

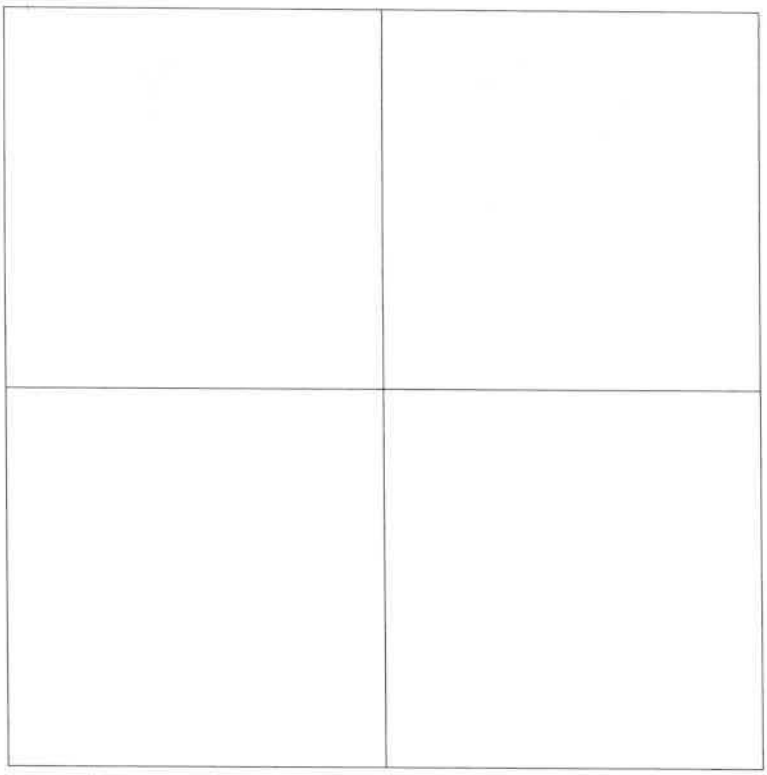
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1		A1 A2 B Other			
2		A1 A2 B Other			
3		A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other zones, compaction, particle size, inclusions, depth, boundaries, vegetation, moisture, disturbance, extent, evidence of burning/ heating, condition, integrity. Note bleached zones in the accumulation and the base of the bioturbation.) ±% Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		
A1		
A2		
B		

Description of material below B or the limit of excavations

Plan



Spit drawn:

Section Plan

Face:
Scale:

Further Descriptions and Relationships to other TU

Project Name: ARTC 125 Revised Alignment
Aboriginal Excavation – Job #: 17-01698

TEST UNIT # 237
PHOTO #

Excavators [illegible]

Date: [illegible]

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 1

Other evidence?

Worthy of expression? How?

Plan #:

Samples (description & #):

LOCATION

GPS (to additional Photograph)

Easting

Northing

Soil Landscape:

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W

Slope %

EXCAVATION

Wet sieved dry sieved

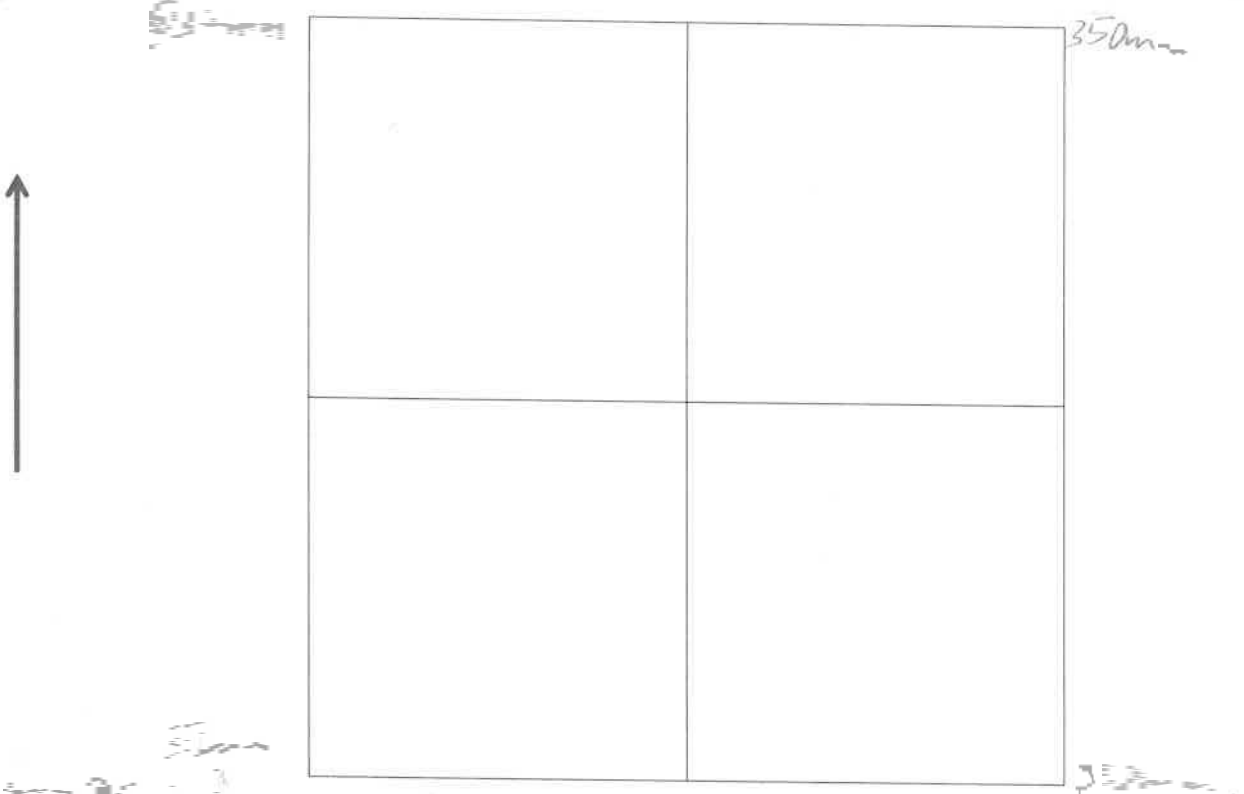
Spit #	Depth (cm)	Soil Horizon			Munsell & pH	Items/ Features – Special Interest	Aboriginal Objects #
1	100	A1	A2	B Other	10 YR 4/4 Brown		0
2	100	A1	A2	B Other	10 YR 4/2 [illegible]		1
3	100	A1	A2	B Other			0
4	50	A1	A2	B Other	10 YR 5/6 Light [illegible]	Bioturb. [illegible] / Impeded	0
5		A1	A2	B Other			
6		A1	A2	B Other			
7		A1	A2	B Other			
Totals	350						1

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note: bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these lead to be zones of artefact accumulation and the base of the biomat(s). Eg. Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		
A1	1	Dark Brown [illegible]
A2	1-4	Light [illegible]
B		Clay

Description of material below B or the limit of excavations

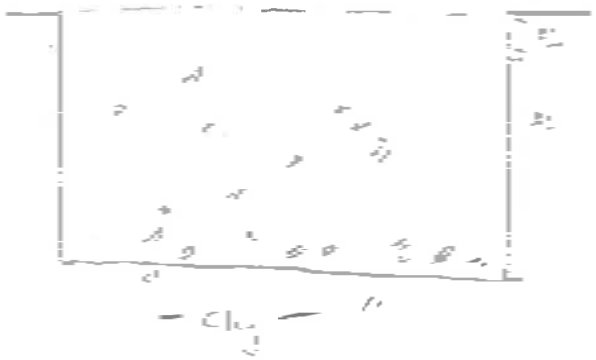
Plan



Section Plan

Face: S

Scale: 1 2cm



Further Descriptions and Relationships to other TU

Middle of a vehicle / sheep track. Very compact clayey silt (A1.)

Project Name: ARTC I2S Revised Alignment — TEST UNIT # 240
Aboriginal Excavation – Job #: 17-0669 — PHOTO #
Excavators: AI DI MR — Date: 9/12

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 1 stone (50mm)
Other evidence?
Worthy of expansion? How?
Plan #: — Samples (description & #): 0 artefacts

LOCATION

GPS (geodetic datum): Easting □□□□□□ Northing □□□□□□□
Soil landscape:
Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depression / Rock Outcrops / Other
Aspect: N E S W — Slope % 0

EXCAVATION — wet sieved — dry sieved

Spit #	Depth (mm)	Soil Horizon	Munsell & grit	Survey Features – Special Interest	Aboriginal Objects #
1	0-50	(A1) A2 B Other	10YR 6/3 Pale B.		
2	50-100	(A1) A2 B Other	as above in 10YR 7/1		
3	100-150	A1 (A2) B Other	10YR 7/1 Very Pale		
4	150-200	A1 (A2) B Other	" Light Grey		
5	200-250	A1 (A2) B Other	" "		
6	250-300	A1 (A2) B Other	" "		
7	300-350	A1 A2 (B) Other	7.5 YR 7/6 Strong Brown		
Totals					

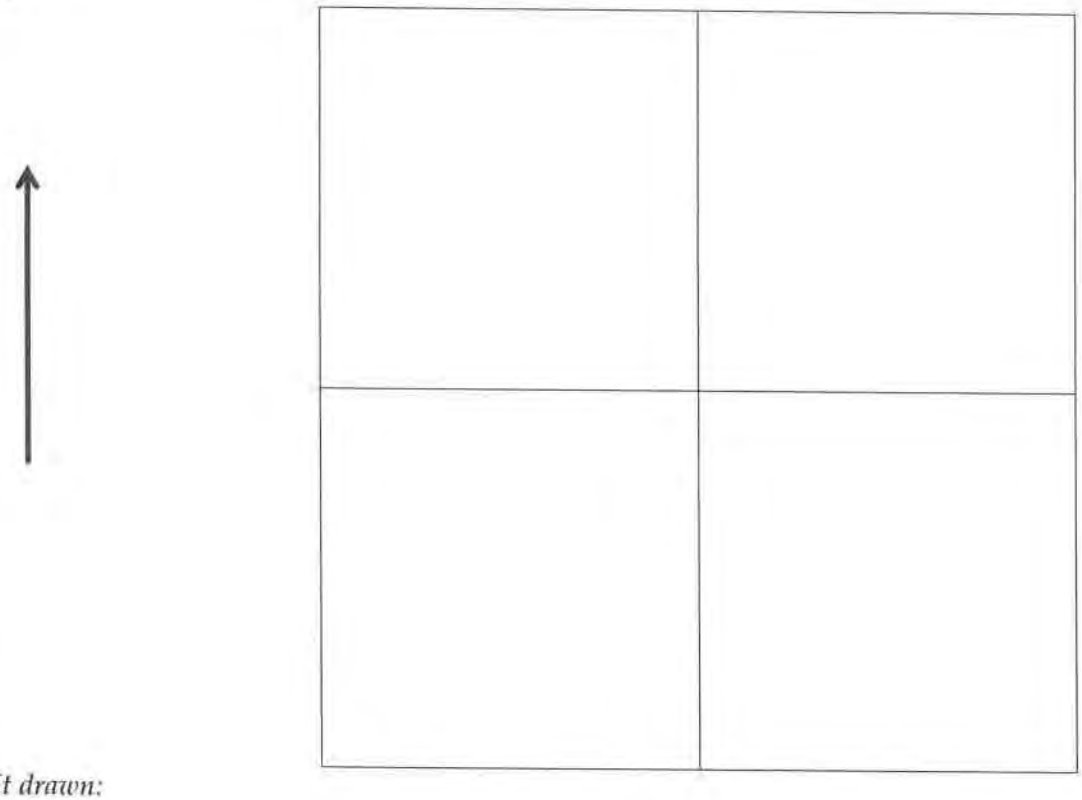
SOIL DESCRIPTION

Soil Horizon	Spit #	Soil colour, colour differences in mixed zones, other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. At the lower end, in zones of artefact accumulation and the base of the horizon(s). Eg: Gravelly, sand, lithic evidence of disturbance.
Surface Layer		
A1	0-50	Pale Brown / light brown silt, friable, humous, slightly diffuse boundary
A2	50-320	light grey coloured silt, ironstone gravels
	320+	mottled yellow-brown clay. Dry, hard, root plates, frontier fm A2 → B undulating, from 320 to base of spit
B		

50 mm SPITS

Description of material below B or the limit of excavations

Plan

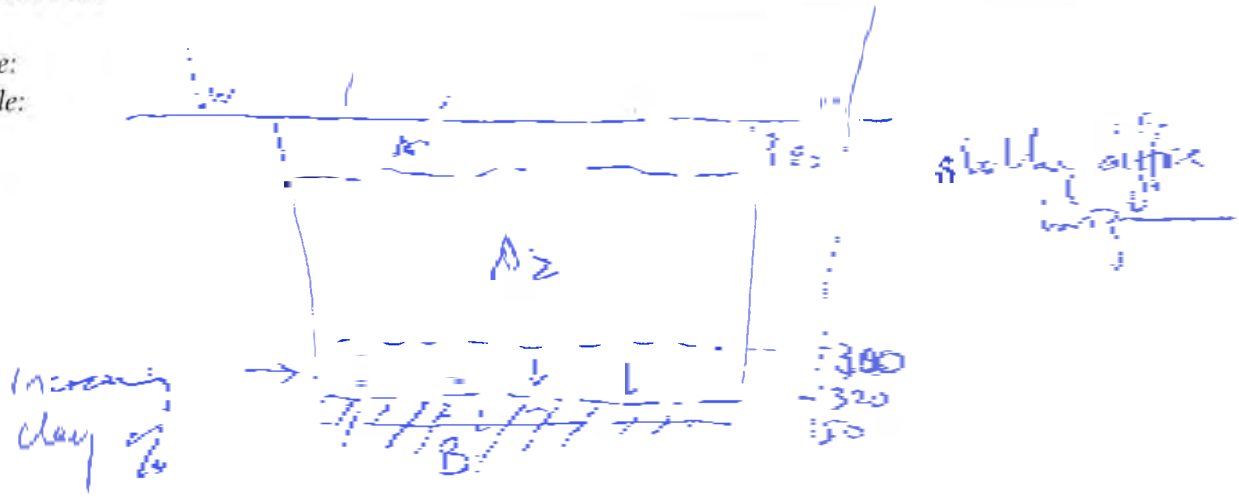


Spit drawn:

Section Plan

Face:

Scale:



Further Descriptions and Relationships to other TU

Project Name: AKTC 125 Revised Alignment
Aboriginal Excavation — Job #: 17-0169B

TEST UNIT # 202
PHOTO #

Excavators: MPF, MR, KF, CT Date: 10/12/2020

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 0

Other evidence?

Worthy of expansion? How?

Plan #: Samples (description & #):

LOCATION

GPS (for additional / overlay) Easting: □□□□□□ Northing: □□□□□□□

Soil landscape:

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W Slope %

EXCAVATION wet sieved dry sieved

Spit #	Depth (cm)	XRA Material			Munsell & Colour	Notes/Features – Special Treatment	Aboriginal Objects #
1	100	A1 (A2)	B	Other	7.5YR 5/3 Brown		0
2	150	A1 (A2)	B	Other			0
3	160	A1 (A2)	B	Other	7.5YR 7/2 Pinkish Grey		0
4		A1 A2	B	Other			
5		A1 A2	B	Other			
6		A1 A2	B	Other			
7		A1 A2	B	Other			
Totals	360						0

SOIL DESCRIPTION

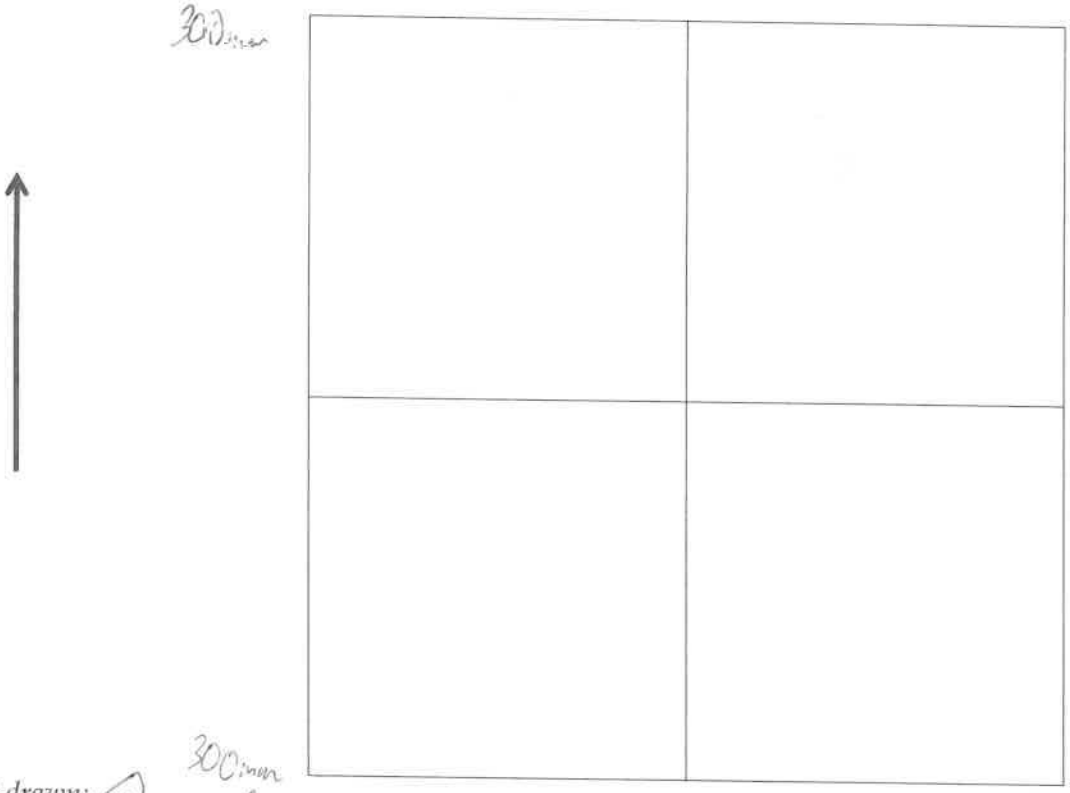
Soil Horizon	Strat/ Spit #	Soil (type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All or these tend to be zones of artefact accumulation and the base of the biomantle)
Surface Layer		Eg. Gravels, sand, litter, evidence of disturbance etc
A1	Spits 1-3	Brown loamy clay with some small ironstone gravels (lack of sorting)
A2	Spits 3-4	As above, but more bleached (pinkish grey), less clay, more ironstone gravels, especially @ base of pit
B		

Description of material below B or the limit of excavation

Plan

300mm

300mm



300mm

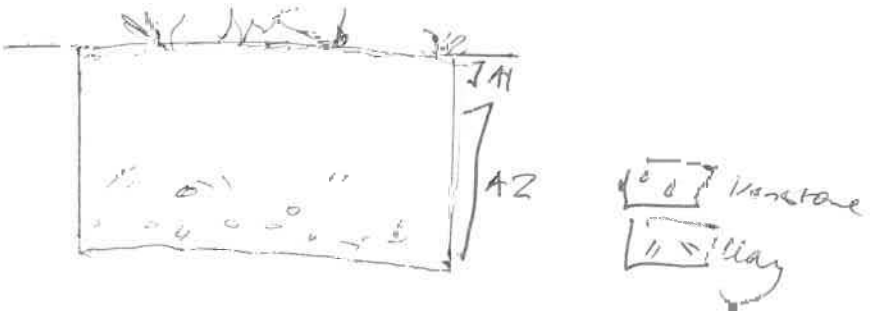
360mm

Spit drawn: @ end of excavation

Section Plan

Face: N

Scale: 0 100mm



Further Descriptions and Relationships to other TU

239.

Project Name: AKTC 125 Revised Alignment
Aboriginal Excavation — Job #: 17-0169B

TEST UNIT # PHOTO # 224

Excavators MR Date 10/2

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects: 3 spots

Other evidence?

Worthy of expansion? How?

Plan #: Samples (description & #): 0 artefacts

LOCATION

GPS (for additional TU only) Easting Northing

Soil landscape: [illegible]

Landform: Creek Bank / Terrace / Flat / Slope / Ridge Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other

Aspect: N E S W Slope % 0

EXCAVATION

wet sieved dry sieved

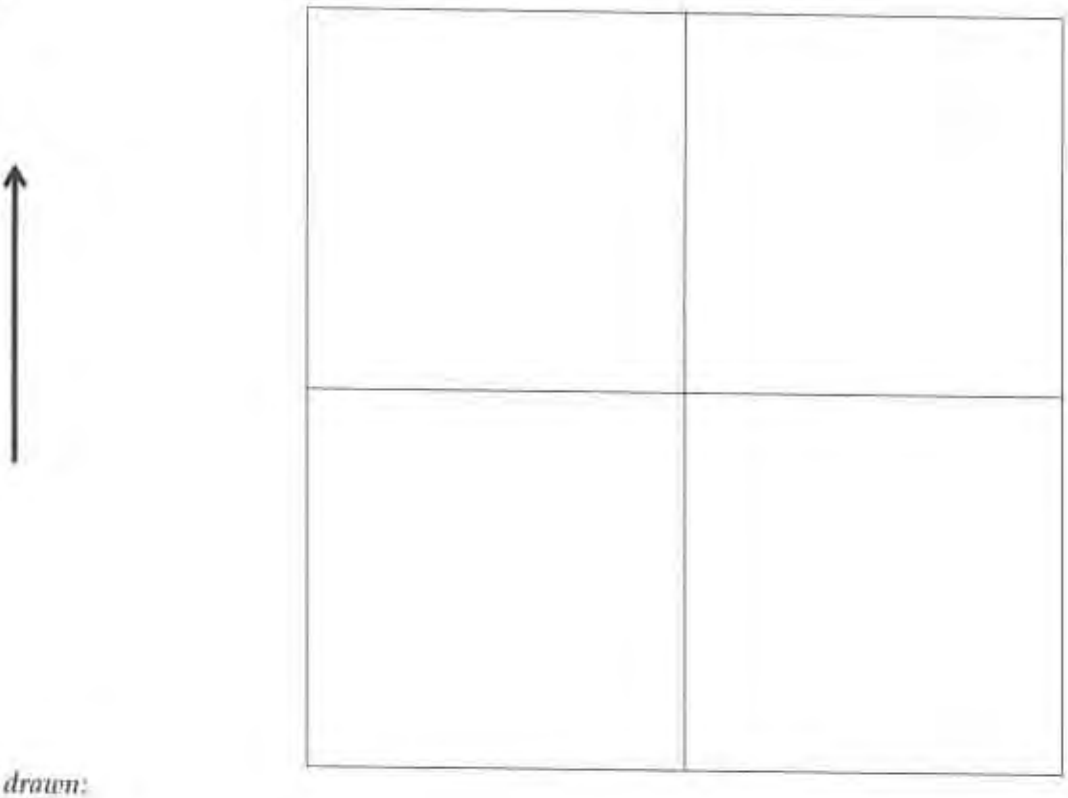
Spit #	Depth (cm)	Soil Horizon	Munsell & pH	Matrix/ Inclusions = Special Interest	Aboriginal Objects #
1	0 – 100	A1 A2 B Other	10 yr 6/3	pale brown	
2	100–[illegible]	A1 A2 B Other	10 yr 7/1	light grey	
3	200–250/[illegible]	A1 A2 B Other	10 yr 5/3	Brown	
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, disturbance, vegetation, moisture, disturbance, carbon, evidence of burning/ heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.) Eg. Gravels, sand, litter, evidence of disturbance etc.
Surface Layer		
A1	0-10	[illegible]
A2	10- [illegible]	[illegible]
	200- [illegible]	[illegible]
B		[illegible]

Description of material below B or the limit of excavations

Plan

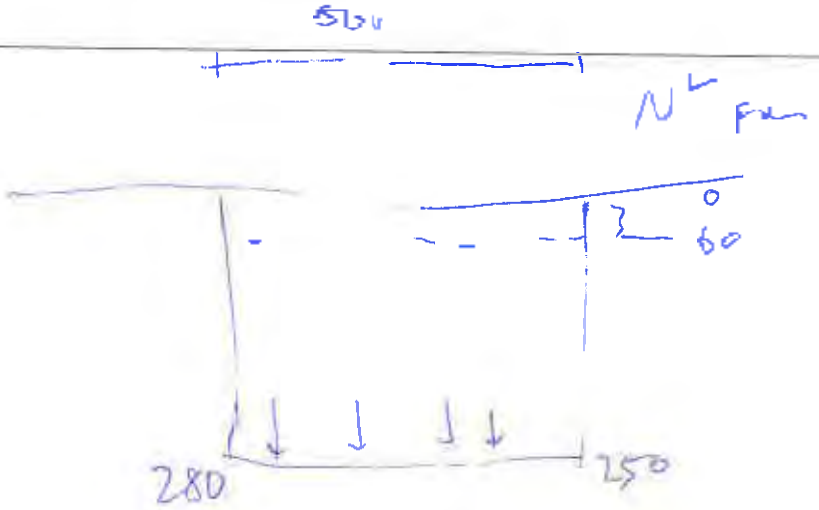


Spit drawn:

Section Plan

Face:

Scale:



Further Descriptions and Relationships to other TU

Project Name: ARTC 128 Revised Alignment
Aboriginal Excavation – Job #: 17-0169B

TEST UNIT # / PHOTO # 246

Excavators MR AR KO

Date: 10/12

SUMMARY OF EXCAVATION

Total Count Aboriginal Objects	–
Other evidence?	–
Worthy of expansion? How?	–
Plan #:	Samples (description & #):

3 Sh's

0 artefacts

LOCATION

GPS (for additional TU only)	Easting	Northing	
Soil landscape	OAKVILLE		
Landform	Creek Bank / Terrace / Flat / Slope / Ridge-Line / Hill Crest / Swamps / Depressions / Rock Outcrops / Other		
Aspect	N E S W	Slope %	0-

EXCAVATION

wet sieved dry sieved

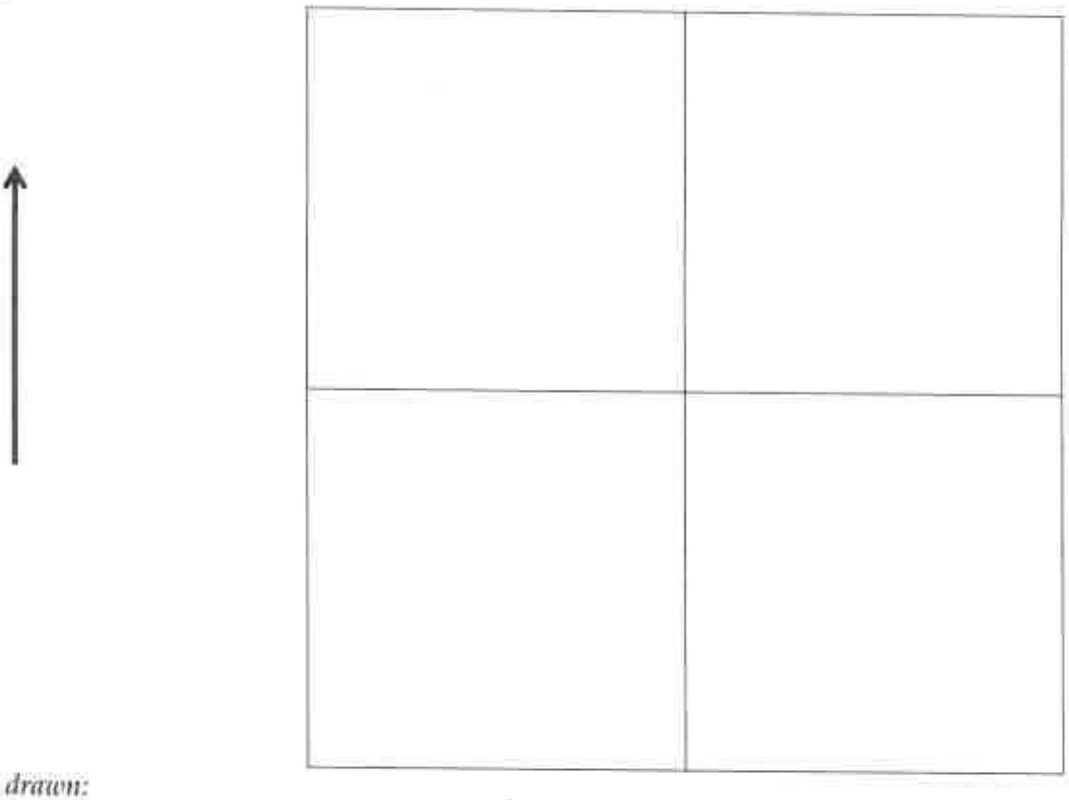
Spit #	Depth (mm)	Soil Horizon	Munsell & pH	Items Features - Special Interest	Aboriginal Objects #
1	0-100	A1 A2 B Other	10 YR 5/4		
2	100-200	A1 A2 B Other	10 YR 6/2	light brown/grey	
3	200-300	A1 A2 B Other			
4		A1 A2 B Other			
5		A1 A2 B Other			
6		A1 A2 B Other			
7		A1 A2 B Other			
Totals					

SOIL DESCRIPTION

Soil Horizon	Strata/ Spit #	Soil type, colour, difference in shade from other strata, compaction, particle size, inclusions, depth, bioturbation, vegetation, moisture, disturbance, carbon, evidence of burning/heating, condition, integrity. Note bleached zones in the A2 and presence of ironstone gravels and/or stone layers, any cemented pans. All of these tend to be zones of artefact accumulation and the base of the biomantle.) Eg. Gravels, sand, lithics, evidence of disturbance etc.
Surface Layer		
A1	0-80	80cm friable brown silt, homogenous throughout layer diffuse boundary to A2
A2	80-300	light grey compact silt & gravels increasing clay content to base
	300+	clay
B		

Description of material below B or the limit of excavation:

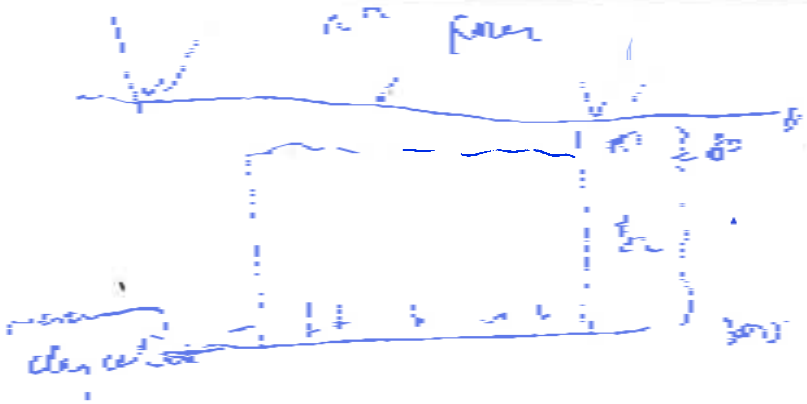
Plan



Spit drawn:

Section Plan

Face:
Scale:



Further Descriptions and Relationships to other TU

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix I Photo log

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix I

Photo log for photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

Date	Photo #	TU	Zone	Orientation	Description
Monday 6 May 2019					
6/05/2019	IMG_0001	8	1		Stake ID
6/05/2019	IMG_0003	8	1	N	Pre-ex landscape shot
6/05/2019	IMG_0004	10	1		Stake ID
6/05/2019	IMG_0005	10	1	N	Pre-ex landscape shot
6/05/2019	IMG_0006	6	1		Stake ID
6/05/2019	IMG_0007	6	1	N	Pre-ex landscape shot
6/05/2019	IMG_0008	5	1		Stake ID
6/05/2019	IMG_0009	5	1	N	Pre-ex landscape shot
6/05/2019	IMG_0010	5	1	N	Pre-ex landscape shot
6/05/2019	IMG_0011	7	1		Stake ID
6/05/2019	IMG_0012	7	1		Stake ID
6/05/2019	IMG_0013	7	1	N	Pre-ex landscape shot
6/05/2019	IMG_0014	9	1		Stake ID
6/05/2019	IMG_0015	9	1	N	Pre-ex landscape shot
6/05/2019	IMG_0016	9	1	N	Pre-ex landscape shot
6/05/2019	IMG_0017	12	1		Stake ID
6/05/2019	IMG_0018	12	1	N	Pre-ex landscape shot
6/05/2019	IMG_0019	11	1		Stake ID
6/05/2019	IMG_0020	11	1	N	Pre-ex landscape shot
6/05/2019	IMG_0021	14	1		Stake ID
6/05/2019	IMG_0022	14	1	N	Pre-ex landscape shot
6/05/2019	IMG_0023	13	1		Stake ID
6/05/2019	IMG_0024	13	1	N	Pre-ex landscape shot
6/05/2019	IMG_0025		1	S	Shot of Zone 1 site setup
6/05/2019	IMG_0026	16	1		Stake ID
6/05/2019	IMG_0027	16	1	N	Pre-ex landscape shot
6/05/2019	IMG_0028	15	1		Stake ID
6/05/2019	IMG_0029	15	1	N	Pre-ex landscape shot
6/05/2019	IMG_0030	18	1		Stake ID
6/05/2019	IMG_0031	18	1	N	Pre-ex landscape shot
6/05/2019	IMG_0032	17	1		Stake ID
6/05/2019	IMG_0033	17	1	N	Pre-ex landscape shot
6/05/2019	IMG_0034	21	1		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
6/05/2019	IMG_0035	21	1	N	Pre-ex landscape shot
6/05/2019	IMG_0036	20	1		Stake ID
6/05/2019	IMG_0037	20	1	N	Pre-ex landscape shot
6/05/2019	IMG_0038	24	1		Stake ID
6/05/2019	IMG_0039	24	1	N	Pre-ex landscape shot
6/05/2019	IMG_0040	19	1	N	Pre-ex landscape shot
6/05/2019	IMG_0041	23	1		Stake ID
6/05/2019	IMG_0042	23	1	N	Pre-ex landscape shot
6/05/2019	IMG_0043	27	1		Stake ID
6/05/2019	IMG_0044	27	1	N	Pre-ex landscape shot
6/05/2019	IMG_0045	21	1		Stake ID
6/05/2019	IMG_0046	22	1	N	Pre-ex landscape shot
6/05/2019	IMG_0047	4	1		Stake ID
6/05/2019	IMG_0048	4	1	N	Pre-ex landscape shot
6/05/2019	IMG_0049	6	1		Stake ID
6/05/2019	IMG_0050	6	1	N	Pre-ex shot
6/05/2019	IMG_0051	30	1		Stake ID
6/05/2019	IMG_0052	30	1	N	Pre-ex landscape shot
6/05/2019	IMG_0053	26	1		Stake ID
6/05/2019	IMG_0054	26	1	N	Pre-ex landscape shot
6/05/2019	IMG_0055	33	1		Stake ID
6/05/2019	IMG_0056	33	1	N	Pre-ex landscape shot
6/05/2019	IMG_0057	28	1		Stake ID
6/05/2019	IMG_0058	28	1	N	Pre-ex shot
6/05/2019	IMG_0059	32	1		Stake ID
6/05/2019	IMG_0060	32	1	N	Pre-ex landscape shot
6/05/2019	IMG_0061	36	1		Stake ID
6/05/2019	IMG_0062	36	1	N	Pre-ex landscape shot
6/05/2019	IMG_0063	31	1		Stake ID
6/05/2019	IMG_0064	31	1	N	Pre-ex landscape shot
6/05/2019	IMG_0065	35	1		Stake ID
6/05/2019	IMG_0066	35	1	N	Pre-ex landscape shot
6/05/2019	IMG_0067	39	1		Stake ID
6/05/2019	IMG_0068	39	1	N	Pre-ex landscape shot

Date	Photo #	TU	Zone	Orientation	Description
6/05/2019	IMG_0069	34	1		Stake ID
6/05/2019	IMG_0070	34	1	N	Pre-ex landscape shot
6/05/2019	IMG_0071	38	1		Stake ID
6/05/2019	IMG_0072	38	1	N	Pre-ex landscape shot
6/05/2019	IMG_0073	42	1		Stake ID
6/05/2019	IMG_0074	42	1	N	Pre-ex shot
6/05/2019	IMG_0075	37	1		Stake ID
6/05/2019	IMG_0076	37	1	N	Pre-ex landscape shot
6/05/2019	IMG_0077	41	1		Stake ID
6/05/2019	IMG_0078	41	1	N	Pre-ex landscape shot
6/05/2019	IMG_0079	45	1		Stake ID
6/05/2019	IMG_0080	45	1	N	Pre-ex landscape shot
6/05/2019	IMG_0081	40	1		Stake ID
6/05/2019	IMG_0082	40	1	N	Pre-ex landscape shot
6/05/2019	IMG_0083	43	1		Stake ID
6/05/2019	IMG_0084	43	1	N	Pre-ex landscape shot
6/05/2019	IMG_0085	44	1		Stake ID
6/05/2019	IMG_0086	44	1	N	Pre-ex landscape shot
6/05/2019	IMG_0087	9	1		Stake ID
6/05/2019	IMG_0088	9	1	N	Post-ex TU in plan
6/05/2019	IMG_0089	9	1	N	Post-ex TU in plan
6/05/2019	IMG_0090	9	1	N	Post-ex TU in plan
6/05/2019	IMG_0091	9	1	N	Post-ex TU north section
6/05/2019	IMG_0092	9	1	N	Post-ex TU north section
6/05/2019	IMG_0093	9	1		Backfilled TU
6/05/2019	IMG_0094	8	1		Stake ID
6/05/2019	IMG_0095	8	1	N	Post-ex TU in plan
6/05/2019	IMG_0096	8	1	N	Post-ex TU in plan
6/05/2019	IMG_0097	8	1	N	Post-ex TU north section
6/05/2019	IMG_0098	10	1		Stake ID
6/05/2019	IMG_0099	10	1	N	Post-ex TU in plan
6/05/2019	IMG_0100	10	1		Post-ex TU in plan
6/05/2019	IMG_0101	10	1	N	Post-ex TU north section
6/05/2019	IMG_0102	8	1		Backfilled TU

Date	Photo #	TU	Zone	Orientation	Description
Tuesday 7 May 2019					
7/05/2019	IMG_0103		1		Date
7/05/2019	IMG_0104	5	1		Stake ID
7/05/2019	IMG_0105	5	1	N	Post-ex TU in plan
7/05/2019	IMG_0106	5	1	N	Post-ex TU in plan
7/05/2019	IMG_0107	5	1	N	Post-ex TU north section
7/05/2019	IMG_0108	5	1	N	Post-ex TU north section
7/05/2019	IMG_0109	7	1	N	Post-ex TU in plan
7/05/2019	IMG_0110	7	1	N	Post-ex TU in plan
7/05/2019	IMG_0111	7	1	N	Post-ex TU north section
7/05/2019	IMG_0112	7	1	N	Post-ex TU north section
7/05/2019	IMG_0113		1		Note to self
7/05/2019	IMG_0114	7	1		Backfilled TU
7/05/2019	IMG_0115	5	1		Backfilled TU
7/05/2019	IMG_0116	10	1		Backfilled TU
7/05/2019	IMG_0117	8	1		Backfilled TU
7/05/2019	IMG_0118	12	1		Stake ID
7/05/2019	IMG_0119	12	1	N	Post-ex TU in plan
7/05/2019	IMG_0120	12	1	N	Post-ex TU in plan
7/05/2019	IMG_0121	12	1	N	Post-ex TU north section
7/05/2019	IMG_0122	12	1	N	Post-ex TU north section
7/05/2019	IMG_0123	12	1		Backfilled TU
7/05/2019	IMG_0124	11	1		Stake ID
7/05/2019	IMG_0125	11	1	N	Post-ex TU in plan
7/05/2019	IMG_0126	11	1	N	Post-ex TU in plan
7/05/2019	IMG_0127	11	1	N	Post-ex TU north section
7/05/2019	IMG_0128	11	1	N	Post-ex TU north section
7/05/2019	IMG_0129	11	1		Backfilled TU
7/05/2019	IMG_0130	13	1		Stake ID
7/05/2019	IMG_0131	13	1	N	Post-ex TU in plan
7/05/2019	IMG_0132	13	1	N	Post-ex TU north section
7/05/2019	IMG_0133	13	1	N	Post-ex TU north section
7/05/2019	IMG_0134	13	1	N	Backfilled TU
Wednesday 8 May 2019					

Date	Photo #	TU	Zone	Orientation	Description
8/05/2019	IMG_0135		1		Date
8/05/2019	IMG_0136	4	1		Stake ID
8/05/2019	IMG_0137	4	1	N	Post-ex TU in plan
8/05/2019	IMG_0138	4	1	N	Post-ex TU north section
8/05/2019	IMG_0139	4	1		Backfilled TU
8/05/2019	IMG_0140		1		Unexploded ordnance
8/05/2019	IMG_0141		1		Unexploded ordnance
8/05/2019	IMG_0142		1		Unexploded ordnance
8/05/2019	IMG_1440	170	8		Stake ID
8/05/2019	IMG_1441		8	N	Rebecca and Heath
8/05/2019	IMG_1442	170	8	N	Pre-ex landscape shot
8/05/2019	IMG_1443		8		Lisa and Lara (Heath and Rebecca in background)
8/05/2019	IMG_1444	172	8		Stake ID
8/05/2019	IMG_1445	172	8	N	Pre-ex landscape shot
8/05/2019	IMG_1446	175	8		Stake ID
8/05/2019	IMG_1447	175	8	N	Pre-ex landscape shot
8/05/2019	IMG_1448	171	8		Stake ID
8/05/2019	IMG_1449	171	8	N	Pre-ex landscape shot
8/05/2019	IMG_1450	174	8		Stake ID
8/05/2019	IMG_1451	174	8	N	Pre-ex landscape shot
8/05/2019	IMG_1452	170	8		Stake ID
8/05/2019	IMG_1453		8	N	Lisa
8/05/2019	IMG_1454		8	N	Lisa
8/05/2019	IMG_1455	170	8	N	Pre-ex landscape shot
8/05/2019	IMG_1456	173	8		Stake ID
8/05/2019	IMG_1457	173	8	N	Pre-ex landscape shot
8/05/2019	IMG_1458	168	8		Stake ID
8/05/2019	IMG_1459	168	8	N	Pre-ex landscape shot
8/05/2019	IMG_1460	167	8		Stake ID
8/05/2019	IMG_1461	167	8	N	Pre-ex landscape shot
8/05/2019	IMG_1462	161	8		Stake ID
8/05/2019	IMG_1463	161	8	N	Pre-ex landscape shot
8/05/2019	IMG_1464	162	8		Stake ID
8/05/2019	IMG_1465	162	8	N	Pre-ex landscape shot

Date	Photo #	TU	Zone	Orientation	Description
8/05/2019	IMG_1466	163	8		Stake ID
8/05/2019	IMG_1467	163	8	N	Pre-ex landscape shot
8/05/2019	IMG_1468	164	8		Stake ID
8/05/2019	IMG_1469	164	8	N	Pre-ex landscape shot
8/05/2019	IMG_1470	165	8		Stake ID
8/05/2019	IMG_1471	165	8	N	Pre-ex landscape shot
8/05/2019	IMG_1472	166	8		Stake ID
8/05/2019	IMG_1473	166	8	N	Pre-ex landscape shot
8/05/2019	IMG_1476		8		Sky whilst driving to other side of Zone 8
8/05/2019	IMG_1487	146	8		Stake ID
8/05/2019	IMG_1488	146	8	N	Pre-ex landscape shot
8/05/2019	IMG_1489	142	8		Stake ID
8/05/2019	IMG_1490	142	8	N	Pre-ex landscape shot
8/05/2019	IMG_1491	143	8		Stake ID
8/05/2019	IMG_1492	143	8	N	Pre-ex landscape shot
8/05/2019	IMG_1493	147	8		Stake ID
8/05/2019	IMG_1494	147	8	N	Pre-ex landscape shot
8/05/2019	IMG_1495	144	8		Stake ID
8/05/2019	IMG_1496	144	8	N	Pre-ex landscape shot
8/05/2019	IMG_1497	148	8		Stake ID
8/05/2019	IMG_1498	148	8	N	Pre-ex landscape shot
8/05/2019	IMG_1499	149	8		Stake ID
8/05/2019	IMG_1500	149	8	N	Pre-ex landscape shot
8/05/2019	IMG_1501	153	8		Stake ID
8/05/2019	IMG_1502	153	8	N	Pre-ex landscape shot
8/05/2019	IMG_1503	154	8		Stake ID
8/05/2019	IMG_1504	154	8	N	Pre-ex landscape shot
8/05/2019	IMG_1505	158	8		Stake ID
8/05/2019	IMG_1506	158	8	N	Pre-ex landscape shot
8/05/2019	IMG_1507	159	8		Stake ID
8/05/2019	IMG_1508	159	8	N	Pre-ex landscape shot
8/05/2019	IMG_1509	160	8		Stake ID
8/05/2019	IMG_1510	160	8	N	Pre-ex landscape shot
8/05/2019	IMG_1511	155	8		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
8/05/2019	IMG_1512	155	8	N	Pre-ex landscape shot
8/05/2019	IMG_1513	157	8		Stake ID
8/05/2019	IMG_1514	157	8	N	Pre-ex landscape shot
8/05/2019	IMG_1515	156	8		Stake ID
8/05/2019	IMG_1516	156	8	N	Pre-ex landscape shot
8/05/2019	IMG_1517	152	8		Stake ID
8/05/2019	IMG_1518	152	8	N	Pre-ex landscape shot
8/05/2019	IMG_1519	151	8		Stake ID
8/05/2019	IMG_1520	151	8	N	Pre-ex landscape shot
8/05/2019	IMG_1521	150	8		Stake ID
8/05/2019	IMG_1522	150	8	N	Pre-ex landscape shot
8/05/2019	IMG_1523	145	8		Stake ID
8/05/2019	IMG_1524	145	8	N	Pre-ex landscape shot
8/05/2019	IMG_1525	145	8	E	Pre-ex landscape shot
Thursday 9 May 2019					
9/05/2019	IMG_0143				Date
9/05/2019	IMG_0144	169	8		Stake ID
9/05/2019	IMG_0145	169	8	N	Pre-ex landscape shot
9/05/2019	IMG_0146	175	8		Stake ID
9/05/2019	IMG_0147	175	8	N	Post-ex TU in plan
9/05/2019	IMG_0148	175	8	N	Post-ex TU in plan
9/05/2019	IMG_0149	175	8	N	Post-ex in section
9/05/2019	IMG_0150	175	8	N	Post-ex in section
9/05/2019	IMG_0151	175	8		Backfilled TU
9/05/2019	IMG_0152	171	8		Stake ID
9/05/2019	IMG_0153	171	8	N	Post-ex TU in plan
9/05/2019	IMG_0154	171	8	N	Post-ex TU in plan
9/05/2019	IMG_0156	171	8	N	Post-ex in section
9/05/2019	IMG_0157	171	8	N	Post-ex in section
9/05/2019	IMG_0158	171	8		Backfilled TU
9/05/2019	IMG_0159	172	8		Stake ID
9/05/2019	IMG_0160	172	8	N	Post-ex TU in plan
9/05/2019	IMG_0161	172	8	N	Post-ex TU in plan
9/05/2019	IMG_0162	172	8	N	Post-ex TU in section

Date	Photo #	TU	Zone	Orientation	Description
9/05/2019	IMG_0163	172	8	N	Post-ex TU in section
9/05/2019	IMG_0164	172	8		Backfilled TU
9/05/2019	IMG_0165	176	8		Stake ID
9/05/2019	IMG_0166	176	8	S	Post-ex TU in plan
9/05/2019	IMG_0167	176	8	S	Post-ex TU in plan
9/05/2019	IMG_0168	176	8	S	Post-ex TU in section
9/05/2019	IMG_0169	176	8	S	Post-ex TU in section
9/05/2019	IMG_0170	176	8		Backfilled TU
9/05/2019	IMG_0171	174	8		Stake ID
9/05/2019	IMG_0172	174	8	N	Post-ex TU in plan
9/05/2019	IMG_0173	174	8	N	Post-ex TU in plan
9/05/2019	IMG_0174	174	8	N	Post-ex TU in plan
9/05/2019	IMG_0175	174	8	N	Post-ex TU in section
9/05/2019	IMG_0176	174	8	N	Post-ex TU in section
9/05/2019	IMG_0177	174	8		Backfilled TU
9/05/2019	IMG_0178	166	8	N	Post-ex TU in plan
9/05/2019	IMG_0179	166	8	N	Post-ex TU in plan
9/05/2019	IMG_0180	166	8	N	Post-ex TU in section
9/05/2019	IMG_0181	166	8	N	Post-ex TU in section
9/05/2019	IMG_0182	166	8		Backfilled TU
9/05/2019	IMG_0183	166	8		Note to self
9/05/2019	IMG_0184	165	8		Stake ID
9/05/2019	IMG_0185	165	8	N	Post-ex TU in plan
9/05/2019	IMG_0186	165	8	N	Post-ex TU in plan
9/05/2019	IMG_0187	165	8	N	Post-ex TU in section
9/05/2019	IMG_0188	165	8	N	Post-ex TU in section
9/05/2019	IMG_0189	165	8		Backfilled TU
9/05/2019	IMG_0190	170	8		Stake ID
9/05/2019	IMG_0191	170	8	N	Post-ex TU in plan
9/05/2019	IMG_0192	170	8	N	Post-ex TU in plan
9/05/2019	IMG_0193	170	8	N	Post-ex TU in section
9/05/2019	IMG_0194	170	8	N	Post-ex TU in section
9/05/2019	IMG_0195	164	8		Stake ID
9/05/2019	IMG_0196	164	8	N	Post-ex TU in plan

Date	Photo #	TU	Zone	Orientation	Description
9/05/2019	IMG_0197	164	8	N	Post-ex TU in plan
9/05/2019	IMG_0198	164	8	N	Post-ex TU in section
9/05/2019	IMG_0199	164	8	N	Post-ex TU in section
9/05/2019	IMG_0200	164	8		Backfilled TU
9/05/2019	IMG_0201	170	8		Backfilled TU
9/05/2019	IMG_0202	163	8		Stake ID
9/05/2019	IMG_0203	163	8	N	Post-ex TU in plan
9/05/2019	IMG_0204	163	8	N	Post-ex TU in section
9/05/2019	IMG_0205	163	8	N	Post-ex TU in section
9/05/2019	IMG_0206	163	8		Backfilled TU
9/05/2019	IMG_0207	173	8		Stake ID
9/05/2019	IMG_0208	173	8	N	Post-ex TU in plan
9/05/2019	IMG_0209	173	8	N	Post-ex TU in plan
9/05/2019	IMG_0210	173	8	N	Post-ex TU in section
9/05/2019	IMG_0211	173	8	N	Post-ex TU in section
9/05/2019	IMG_0212	173	8		Backfilled TU
9/05/2019	IMG_0213	161	8		Stake ID
9/05/2019	IMG_0214	161	8	N	Post-ex TU in plan
9/05/2019	IMG_0215	161	8	N	Post-ex TU in plan
9/05/2019	IMG_0216	161	8	N	Post-ex TU in section
9/05/2019	IMG_0217	161	8	N	Post-ex TU in section
9/05/2019	IMG_0218	168	8		Stake ID
9/05/2019	IMG_0219	168	8	N	Post-ex TU in plan
9/05/2019	IMG_0220	168	8	N	Post-ex TU in plan
9/05/2019	IMG_0221	168	8	N	Post-ex TU in section
9/05/2019	IMG_0222	168	8	N	Post-ex TU in section
9/05/2019	IMG_0223	161	8		Backfilled TU
9/05/2019	IMG_0224	162	8		Stake ID
9/05/2019	IMG_0225	162	8	W	Post-ex TU in plan
9/05/2019	IMG_0226	162	8	W	Post-ex TU in plan
9/05/2019	IMG_0227	162	8	W	Post-ex TU in section
9/05/2019	IMG_0228	162	8	W	Post-ex TU in section
9/05/2019	IMG_0229	169	8		Stake ID
9/05/2019	IMG_0230	169	8	N	Post-ex TU in plan

Date	Photo #	TU	Zone	Orientation	Description
9/05/2019	IMG_0231	169	8	N	Post-ex TU in plan
9/05/2019	IMG_0232	169	8	N	Post-ex TU in section
9/05/2019	IMG_0233	169	8	N	Post-ex TU in section
9/05/2019	IMG_0234	162	8		Backfilled TU
9/05/2019	IMG_0235	167	8		Stake ID
9/05/2019	IMG_0236	167	8	N	Post-ex TU in plan
9/05/2019	IMG_0237	167	8	N	Post-ex TU in plan
9/05/2019	IMG_0238	167	8	N	Post-ex TU in section
9/05/2019	IMG_0239	167	8	N	Post-ex TU in section
9/05/2019	IMG_0240	168	8		Backfilled TU
9/05/2019	IMG_0241	169	8		Backfilled TU
9/05/2019	IMG_0243		8		
9/05/2019	IMG_0244	167	8		Backfilled TU
9/05/2019	IMG_0245		8		Cows
9/05/2019	IMG_0246		8		Cows
9/05/2019	IMG_0247		8		Cows
9/05/2019	IMG_0248		8		Cows
9/05/2019	IMG_0249		8		Cows
9/05/2019	IMG_0250	142	8		Stake ID
9/05/2019	IMG_0251	142	8	N	Post-ex TU in plan
9/05/2019	IMG_0252	142	8	N	Post-ex TU in plan
9/05/2019	IMG_0253	142	8	N	Post-ex TU in section
9/05/2019	IMG_0254	142	8	N	Post-ex TU in section
9/05/2019	IMG_0255	142	8		Backfilled TU
9/05/2019	IMG_0256	147	8		Stake ID
9/05/2019	IMG_0257	147	8	N	Post-ex TU in plan
9/05/2019	IMG_0258	147	8	N	Post-ex TU in plan
9/05/2019	IMG_0259	147	8	N	Post-ex TU in section
9/05/2019	IMG_0260	147	8	N	Post-ex TU in section
9/05/2019	IMG_0261	145	8		Stake ID
9/05/2019	IMG_0262	145	8	N	Post-ex TU in plan
9/05/2019	IMG_0263	145	8	N	Post-ex TU in plan
9/05/2019	IMG_0264	145	8	N	Post-ex TU in plan
9/05/2019	IMG_0265	145	8	N	Post-ex TU in section

Date	Photo #	TU	Zone	Orientation	Description
9/05/2019	IMG_0266	145	8	N	Post-ex TU in section
9/05/2019	IMG_0267	145	8		Backfilled TU
9/05/2019	IMG_0268	146	8		Stake ID
9/05/2019	IMG_0270	146	8	N	Post-ex TU in plan
9/05/2019	IMG_0271	146	8	N	Post-ex TU in plan
9/05/2019	IMG_0272	146	8	N	Post-ex TU in section
9/05/2019	IMG_0273	146	8	N	Post-ex TU in section
9/05/2019	IMG_0274	147	8		Backfilled TU
9/05/2019	IMG_0275	148	8		Stake ID
9/05/2019	IMG_0276	148	8	N	Post-ex TU in plan
9/05/2019	IMG_0277	148	8	N	Post-ex TU in plan
9/05/2019	IMG_0278	148	8	N	Post-ex TU in section
9/05/2019	IMG_0279	148	8	N	Post-ex TU in section
9/05/2019	IMG_0280	148	8		Backfilled TU
9/05/2019	IMG_0281	146	8		Backfilled TU
9/05/2019	IMG_0282	150	8		Stake ID
9/05/2019	IMG_0283	150	8	N	Post-ex TU in plan
9/05/2019	IMG_0284	150	8	N	Post-ex TU in plan
9/05/2019	IMG_0285	150	8	N	Post-ex TU in section
9/05/2019	IMG_0286	150	8	N	Post-ex TU in section
9/05/2019	IMG_0287	153	8		Stake ID
9/05/2019	IMG_0288	153	8	N	Post-ex TU in plan
9/05/2019	IMG_0289	153	8	N	Post-ex TU in plan
9/05/2019	IMG_0290	153	8	N	Post-ex TU in section
9/05/2019	IMG_0291	153	8	N	Post-ex TU in section
9/05/2019	IMG_0292	153	8		Backfilled TU
9/05/2019	IMG_0293	150	8		Backfilled TU
Friday 10 May 2019					
10/05/2019	IMG_0294		8		Date
10/05/2019	IMG_0295	152	8		Stake ID
10/05/2019	IMG_0296	152	8	N	Post-ex in plan
10/05/2019	IMG_0297	152	8	N	Post-ex in section
10/05/2019	IMG_0298	143	8		Stake ID
10/05/2019	IMG_0299	143	8	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
10/05/2019	IMG_0300	143	8	N	Post-ex in section
10/05/2019	IMG_0301	143	8		Backfilled TU
10/05/2019	IMG_0302	156	8		Stake ID
10/05/2019	IMG_0303	156	8	N	Post-ex in plan
10/05/2019	IMG_0304	156	8	N	Post-ex in section
10/05/2019	IMG_0305	151	8		Stake ID
10/05/2019	IMG_0306	151	8	N	Post-ex in plan
10/05/2019	IMG_0307	151	8	N	Post-ex in section
10/05/2019	IMG_0308	151	8		Backfilled TU
10/05/2019	IMG_0309	156	8		Backfilled TU
10/05/2019	IMG_0310	152	8		Backfilled TU
10/05/2019	IMG_0311	152	8		Backfilled TU
10/05/2019	IMG_0312	144	8		Stake ID
10/05/2019	IMG_0313	144	8	N	Post-ex in plan
10/05/2019	IMG_0314	144	8	N	Post-ex in section
10/05/2019	IMG_0315	144	8		Backfilled TU
10/05/2019	IMG_0316	149	8		Stake ID
10/05/2019	IMG_0317	149	8	N	Post-ex in plan
10/05/2019	IMG_0318	149	8	N	Post-ex in section
10/05/2019	IMG_0319	149	8		Backfilled TU
10/05/2019	IMG_0320	154	8		Stake ID
10/05/2019	IMG_0321	154	8	N	Post-ex in plan
10/05/2019	IMG_0322	154	8	N	Post-ex in section
10/05/2019	IMG_0323	154	8	N	Post-ex in section
10/05/2019	IMG_0324	154	8		Backfilled TU
10/05/2019	IMG_0325	159	8		Stake ID
10/05/2019	IMG_0326	159	8	N	Post-ex in plan
10/05/2019	IMG_0327	159	8	N	Post-ex in section
10/05/2019	IMG_0328	159	8		Backfilled TU
10/05/2019	IMG_0329	158	8		Stake ID
10/05/2019	IMG_0330	158	8	N	Post-ex in plan
10/05/2019	IMG_0331	158	8	N	Post-ex in section
10/05/2019	IMG_0332	158	8		Backfilled TU
10/05/2019	IMG_0333	157	8		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
10/05/2019	IMG_0334	157	8	N	Post-ex in plan
10/05/2019	IMG_0335	157	8	N	Post-ex in section
10/05/2019	IMG_0336	160	8		Stake ID
10/05/2019	IMG_0337	160	8	N	Post-ex in plan
10/05/2019	IMG_0338	160	8	N	Post-ex in section
10/05/2019	IMG_0339	160	8		Backfilled TU
10/05/2019	IMG_0340	157	8		Backfilled TU
10/05/2019	IMG_0341	155	8		Stake ID
10/05/2019	IMG_0342	155	8	N	Post-ex in plan
10/05/2019	IMG_0343	155	8	N	Post-ex in section
10/05/2019	IMG_0344	155	8		Backfilled TU
10/05/2019	IMG_0345		8		Stakes from excavations so far
10/05/2019	IMG_0346		8		Stakes from excavations so far
10/05/2019	IMG_0347	134	7		Stake ID
10/05/2019	IMG_0348	134	7	N	Pre-ex landscape shot
10/05/2019	IMG_0349	135	7		Stake ID
10/05/2019	IMG_0350	135	7	N	Pre-ex landscape shot
10/05/2019	IMG_0351	133	7		Stake ID
10/05/2019	IMG_0352	133	7		Stake ID
10/05/2019	IMG_0353	133	7	N	Pre-ex landscape shot
10/05/2019	IMG_0354	132	7		Stake ID
10/05/2019	IMG_0355	132	7	N	Pre-ex landscape shot
10/05/2019	IMG_0356	130	7		Stake ID
10/05/2019	IMG_0357	130	7		Stake ID
10/05/2019	IMG_0358	130	7	N	Pre-ex landscape shot
10/05/2019	IMG_0359	128	7		Stake ID
10/05/2019	IMG_0360	128	7	N	Pre-ex landscape shot
10/05/2019	IMG_0361	131	7		Stake ID
10/05/2019	IMG_0362	131	7	N	Pre-ex landscape shot
10/05/2019	IMG_0363	127	7		Stake ID
10/05/2019	IMG_0364	127	7	N	Pre-ex landscape shot
10/05/2019	IMG_0365	126	7		Stake ID
10/05/2019	IMG_0366	126	7	N	Pre-ex landscape shot
10/05/2019	IMG_0367	124	7		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
10/05/2019	IMG_0368	124	7	N	Pre-ex landscape shot
10/05/2019	IMG_0369	124	7	N	Pre-ex landscape shot
10/05/2019	IMG_0370	123	7		Stake ID
10/05/2019	IMG_0371	123	7	N	Pre-ex landscape shot
10/05/2019	IMG_0372		7		Rainbow
10/05/2019	IMG_0373	120	7		Stake ID
10/05/2019	IMG_0374	120	7	N	Pre-ex landscape shot
10/05/2019	IMG_0375	122	7		Stake ID
10/05/2019	IMG_0376	122	7	N	Pre-ex landscape shot
10/05/2019	IMG_0377	125	7		Stake ID
10/05/2019	IMG_0378	125	7	N	Pre-ex landscape shot
10/05/2019	IMG_0379	122	7		Stake ID
10/05/2019	IMG_0380	122	7	N	Pre-ex landscape shot
10/05/2019	IMG_0381	120	7		Stake ID
10/05/2019	IMG_0382	120	7	N	Pre-ex landscape shot
10/05/2019	IMG_0383	121	7		Stake ID
10/05/2019	IMG_0384	121	7	N	Pre-ex landscape shot
10/05/2019	IMG_0385	119	7		Stake ID
10/05/2019	IMG_0386	119	7	N	Pre-ex landscape shot
10/05/2019	IMG_0387	118	7		Stake ID
10/05/2019	IMG_0388	118	7	N	Pre-ex landscape shot
10/05/2019	IMG_0389	117	7		Stake ID
10/05/2019	IMG_0390	117	7	N	Pre-ex landscape shot
10/05/2019	IMG_0391	116	7		Stake ID
10/05/2019	IMG_0392	116	7	N	Pre-ex landscape shot
10/05/2019	IMG_0394	129	7		Stake ID
10/05/2019	IMG_0395	129	7	N	Pre-ex landscape shot
Monday 13 May 2019					
13/05/2019	IMG_0396				Date
13/05/2019	IMG_0397	133	7		Stake ID
13/05/2019	IMG_0398	133	7	N	Post-ex in plan
13/05/2019	IMG_0399	133	7	N	Post-ex in plan
13/05/2019	IMG_0401	133	7	N	Post-ex in section
13/05/2019	IMG_0402	133	7		Backfilled TU

Date	Photo #	TU	Zone	Orientation	Description
13/05/2019	IMG_0403	123	7		Stake ID
13/05/2019	IMG_0404	123	7	N	Post-ex in plan
13/05/2019	IMG_0405	123	7	N	Post-ex in plan
13/05/2019	IMG_0406	123	7	N	Post-ex in section
13/05/2019	IMG_0407	123	7	N	Post-ex in section
13/05/2019	IMG_0408	123	7		Backfiled TU
13/05/2019	IMG_0410	135	7		Stake ID
13/05/2019	IMG_0411	135	7	N	Post-ex in plan
13/05/2019	IMG_0412	135	7	N	Post-ex in plan
13/05/2019	IMG_0413	135	7	N	Post-ex in section
13/05/2019	IMG_0414	135	7		Rebecca V
13/05/2019	IMG_0415	135	7	N	Post ex in section
13/05/2019	IMG_0416	131	7		Stake ID
13/05/2019	IMG_0417	131	7		Detail of feature
13/05/2019	IMG_0418	131	7		Detail of feature
13/05/2019	IMG_0419	135	7		Backfilled TU
13/05/2019	IMG_0420	128	7		Stake ID
13/05/2019	IMG_0421	128	7	N	Post-ex in plan
13/05/2019	IMG_0422	128	7	N	Post-ex in plan
13/05/2019	IMG_0423	128	7	N	Post-ex in section
13/05/2019	IMG_0424	128	7	N	Post-ex in section
13/05/2019	IMG_0426	128	7		Backfilled TU
13/05/2019	IMG_0427	126	7		Stake ID
13/05/2019	IMG_0428	126	7	N	Post-ex in plan
13/05/2019	IMG_0429	126	7	N	Post-ex in plan
13/05/2019	IMG_0430	126	7	N	Post-ex in section
13/05/2019	IMG_0431	126	7	N	Post-ex in section
13/05/2019	IMG_0432	126	7	N	Post-ex in section
13/05/2019	IMG_0433	126	7	N	Post-ex in section
13/05/2019	IMG_0434	126	7	N	Post-ex in section / landscape shot
13/05/2019	IMG_0435		7		Seb
13/05/2019	IMG_0436	126	7		Backfilled TU
13/05/2019	IMG_0437	134	7		Stake ID
13/05/2019	IMG_0438	134	7	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
13/05/2019	IMG_0439	134	7	N	Post-ex in plan
13/05/2019	IMG_0440	134	7	N	Post-ex in section
13/05/2019	IMG_0441	134	7	N	Post-ex in section
13/05/2019	IMG_0442	134	7		Backfilled TU
13/05/2019	IMG_0443	131	7		Stake ID
13/05/2019	IMG_0444	131	7		Post-ex in plan
13/05/2019	IMG_0445	131	7		Post-ex in plan
13/05/2019	IMG_0446	131	7		Post-ex in plan
13/05/2019	IMG_0447	131	7		Post-ex details
13/05/2019	IMG_0448	131	7		Post-ex details
13/05/2019	IMG_0449	131	7		Post-ex details
13/05/2019	IMG_0450	131	7	N	Post-ex in section
13/05/2019	IMG_0451	131	7	N	Post-ex in section
13/05/2019	IMG_0452	131	7	N	Post-ex in section
13/05/2019	IMG_0453	131	7		Backfilled TU
13/05/2019	IMG_0454	127	7		Stake ID
13/05/2019	IMG_0455	127	7	N	Post-ex in plan
13/05/2019	IMG_0456	127	7	N	Post-ex in plan
13/05/2019	IMG_0457	127	7	N	Post-ex in section
13/05/2019	IMG_0458	127	7	N	Post-ex in section
13/05/2019	IMG_0459	127	7		Backfilled TU
13/05/2019	IMG_0460	127	7		Backfilled TU
13/05/2019	IMG_0461	130	7		Stake ID
13/05/2019	IMG_0462	130	7	N	Post-ex in plan
13/05/2019	IMG_0463	130	7	N	Post-ex in plan
13/05/2019	IMG_0464	130	7	N	Post-ex in section
13/05/2019	IMG_0465	130	7	N	Post-ex in section
13/05/2019	IMG_0466	130	7		Backfilled TU
13/05/2019	IMG_0467	130	7		Backfilled TU
13/05/2019	IMG_0468	125	7		Stake ID
13/05/2019	IMG_0469	125	7	N	Post-ex in plan
13/05/2019	IMG_0470	125	7	N	Post-ex in plan
13/05/2019	IMG_0471	125	7	N	Post-ex in section
13/05/2019	IMG_0472	125	7	N	Post-ex in section

Date	Photo #	TU	Zone	Orientation	Description
13/05/2019	IMG_0473	125	7	N	Post-ex in section
13/05/2019	IMG_0474	125	7		Backfilled TU
13/05/2019	IMG_0475	132	7		Stake ID
13/05/2019	IMG_0476	132	7	N	Post-ex in plan
13/05/2019	IMG_0477	132	7	N	Post-ex in plan
13/05/2019	IMG_0478	132	7	N	Post-ex in section
13/05/2019	IMG_0479	132	7	N	Post-ex in section
13/05/2019	IMG_0480	132	7		Backfilled TU
13/05/2019	IMG_0481	132	7		Backfilled TU
13/05/2019	IMG_0482	129	7		Stake ID
13/05/2019	IMG_0483	129	7	N	Post-ex in plan
13/05/2019	IMG_0484	129	7	N	Post-ex in plan
13/05/2019	IMG_0485	129	7	N	Post-ex in section
13/05/2019	IMG_0486	129	7	N	Post-ex in section
13/05/2019	IMG_0487	129	7		Backfilled TU
13/05/2019	IMG_0488	124	7		Stake ID
13/05/2019	IMG_0489	124	7	N	Post-ex in plan
13/05/2019	IMG_0490	124	7	N	Post-ex in plan
13/05/2019	IMG_0491	124	7	N	Post-ex in section
13/05/2019	IMG_0492	124	7	N	Post-ex in section
13/05/2019	IMG_0493	124	7		Backfilled TU
13/05/2019	IMG_0494	122	7		Stake ID
13/05/2019	IMG_0495	122	7	N	Post-ex in plan
13/05/2019	IMG_0496	122	7	N	Post-ex in plan
13/05/2019	IMG_0497	122	7	N	Post-ex in section
13/05/2019	IMG_0498	122	7	N	Post-ex in section
13/05/2019	IMG_0499	122	7		Backfilled TU
13/05/2019	IMG_0500	121	7		Stake ID
13/05/2019	IMG_0501	121	7	N	Post-ex in plan
13/05/2019	IMG_0502	121	7	N	Post-ex in plan
13/05/2019	IMG_0503	121	7	N	Post-ex in section
13/05/2019	IMG_0504	121	7	N	Post-ex in section
13/05/2019	IMG_0505	121	7		Backfilled TU
13/05/2019	IMG_0506	116	7		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
13/05/2019	IMG_0507	116	7	N	Post-ex in plan
13/05/2019	IMG_0508	116	7	N	Post-ex in plan
13/05/2019	IMG_0509	116	7	N	Post-ex in section
13/05/2019	IMG_0510	116	7	N	Post-ex in section
13/05/2019	IMG_0511	116	7	N	Post-ex in section
13/05/2019	IMG_0512	116	7		Backfilled TU
13/05/2019	IMG_0513		7		Landscape shot
13/05/2019	IMG_0514		7		Landscape shot
13/05/2019	IMG_0515		7		Landscape shot
13/05/2019	IMG_0516		7		Landscape shot
Tuesday 14 May 2019					
14/05/2019	IMG_0517		7		Date
14/05/2019	IMG_0518	119	7		Stake ID
14/05/2019	IMG_0519	119	7	N	Post-ex in plan
14/05/2019	IMG_0520	119	7	N	Post-ex in plan
14/05/2019	IMG_0521	119	7	N	Post-ex in section
14/05/2019	IMG_0522	119	7	N	Post-ex in section
14/05/2019	IMG_0523	119	7	N	Post-ex in section
14/05/2019	IMG_0524	119	7		Backfilled TU
14/05/2019	IMG_0525		7		Sieving
14/05/2019	IMG_0526		7		Sarah Carter
14/05/2019	IMG_0527	118	7		Stake ID
14/05/2019	IMG_0528	118	7	N	Post-ex in plan
14/05/2019	IMG_0529	118	7	N	Post-ex in plan
14/05/2019	IMG_0530	118	7	N	Post-ex in section
14/05/2019	IMG_0531	118	7	N	Post-ex in section
14/05/2019	IMG_0532	118	7	N	Post-ex in section
14/05/2019	IMG_0533	118	7		Backfilled TU
14/05/2019	IMG_0534	117	7		Stake ID
14/05/2019	IMG_0536	117	7	N	Post-ex in plan
14/05/2019	IMG_0537	117	7	N	Post-ex in section
14/05/2019	IMG_0538	117	7	N	Post-ex in section
14/05/2019	IMG_0539	120	7		Stake ID
14/05/2019	IMG_0541	120	7	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
14/05/2019	IMG_0542	120	7	N	Post-ex in section
14/05/2019	IMG_0543	120	7	N	Post-ex in section
14/05/2019	IMG_0544	120	7		Backfilled TU
14/05/2019	IMG_0545	117	7		Backfilled TU
14/05/2019	IMG_0546	69	2	N	Pre-ex landscape shot
14/05/2019	IMG_0547	65	2		Stake ID
14/05/2019	IMG_0548	65	2	N	Pre-ex landscape shot
14/05/2019	IMG_0549	64	2		Stake ID
14/05/2019	IMG_0550	64	2	N	Pre-ex landscape shot
14/05/2019	IMG_0551	63	2		Stake ID
14/05/2019	IMG_0552	63	2	N	Pre-ex landscape shot
14/05/2019	IMG_0553	62	2		Stake ID
14/05/2019	IMG_0554	62	2	N	Pre-ex landscape shot
14/05/2019	IMG_0555	61	2		Stake ID
14/05/2019	IMG_0556	61	2	N	Pre-ex landscape shot
14/05/2019	IMG_0557	66	2		Stake ID
14/05/2019	IMG_0558	66	2	N	Pre-ex landscape shot
14/05/2019	IMG_0559	66	2	S	Pre-ex landscape shot
14/05/2019	IMG_0560	67	2		Stake ID
14/05/2019	IMG_0561	67	2	N	Pre-ex landscape shot
14/05/2019	IMG_0562	68	2		Stake ID
14/05/2019	IMG_0563	68	2	N	Pre-ex landscape shot
14/05/2019	IMG_0564	71	2		Stake ID
14/05/2019	IMG_0565	71	2	N	Pre-ex landscape shot
14/05/2019	IMG_0566	73	2		Stake ID
14/05/2019	IMG_0567	73	2	N	Pre-ex landscape shot
14/05/2019	IMG_0568	72	2		Stake ID
14/05/2019	IMG_0569	72	2	N	Pre-ex landscape shot
14/05/2019	IMG_0570		2		River
14/05/2019	IMG_0571		2		River
14/05/2019	IMG_0572		2		Note to self
14/05/2019	IMG_0573		2		Zone 2 artefact 1
14/05/2019	IMG_0574	65	2		Stake ID
14/05/2019	IMG_0575	65	2	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
14/05/2019	IMG_0576	65	2	N	Post-ex in plan
14/05/2019	IMG_0577	65	2	N	Post-ex in section
14/05/2019	IMG_0579	65	2		Backfilled TU
14/05/2019	IMG_0580	64	2		Stake ID
14/05/2019	IMG_0582	64	2	N	Post-ex in plan
14/05/2019	IMG_0583	64	2	N	Post-ex in section
14/05/2019	IMG_0584	64	2	N	Post-ex in section
14/05/2019	IMG_0585	64	2		Backfilled TU
14/05/2019	IMG_0586	69	2		Stake ID
14/05/2019	IMG_0587	69	2	N	Post-ex in plan
14/05/2019	IMG_0588	69	2	N	Post-ex in plan
14/05/2019	IMG_0589	69	2	N	Post-ex in section
14/05/2019	IMG_0590	69	2	N	Post-ex in section
14/05/2019	IMG_0591		2		Zone 2, Find 5
14/05/2019	IMG_0592		2		Zone 2, Find 5
14/05/2019	IMG_0593		2		Zone 2, Find 5
14/05/2019	IMG_0594	63	2		Stake ID
14/05/2019	IMG_0595	63	2	N	Post-ex in plan
14/05/2019	IMG_0596	63	2	N	Post-ex in plan
14/05/2019	IMG_0597	63	2	N	Post-ex in section
14/05/2019	IMG_0598	63	2	N	Post-ex in section
14/05/2019	IMG_0599	63	2		Backfilled TU
14/05/2019	IMG_0600	63	2		Backfilled TU
14/05/2019	IMG_0601	62	2		Stake ID
14/05/2019	IMG_0602	62	2	N	Post-ex in plan
14/05/2019	IMG_0603	62	2	N	Post-ex in plan
14/05/2019	IMG_0604	62	2	N	Post-ex in section
14/05/2019	IMG_0605	62	2	N	Post-ex in section
14/05/2019	IMG_0606	62	2	N	Post-ex in section
14/05/2019	IMG_0607	62	2		Backfilled TU
14/05/2019	IMG_0608	62	2		Backfilled TU
14/05/2019	IMG_0609	67	2		Stake ID
14/05/2019	IMG_0610	67	2	N	Post-ex in plan
14/05/2019	IMG_0611	67	2	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
14/05/2019	IMG_0612	67	2	N	Post-ex in section
14/05/2019	IMG_0613	67	2	N	Post-ex in section
14/05/2019	IMG_0614	68	2		Stake ID
14/05/2019	IMG_0615	68	2	N	Post-ex in plan
14/05/2019	IMG_0616	68	2	N	Post-ex in plan
14/05/2019	IMG_0617	68	2	N	Post-ex in section
14/05/2019	IMG_0618	68	2	N	Post-ex in section
14/05/2019	IMG_0620	66	2		Stake ID
14/05/2019	IMG_0621	66	2	N	Post-ex in plan
14/05/2019	IMG_0622	66	2	N	Post-ex in plan
14/05/2019	IMG_0623	66	2	N	Post-ex in section
14/05/2019	IMG_0624	66	2	N	Post-ex in section
14/05/2019	IMG_0625	66	2	N	Post-ex in section
14/05/2019	IMG_0626	67	2		Backfilled TU
14/05/2019	IMG_0627	71	2	N	Post-ex in plan
14/05/2019	IMG_0628	71	2	N	Post-ex in plan
14/05/2019	IMG_0630	71	2	N	Post-ex in section
14/05/2019	IMG_0631	71	2	N	Post-ex in section
14/05/2019	IMG_0632	71	2		Backfilled TU
14/05/2019	IMG_0633	68	2		Backfilled TU
14/05/2019	IMG_0636	61	2		Stake ID
14/05/2019	IMG_0637	61	2	N	Post-ex in plan
14/05/2019	IMG_0638	61	2	N	Post-ex in plan
14/05/2019	IMG_0639	61	2	N	Post-ex in section
14/05/2019	IMG_0640	61	2	N	Post-ex in section
14/05/2019	IMG_0641	61	2	N	Post-ex in section
14/05/2019	IMG_0642	61	2		Backfilled TU
14/05/2019	IMG_0643	66	2		Backfilled TU
14/05/2019	IMG_0644		2	N	Location of Surface Artefacts
14/05/2019	IMG_0645		2	N	Location of Surface Artefacts
14/05/2019	IMG_0646		2	N	Location of Surface Artefacts
14/05/2019	IMG_0647		2	NW	Location of Surface Artefacts
14/05/2019	IMG_0648		2	W	Location of Surface Artefacts
14/05/2019	IMG_0649		2	W	Location of Surface Artefacts

Date	Photo #	TU	Zone	Orientation	Description
14/05/2019	IMG_0650		2	NW	Location of Surface Artefacts
14/05/2019	IMG_0651		2	S	Location of Surface Artefacts
14/05/2019	IMG_0652		2	S	Location of Surface Artefacts
14/05/2019	IMG_0653		2	S	Location of Surface Artefacts
14/05/2019	IMG_0654		2	S	Location of Surface Artefacts
14/05/2019	IMG_0655		2	S	Location of Surface Artefacts
Wednesday 15 May 2019					
15/05/2019	IMG_0656				Potential Scarred Tree south of zone 2
15/05/2019	IMG_0657				Potential Scarred Tree south of zone 2
15/05/2019	IMG_0658				Potential Scarred Tree south of zone 2
15/05/2019	IMG_0659				Potential Scarred Tree south of zone 2
15/05/2019	IMG_0662				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0663				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0664				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0665				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0666				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0667				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0668				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0669				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0670				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0671				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0672				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0673				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0674				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0675				Bec and grinding stone at site south of zone 2

Date	Photo #	TU	Zone	Orientation	Description
15/05/2019	IMG_0676				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0677				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0678				Lara and grinding stone at site south of zone 2
15/05/2019	IMG_0679				Lara and grinding stone at site south of zone 3
15/05/2019	IMG_0680				Lara and grinding stone at site south of zone 4
15/05/2019	IMG_0683				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0684				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0686				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0687				Bec and grinding stone at site south of zone 2
15/05/2019	IMG_0690				Sheep skull on empty field south of zone 2
15/05/2019	IMG_0691				Sheep skull on empty field south of zone 2
15/05/2019	IMG_0692				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0693				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0694				RAPS and archaeologists around surface site south of zone 2
15/05/2019	IMG_0696				Artefact from surface site south of zone 2
15/05/2019	IMG_0697				Artefact from surface site south of zone 2
15/05/2019	IMG_0698				Artefact from surface site south of zone 2
15/05/2019	IMG_0699				Artefact from surface site south of zone 2
15/05/2019	IMG_0700				Artefact from surface site south of zone 2
15/05/2019	IMG_0701				Artefact from surface site south of zone 2
15/05/2019	IMG_0704				Artefact from surface site south of zone 2
15/05/2019	IMG_0705				Artefact from surface site south of zone 2
15/05/2019	IMG_0706		2		Date
15/05/2019	IMG_0707	90	2		Stake ID
15/05/2019	IMG_0708	90	2	N	Pre-ex landscape shot
15/05/2019	IMG_0709	87	2		Stake ID
15/05/2019	IMG_0710	87	2		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
15/05/2019	IMG_0711	87	2	N	Pre-ex landscape shot
15/05/2019	IMG_0712	86	2		Stake ID
15/05/2019	IMG_0713	86	2	N	Pre-ex landscape shot
15/05/2019	IMG_0714	85	2		Stake ID
15/05/2019	IMG_0715	85	2	N	Pre-ex landscape shot
15/05/2019	IMG_0716	84	2		Stake ID
15/05/2019	IMG_0717	84	2	N	Pre-ex landscape shot
15/05/2019	IMG_0718	80	2		Stake ID
15/05/2019	IMG_0721	80	2	N	Pre-ex landscape shot
15/05/2019	IMG_0722	89	2		Stake ID
15/05/2019	IMG_0723	89	2	N	Pre-ex landscape shot
15/05/2019	IMG_0724	89	2	N	Pre-ex landscape shot
15/05/2019	IMG_0725	83	2		Stake ID
15/05/2019	IMG_0726	83	2	N	Pre-ex landscape shot
15/05/2019	IMG_0727	82	2		Stake ID
15/05/2019	IMG_0728	82	2	N	Pre-ex landscape shot
15/05/2019	IMG_0729	82	2	N	Pre-ex landscape shot
15/05/2019	IMG_0730	81	2		Stake ID
15/05/2019	IMG_0731	81	2	N	Pre-ex landscape shot
15/05/2019	IMG_0732	80	2		Stake ID
15/05/2019	IMG_0733	80	2	N	Pre-ex landscape shot
15/05/2019	IMG_0734	76	2		Stake ID
15/05/2019	IMG_0735	76	2	N	Pre-ex landscape shot
15/05/2019	IMG_0736	77	2		Stake ID
15/05/2019	IMG_0737	77	2	N	Pre-ex landscape shot
15/05/2019	IMG_0738	74	2		Stake ID
15/05/2019	IMG_0739	74	2	N	Pre-ex landscape shot
15/05/2019	IMG_0740	75	2		Stake ID
15/05/2019	IMG_0741	75	2	N	Pre-ex landscape shot
15/05/2019	IMG_0742	78	2		Stake ID
15/05/2019	IMG_0743	78	2	N	Pre-ex landscape shot
15/05/2019	IMG_0744	79	2		Stake ID
15/05/2019	IMG_0745	79	2	N	Pre-ex landscape shot
15/05/2019	IMG_0746	83	2		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
15/05/2019	IMG_0747	83	2	N	Pre-ex landscape shot
15/05/2019	IMG_0748	88	2		Stake ID
15/05/2019	IMG_0749	88	2	N	Pre-ex landscape shot
15/05/2019	IMG_0750	90	2		Stake ID
15/05/2019	IMG_0751	90	2	N	Post-ex in plan
15/05/2019	IMG_0752	90	2	N	Post-ex in plan
15/05/2019	IMG_0753	90	2	N	Post-ex in plan
15/05/2019	IMG_0754	90	2	N	Post-ex in plan
15/05/2019	IMG_0755	90	2	N	Post-ex in section
15/05/2019	IMG_0756	90	2	N	Post-ex in section
15/05/2019	IMG_0757	90	2		Backfilled TU
15/05/2019	IMG_0758	87	2		Stake ID
15/05/2019	IMG_0759	87	2	N	Post-ex in plan
15/05/2019	IMG_0760	87	2	N	Post-ex in plan
15/05/2019	IMG_0761	87	2	N	Post-ex in section
15/05/2019	IMG_0762	87	2		Backfilled TU
15/05/2019	IMG_0763	75	2		Stake ID
15/05/2019	IMG_0764	75	2	N	Post-ex in plan
15/05/2019	IMG_0765	75	2	N	Post-ex in plan
15/05/2019	IMG_0766	75	2	N	Post-ex in section
15/05/2019	IMG_0767	75	2		Backfilled TU
15/05/2019	IMG_0768	85	2		Stake ID
15/05/2019	IMG_0769	85	2	N	Post-ex in plan
15/05/2019	IMG_0770	85	2	N	Post-ex in plan
15/05/2019	IMG_0771	85	2	N	Post-ex in section
15/05/2019	IMG_0772	85	2		Backfilled TU
15/05/2019	IMG_0773	88	2		Stake ID
15/05/2019	IMG_0774	88	2	N	Post-ex in plan
15/05/2019	IMG_0775	88	2	N	Post-ex in plan
15/05/2019	IMG_0776	88	2	N	Post-ex in section
15/05/2019	IMG_0777	88	2		Backfilled TU
15/05/2019	IMG_0778	83	2		Stake ID
15/05/2019	IMG_0779	83	2	N	Post-ex in plan
15/05/2019	IMG_0780	83	2	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
15/05/2019	IMG_0781	83	2	N	Post-ex in section
15/05/2019	IMG_0782	83	2		Backfilled TU
15/05/2019	IMG_0783	81	2		Stake ID
15/05/2019	IMG_0784	81	2	N	Post-ex in plan
15/05/2019	IMG_0785	81	2	N	Post-ex in plan
15/05/2019	IMG_0786	81	2	N	Post-ex in section
15/05/2019	IMG_0787	81	2		Backfilled TU
15/05/2019	IMG_0788	84	2		Stake ID
15/05/2019	IMG_0789	84	2	N	Post-ex in plan
15/05/2019	IMG_0790	84	2	N	Post-ex in plan
15/05/2019	IMG_0791	84	2	N	Post-ex in section
15/05/2019	IMG_0792	84	2		Backfilled TU
15/05/2019	IMG_0793	77	2		Stake ID
15/05/2019	IMG_0794	77	2	N	Post-ex in plan
15/05/2019	IMG_0795	77	2	N	Post-ex in plan
15/05/2019	IMG_0796	77	2	N	Post-ex in section
15/05/2019	IMG_0797	77	2	N	Post-ex in section
15/05/2019	IMG_0798	77	2	N	Post-ex in section
15/05/2019	IMG_0799	79	2		Stake ID
15/05/2019	IMG_0800	79	2	N	Post-ex in plan
15/05/2019	IMG_0801	79	2	N	Post-ex in plan
15/05/2019	IMG_0802	79	2	N	Post-ex in section
15/05/2019	IMG_0803	79	2	N	Post-ex in section
15/05/2019	IMG_0804	79	2	N	Post-ex in section
15/05/2019	IMG_0805	82	2		Stake ID
15/05/2019	IMG_0806	82	2	N	Post-ex in plan
15/05/2019	IMG_0807	82	2	N	Post-ex in plan
15/05/2019	IMG_0808	82	2	N	Post-ex in section
15/05/2019	IMG_0809	82	2	N	Post-ex in section
15/05/2019	IMG_0810	77	2		Backfilled TU
15/05/2019	IMG_0811	80	2		Stake ID
15/05/2019	IMG_0812	80	2	N	Post-ex in plan
15/05/2019	IMG_0813	80	2	N	Post-ex in plan
15/05/2019	IMG_0814	80	2	N	Post-ex in section

Date	Photo #	TU	Zone	Orientation	Description
15/05/2019	IMG_0815	80	2	N	Post-ex in section
15/05/2019	IMG_0816	82	2		Backfilled TU
15/05/2019	IMG_0817	80	2		Backfilled TU
Thursday 16 May 2020					
16/05/2019	IMG_0819	92	4		Stake ID
16/05/2019	IMG_0820	92	4	N	Pre-ex landscape shot
16/05/2019	IMG_0821	91	4		Stake ID
16/05/2019	IMG_0822	91	4	N	Pre-ex landscape shot
16/05/2019	IMG_0823	92	4		Stake ID
16/05/2019	IMG_0824	92	4	N	Pre-ex landscape shot
16/05/2019	IMG_0825	95	4		Stake ID
16/05/2019	IMG_0826	95	4	N	Pre-ex landscape shot
16/05/2019	IMG_0827	94	4		Stake ID
16/05/2019	IMG_0828	94	4	N	Pre-ex landscape shot
16/05/2019	IMG_0829	99	4		Stake ID
16/05/2019	IMG_0830	99	4	N	Pre-ex landscape shot
16/05/2019	IMG_0831	100	4		Stake ID
16/05/2019	IMG_0832	100	4	N	Pre-ex landscape shot
16/05/2019	IMG_0833	112	4		Stake ID
16/05/2019	IMG_0834	112	4	N	Pre-ex landscape shot
16/05/2019	IMG_0835	112	4	N	Pre-ex landscape shot
16/05/2019	IMG_0836	108	4		Stake ID
16/05/2019	IMG_0837	108	4	N	Pre-ex landscape shot
16/05/2019	IMG_0838	96	4		Stake ID
16/05/2019	IMG_0839	96	4	N	Pre-ex landscape shot
16/05/2019	IMG_0840	97	4		Stake ID
16/05/2019	IMG_0841	97	4	N	Pre-ex landscape shot
16/05/2019	IMG_0842	102	4		Stake ID
16/05/2019	IMG_0843	102	4	N	Pre-ex landscape shot
16/05/2019	IMG_0844	101	4		Stake ID
16/05/2019	IMG_0845	101	4	N	Pre-ex landscape shot
16/05/2019	IMG_0846	101	4	N	Pre-ex landscape shot
16/05/2019	IMG_0847	105	4		Stake ID
16/05/2019	IMG_0848	105	4	N	Pre-ex landscape shot

Date	Photo #	TU	Zone	Orientation	Description
16/05/2019	IMG_0849	106	4		Stake ID
16/05/2019	IMG_0850	106	4	N	Pre-ex landscape shot
16/05/2019	IMG_0851	110	4		Stake ID
16/05/2019	IMG_0852	110	4	N	Pre-ex landscape shot
16/05/2019	IMG_0853	113	4		Stake ID
16/05/2019	IMG_0855	113	4	N	Pre-ex landscape shot
16/05/2019	IMG_0856	115	4		Stake ID
16/05/2019	IMG_0857	115	4	N	Pre-ex landscape shot
16/05/2019	IMG_0858	111	4		Stake ID
16/05/2019	IMG_0861	111	4	N	Pre-ex landscape shot
16/05/2019	IMG_0862	107	4		Stake ID
16/05/2019	IMG_0863	107	4	N	Pre-ex landscape shot
16/05/2019	IMG_0864	103	4		Stake ID
16/05/2019	IMG_0865	103	4	N	Pre-ex landscape shot
16/05/2019	IMG_0866	98	4		Stake ID
16/05/2019	IMG_0867	98	4	N	Pre-ex landscape shot
16/05/2019	IMG_0868	93	4		Stake ID
16/05/2019	IMG_0869	93	4	N	Pre-ex landscape shot
16/05/2019	IMG_0871	109	4		Stake ID
16/05/2019	IMG_0872	109	4	N	Pre-ex landscape shot
16/05/2019	IMG_0873	104	4		Stake ID
16/05/2019	IMG_0874	104	4	N	Pre-ex landscape shot
16/05/2019	IMG_0876	92	4		Stake ID
16/05/2019	IMG_0880	92	4	N	Post-ex in plan
16/05/2019	IMG_0881	92	4	N	Post-ex in plan
16/05/2019	IMG_0882	92	4	N	Post-ex in section
16/05/2019	IMG_0883	92	4	N	Post-ex in section
16/05/2019	IMG_0884	92	4		Backfilled TU
16/05/2019	IMG_0885	95	4		Stake ID
16/05/2019	IMG_0886	95	4	N	Post-ex in plan
16/05/2019	IMG_0889	95	4	N	Post-ex in plan
16/05/2019	IMG_0890	95	4	N	Post-ex in section
16/05/2019	IMG_0893	95	4	N	Post-ex in section
16/05/2019	IMG_0894	95	4		Backfilled TU

Date	Photo #	TU	Zone	Orientation	Description
16/05/2019	IMG_0895	112	4		Stake ID
16/05/2019	IMG_0896	112	4	N	Post-ex in plan
16/05/2019	IMG_0897	112	4	N	Post-ex in plan
16/05/2019	IMG_0898	112	4	N	Post-ex in plan
16/05/2019	IMG_0902	112	4	N	Post-ex in section
16/05/2019	IMG_0903	112	4	N	Post-ex in section
16/05/2019	IMG_0904	112	4	N	Post-ex in section
16/05/2019	IMG_0905	112	4	N	Post-ex in section
16/05/2019	IMG_0906	112	4		Backfilled TU
16/05/2019	IMG_0911	97	4		Stake ID
16/05/2019	IMG_0912	97	4	N	Post-ex in plan
16/05/2019	IMG_0914	97	4	N	Post-ex in plan
16/05/2019	IMG_0916	97	4	N	Post-ex in section
16/05/2019	IMG_0917	97	4	N	Post-ex in section
16/05/2019	IMG_0918	97	4		Backfilled TU
16/05/2019	IMG_9119	94	4		Stake ID
16/05/2019	IMG_0921	94	4	N	Post-ex in plan
16/05/2019	IMG_0923	94	4	N	Post-ex in plan
16/05/2019	IMG_0925	94	4	N	Post-ex in section
16/05/2019	IMG_0926	94	4	N	Post-ex in section
16/05/2019	IMG_0927	94	4		Backfilled TU
16/05/2019	IMG_0928	108	4		Stake ID
16/05/2019	IMG_0929	108	4	N	Post-ex in plan
16/05/2019	IMG_0931	108	4	N	Post-ex in plan
16/05/2019	IMG_0932	108	4	N	Post-ex in section
16/05/2019	IMG_0933	108	4	N	Post-ex in section
16/05/2019	IMG_0934	108	4		Backfilled TU
16/05/2019	IMG_0935	102	4		Stake ID
16/05/2019	IMG_0936	102	4	N	Post-ex in plan
16/05/2019	IMG_0937	102	4	N	Post-ex in plan
16/05/2019	IMG_0938	102	4	N	Post-ex in section
16/05/2019	IMG_0939	102	4	N	Post-ex in section
16/05/2019	IMG_0940	102	4		Backfilled TU
Friday 17 May 2019					

Date	Photo #	TU	Zone	Orientation	Description
17/05/2019	IMG_0946	104	4		Stake ID
17/05/2019	IMG_0947	104	4	N	Post-ex in plan
17/05/2019	IMG_0948	104	4	N	Post-ex in plan
17/05/2019	IMG_0949	104	4	N	Post-ex in section
17/05/2019	IMG_0951	104	4	N	Post-ex in section
17/05/2019	IMG_0952	104	4		Backfilled TU
17/05/2019	IMG_0953	96	4		Stake ID
17/05/2019	IMG_0954	96	4	N	Pre-ex landscape shot
17/05/2019	IMG_0956	99	4		Stake ID
17/05/2019	IMG_0957	99	4	N	Post-ex in plan
17/05/2019	IMG_0958	99	4	N	Post-ex in plan
17/05/2019	IMG_0959	99	4	N	Post-ex in section
17/05/2019	IMG_0960	99	4	N	Post-ex in section
17/05/2019	IMG_0961		4		Landscape shot with people working on offset 96 TU
17/05/2019	IMG_0962	106	4		Stake ID
17/05/2019	IMG_0963	106	4	N	Post-ex in plan
17/05/2019	IMG_0964	106	4	N	Post-ex in plan
17/05/2019	IMG_0972	106	4	N	Post-ex in section
17/05/2019	IMG_0973	106	4	N	Post-ex in section
17/05/2019	IMG_0978	107	4		Stake ID
17/05/2019	IMG_0981	107	4	N	Post-ex in plan
17/05/2019	IMG_0982	107	4	N	Post-ex in plan
17/05/2019	IMG_0985	107	4	N	Post-ex in section
17/05/2019	IMG_0986	107	4	N	Post-ex in section
17/05/2019	IMG_0987	107	4		Backfilled TU
17/05/2019	IMG_0988	103	4		Stake ID
17/05/2019	IMG_0989	103	4	N	Post-ex in plan
17/05/2019	IMG_0990	103	4	N	Post-ex in plan
17/05/2019	IMG_0991	103	4	N	Post-ex in section
17/05/2019	IMG_0992	103	4	N	Post-ex in section
17/05/2019	IMG_0993	103	4		Backfilled TU
17/05/2019	IMG_0994	106	4		Backfilled TU
17/05/2019	IMG_1002	99	4		Backfilled TU
17/05/2019	IMG_1003	105	4	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
17/05/2019	IMG_1004	105	4	N	Post-ex in plan
17/05/2019	IMG_1005	105	4	N	Post-ex in section
17/05/2019	IMG_1006	105	4	N	Post-ex in section
17/05/2019	IMG_1007	105	4		Backfilled TU
17/05/2019	IMG_1012	98	4		Stake ID
17/05/2019	IMG_1013	98	4	N	Post-ex in plan
17/05/2019	IMG_1014	98	4	N	Post-ex in plan
17/05/2019	IMG_1015	98	4	N	Post-ex in section
17/05/2019	IMG_1016	98	4	N	Post-ex in section
17/05/2019	IMG_1017	98	4		Backfilled TU
17/05/2019	IMG_1018	109	4		Stake ID
17/05/2019	IMG_1019	109	4	N	Post-ex in plan
17/05/2019	IMG_1020	109	4	N	Post-ex in plan
17/05/2019	IMG_1023	109	4	N	Post-ex in section
17/05/2019	IMG_1024	109	4	N	Post-ex in section
17/05/2019	IMG_1025	109	4		Backfilled TU
17/05/2019	IMG_1027	101	4		Stake ID
17/05/2019	IMG_1028	101	4	N	Post-ex in plan
17/05/2019	IMG_1029	101	4	N	Post-ex in plan
17/05/2019	IMG_1031	101	4	N	Post-ex in section
17/05/2019	IMG_1032	101	4	N	Post-ex in section
17/05/2019	IMG_1033	101	4		Backfilled TU
17/05/2019	IMG_1034	96	4		Stake ID
17/05/2019	IMG_1035	96	4	N	Post-ex in plan
17/05/2019	IMG_1036	96	4	N	Post-ex in plan
17/05/2019	IMG_1037	96	4	N	Post-ex in section
17/05/2019	IMG_1038	96	4	N	Post-ex in section
17/05/2019	IMG_1039	96	4		Backfilled TU
Monday 20 May 2019					
20/05/2019	IMG_1040		11		Note to self
20/05/2019	IMG_1041		11		Note to self
20/05/2019	IMG_1042	201	11		Stake ID
20/05/2019	IMG_1043	201	11	N	Pre-ex landscape shot
20/05/2019	IMG_1044	200	11		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
20/05/2019	IMG_1045	200	11	N	Pre-ex landscape shot
20/05/2019	IMG_1046	199	11		Stake ID
20/05/2019	IMG_1047	199	11	N	Pre-ex landscape shot
20/05/2019	IMG_1048	196	11		Stake ID
20/05/2019	IMG_1049	196	11	N	Pre-ex landscape shot
20/05/2019	IMG_1050	195	11		Stake ID
20/05/2019	IMG_1051	195	11	N	Pre-ex landscape shot
20/05/2019	IMG_1052	197	11		Stake ID
20/05/2019	IMG_1053	197	11	N	Pre-ex landscape shot
20/05/2019	IMG_1054	198	11		Stake ID
20/05/2019	IMG_1055	198	11	N	Pre-ex landscape shot
20/05/2019	IMG_1056	194	11		Stake ID
20/05/2019	IMG_1057	194	11	N	Pre-ex landscape shot
20/05/2019	IMG_1058	192	11		Stake ID
20/05/2019	IMG_1059	192	11	N	Pre-ex landscape shot
20/05/2019	IMG_1060	192	11		Note to self
20/05/2019	IMG_1061	192	11	S	Pre-ex landscape shot
20/05/2019	IMG_1062	193	11		Stake ID
20/05/2019	IMG_1063	193	11	N	Pre-ex landscape shot
20/05/2019	IMG_1064	193	11	N	Pre-ex landscape shot
20/05/2019	IMG_1065	191	11		Stake ID
20/05/2019	IMG_1066	191	11	N	Pre-ex landscape shot
20/05/2019	IMG_1067	190	11		Stake ID
20/05/2019	IMG_1068	190	11	N	Pre-ex landscape shot
20/05/2019	IMG_1069	189	11		Stake ID
20/05/2019	IMG_1070	189	11	N	Pre-ex landscape shot
20/05/2019	IMG_1071	196	11		Stake ID
20/05/2019	IMG_1072	196	11	N	Post-ex in plan
20/05/2019	IMG_1073	196	11	N	Post-ex in plan
20/05/2019	IMG_1074	196	11	N	Post-ex in section
20/05/2019	IMG_1075	196	11	N	Post-ex in section
20/05/2019	IMG_1076	196	11		Backfilled TU
20/05/2019	IMG_1077	199	11		Stake ID
20/05/2019	IMG_1078	199	11	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
20/05/2019	IMG_1079	199	11	N	Post-ex in plan
20/05/2019	IMG_1080	199	11	N	Post-ex in section
20/05/2019	IMG_1081	199	11	N	Post-ex in section
20/05/2019	IMG_1082	199	11	N	Post-ex in section
20/05/2019	IMG_1083	201	11		Stake ID
20/05/2019	IMG_1084	201	11	N	Post-ex in plan
20/05/2019	IMG_1085	201	11	N	Post-ex in plan
20/05/2019	IMG_1086	201	11	N	Post-ex in section
20/05/2019	IMG_1087	201	11	N	Post-ex in section
20/05/2019	IMG_1088	201	11		Backfilled TU
20/05/2019	IMG_1089	199	11		Backfilled TU
20/05/2019	IMG_1090	195	11		Stake ID
20/05/2019	IMG_1091	195	11	N	Post-ex in plan
20/05/2019	IMG_1092	195	11	N	Post-ex in plan
20/05/2019	IMG_1093	195	11	N	Post-ex in section
20/05/2019	IMG_1094	195	11	N	Post-ex in section
20/05/2019	IMG_1095	197	11		Stake ID
20/05/2019	IMG_1096	197	11		Post-ex in plan
20/05/2019	IMG_1097	197	11		Post-ex in plan
20/05/2019	IMG_1098	197	11	N	Post-ex in section
20/05/2019	IMG_1099	197	11	N	Post-ex in section
20/05/2019	IMG_1100	197	11		Backfilled TU
20/05/2019	IMG_1101	195	11		Backfilled TU
20/05/2019	IMG_1102	198	11		Stake ID
20/05/2019	IMG_1103	198	11	N	Post-ex in plan
20/05/2019	IMG_1104	198	11	N	Post-ex in plan
20/05/2019	IMG_1105	198	11		Blurred post-ex in section
20/05/2019	IMG_1106	198	11	N	Post-ex in section
20/05/2019	IMG_1107	198	11	N	Post-ex in section
20/05/2019	IMG_1108	198	11	E	Eastern section detail
20/05/2019	IMG_1109	191	11		Stake ID
20/05/2019	IMG_1110	191	11	N	Post-ex in plan
20/05/2019	IMG_1111	191	11	N	Post-ex in plan
20/05/2019	IMG_1112	191	11	N	Post-ex in section

Date	Photo #	TU	Zone	Orientation	Description
20/05/2019	IMG_1113	191	11	N	Post-ex in section
20/05/2019	IMG_1114	191	11		Stake ID
20/05/2019	IMG_1115	191	11		Backfilled TU
20/05/2019	IMG_1116	198	11		Backfilled TU
20/05/2019	IMG_1117	192	11		Stake ID
20/05/2019	IMG_1118	192	11	N	Post-ex in plan
20/05/2019	IMG_1119	192	11	N	Post-ex in plan
20/05/2019	IMG_1120	192	11	N	Post-ex in section
20/05/2019	IMG_1121	192	11	N	Post-ex in section
20/05/2019	IMG_1122	192	11		Backfilled TU
20/05/2019	IMG_1123	192	11		Backfilled TU
20/05/2019	IMG_1124	200	11		Stake ID
20/05/2019	IMG_1125	200	11	N	Post-ex in plan
20/05/2019	IMG_1126	200	11	N	Post-ex in plan
20/05/2019	IMG_1127	200	11	N	Post-ex in section
20/05/2019	IMG_1128	200	11	N	Post-ex in section
20/05/2019	IMG_1129	200	11	N	Post-ex in section
20/05/2019	IMG_1130	200	11	N	Post-ex in section
20/05/2019	IMG_1131	189	11		Stake ID
20/05/2019	IMG_1132	189	11	N	Post-ex in plan
20/05/2019	IMG_1133	189	11	N	Post-ex in plan
20/05/2019	IMG_1134	189	11	N	Post-ex in section
20/05/2019	IMG_1135	189	11	N	Post-ex in section
20/05/2019	IMG_1136	189	11	N	Post-ex in section
20/05/2019	IMG_1137	189	11		Stake ID
20/05/2019	IMG_1138	189	11		Backfilled TU
Tuesday 21 May 2019					
21/05/2019	IMG_1140	203	11		Stake ID
21/05/2019	IMG_1141	203	11	N	Pre-ex landscape shot
21/05/2019	IMG_1142	205	11		Stake ID
21/05/2019	IMG_1143	205	11	N	Pre-ex landscape shot
21/05/2019	IMG_1144	207	11		Stake ID
21/05/2019	IMG_1145	207	11		Stake ID
21/05/2019	IMG_1146	207	11	N	Pre-ex landscape shot

Date	Photo #	TU	Zone	Orientation	Description
21/05/2019	IMG_1147	209	11		Stake ID
21/05/2019	IMG_1148	209	11	N	Pre-ex landscape shot
21/05/2019	IMG_1149	211	11		Stake ID
21/05/2019	IMG_1150	211	11	N	Pre-ex landscape shot
21/05/2019	IMG_1151	213	11		Stake ID
21/05/2019	IMG_1152	213	11	N	Pre-ex landscape shot
21/05/2019	IMG_1153	202	11		Stake ID
21/05/2019	IMG_1154	202	11	N	Pre-ex landscape shot
21/05/2019	IMG_1155	204	11		Stake ID
21/05/2019	IMG_1156	204	11	N	Pre-ex landscape shot
21/05/2019	IMG_1157	206	11		Stake ID
21/05/2019	IMG_1158	206	11	N	Pre-ex landscape shot
21/05/2019	IMG_1159	208	11		Stake ID
21/05/2019	IMG_1160	208	11	N	Pre-ex landscape shot
21/05/2019	IMG_1161	210	11		Stake ID
21/05/2019	IMG_1162	210	11	N	Pre-ex landscape shot
21/05/2019	IMG_1163	212	11		Stake ID
21/05/2019	IMG_1164	212	11	N	Pre-ex landscape shot
21/05/2019	IMG_1165	214	11		Stake ID
21/05/2019	IMG_1166	214	11	N	Pre-ex landscape shot
21/05/2019	IMG_1167	216	11		Stake ID
21/05/2019	IMG_1168	216	11	N	Pre-ex landscape shot
21/05/2019	IMG_1169	217	11		Stake ID
21/05/2019	IMG_1170	217	11	N	Pre-ex landscape shot
21/05/2019	IMG_1171	215	11		Stake ID
21/05/2019	IMG_1172	215	11	N	Pre-ex landscape shot
21/05/2019	IMG_1173	200	11		Backfilled TU
21/05/2019	IMG_1174	189	11		Stake ID
21/05/2019	IMG_1175	189	11		Backfilled TU
21/05/2019	IMG_1176	193	11		Stake ID
21/05/2019	IMG_1177	193	11	N	Post-ex in plan
21/05/2019	IMG_1178	193	11	N	Post-ex in plan
21/05/2019	IMG_1179	193	11	N	Post-ex in section
21/05/2019	IMG_1180	193	11	N	Post-ex in section

Date	Photo #	TU	Zone	Orientation	Description
21/05/2019	IMG_1181	194	11		Stake ID
21/05/2019	IMG_1182	194	11	N	Post-ex in plan
21/05/2019	IMG_1183	194	11	N	Post-ex in plan
21/05/2019	IMG_1184	194	11	N	Post-ex in section
21/05/2019	IMG_1185	194	11	N	Post-ex in section
21/05/2019	IMG_1186	194	11	N	Post-ex in section
21/05/2019	IMG_1187	194	11		Backfilled TU
21/05/2019	IMG_1188	193	11		Backfilled TU
21/05/2019	IMG_1189	190	11		Stake ID
21/05/2019	IMG_1190	190	11	N	Post-ex in plan
21/05/2019	IMG_1191	190	11	N	Post-ex in plan
21/05/2019	IMG_1192	190	11	N	Post-ex in section
21/05/2019	IMG_1193	190	11	N	Post-ex in section
21/05/2019	IMG_1194	190	11		Backfilled TU
21/05/2019	IMG_1195	209	11		Stake ID
21/05/2019	IMG_1196	209	11	N	Post-ex in plan
21/05/2019	IMG_1197	209	11	N	Post-ex in plan
21/05/2019	IMG_1198	209	11	N	Post-ex in section
21/05/2019	IMG_1199	209	11	N	Post-ex in section
21/05/2019	IMG_1200	209	11		Backfilled TU
21/05/2019	IMG_1201	211	11		Stake ID
21/05/2019	IMG_1202	211	11	N	Post-ex in plan
21/05/2019	IMG_1203	211	11	N	Post-ex in plan
21/05/2019	IMG_1204	211	11	N	Post-ex in section
21/05/2019	IMG_1205	211	11	N	Post-ex in section
21/05/2019	IMG_1206	211	11	N	Post-ex in section
21/05/2019	IMG_1207	211	11		Backfilled TU
21/05/2019	IMG_1208	217	11		Stake ID
21/05/2019	IMG_1209	217	11	N	Post-ex in plan
21/05/2019	IMG_1210	217	11	N	Post-ex in plan
21/05/2019	IMG_1211	217	11	N	Post-ex in section
21/05/2019	IMG_1212	217	11	N	Post-ex in section
21/05/2019	IMG_1213	217	11		Backfilled TU
21/05/2019	IMG_1214	210	11		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
21/05/2019	IMG_1215	210	11	N	Post-ex in plan
21/05/2019	IMG_1216	210	11	N	Post-ex in plan
21/05/2019	IMG_1217	210	11	N	Post-ex in section
21/05/2019	IMG_1218	210	11	N	Post-ex in section
21/05/2019	IMG_1219	210	11		Backfilled TU
21/05/2019	IMG_1220	208	11		Stake ID
21/05/2019	IMG_1221	208	11	N	Post-ex in plan
21/05/2019	IMG_1222	208	11	N	Post-ex in plan
21/05/2019	IMG_1223	208	11	N	Post-ex in section
21/05/2019	IMG_1224	208	11	N	Post-ex in section
21/05/2019	IMG_1225	208	11	N	Post-ex in section
21/05/2019	IMG_1226	208	11		Backfilled TU
21/05/2019	IMG_1227	213	11		Stake ID
21/05/2019	IMG_1228	213	11	N	Post-ex in plan
21/05/2019	IMG_1229	213	11	N	Post-ex in plan
21/05/2019	IMG_1230	213	11	N	Post-ex in section
21/05/2019	IMG_1231	213	11	N	Post-ex in section
21/05/2019	IMG_1232	213	11	N	Post-ex in section
21/05/2019	IMG_1233	216	11		Stake ID
21/05/2019	IMG_1235	216	11	N	Post-ex in plan
21/05/2019	IMG_1236	216	11	N	Post-ex in plan
21/05/2019	IMG_1237	216	11	N	Post-ex in section
21/05/2019	IMG_1238	216	11	N	Post-ex in section
21/05/2019	IMG_1239	216	11		Backfilled TU
21/05/2019	IMG_1240	212	11		Stake ID
21/05/2019	IMG_1243	212	11	N	Post-ex in plan
21/05/2019	IMG_1244	212	11	N	Post-ex in plan
21/05/2019	IMG_1245	212	11	N	Post-ex in section
21/05/2019	IMG_1246	212	11	N	Post-ex in section
21/05/2019	IMG_1247	212	11		Backfilled TU
21/05/2019	IMG_1248	206	11		Stake ID
21/05/2019	IMG_1249	206	11	N	Post-ex in plan
21/05/2019	IMG_1250	206	11	N	Post-ex in plan
21/05/2019	IMG_1251	206	11	N	Post-ex in section

Date	Photo #	TU	Zone	Orientation	Description
21/05/2019	IMG_1252	206	11	N	Post-ex in section
21/05/2019	IMG_1253	206	11		Backfilled TU
21/05/2019	IMG_1254	213	11		Backfilled TU
21/05/2019	IMG_1255	213	11		Backfilled TU
21/05/2019	IMG_1256	214	11		Stake ID
21/05/2019	IMG_1257	214	11	N	Post-ex in plan
21/05/2019	IMG_1258	214	11	N	Post-ex in plan
21/05/2019	IMG_1259	214	11	N	Post-ex in section
21/05/2019	IMG_1260	214	11	N	Post-ex in section
21/05/2019	IMG_1261	214	11	N	Post-ex in section
21/05/2019	IMG_1262	207	11		Stake ID
21/05/2019	IMG_1263	207	11	N	Post-ex in plan
21/05/2019	IMG_1264	207	11	N	Post-ex in plan
21/05/2019	IMG_1265	207	11	N	Post-ex in section
21/05/2019	IMG_1266	207	11	N	Post-ex in section
21/05/2019	IMG_1267	204	11		Stake ID
21/05/2019	IMG_1268	204	11	N	Post-ex in plan
21/05/2019	IMG_1269	204	11	N	Post-ex in plan
21/05/2019	IMG_1270	204	11	N	Post-ex in section
21/05/2019	IMG_1271	204	11	N	Post-ex in section
21/05/2019	IMG_1272	214	11		Backfilled TU
21/05/2019	IMG_1273	207	11		Backfilled TU
21/05/2019	IMG_1274	204	11		Backfilled TU
Wednesday 22 May 2019					
22/05/2019	IMG_1275		11		Note to self
22/05/2019	IMG_1276	215	11		Stake ID
22/05/2019	IMG_1277	215	11	N	Post-ex in plan
22/05/2019	IMG_1278	215	11	N	Post-ex in plan
22/05/2019	IMG_1279	215	11	N	Post-ex in section
22/05/2019	IMG_1280	215	11	N	Post-ex in section
22/05/2019	IMG_1281		11		Photo of Sarah and Jura
22/05/2019	IMG_1282	206	11		Stake ID
22/05/2019	IMG_1283	206	11	N	Post-ex in plan
22/05/2019	IMG_1284	206	11	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
22/05/2019	IMG_1285	206	11	N	Post-ex in section
22/05/2019	IMG_1286	206	11	N	Post-ex in section
22/05/2019	IMG_1287		11		Team members
22/05/2019	IMG_1288	202	11		Stake ID
22/05/2019	IMG_1289	202	11	N	Post-ex in plan
22/05/2019	IMG_1290	202	11	N	Post-ex in plan
22/05/2019	IMG_1291	202	11	N	Post-ex in section
22/05/2019	IMG_1292	202	11	N	Post-ex in section
22/05/2019	IMG_1293	202	11	N	Post-ex in section
22/05/2019	IMG_1294	203	11		Stake ID
22/05/2019	IMG_1295	203	11	N	Post-ex in plan
22/05/2019	IMG_1296	203	11	N	Post-ex in plan
22/05/2019	IMG_1297	203	11	N	Post-ex in section
22/05/2019	IMG_1298	203	11	N	Post-ex in section
22/05/2019	IMG_1299	203	11	N	Post-ex in section
22/05/2019	IMG_1300	215	11		Backfilled TU
22/05/2019	IMG_1301	215	11		Backfilled TU
22/05/2019	IMG_1302	205	11		Backfilled TU
22/05/2019	IMG_1303	202	11		Backfilled TU
22/05/2019	IMG_1304	203	11		Backfilled TU
22/05/2019	IMG_1305	141	7		Stake ID
22/05/2019	IMG_1306	141	7	N	Pre-ex landscape shot
22/05/2019	IMG_1307	138	7		Stake ID
22/05/2019	IMG_1308	138	7	N	Pre-ex landscape shot
22/05/2019	IMG_1309	136	7		Stake ID
22/05/2019	IMG_1310	136	7	N	Pre-ex landscape shot
22/05/2019	IMG_1312	137	7		Stake ID
22/05/2019	IMG_1313	137	7	N	Pre-ex landscape shot
22/05/2019	IMG_1314	140	7		Stake ID
22/05/2019	IMG_1315	140	7	N	Pre-ex landscape shot
22/05/2019	IMG_1316	140	7	N	Pre-ex landscape shot
22/05/2019	IMG_1317	139	7		Stake ID
22/05/2019	IMG_1318	139	7	N	Pre-ex landscape shot
22/05/2019	IMG_1319	136	7	N	Post-ex in plan

Date	Photo #	TU	Zone	Orientation	Description
22/05/2019	IMG_1320	136	7	N	Post-ex in plan
22/05/2019	IMG_1321	136	7	N	Post-ex in section
22/05/2019	IMG_1322	136	7	N	Post-ex in section
22/05/2019	IMG_1323	136	7	N	Post-ex in section
22/05/2019	IMG_1324	136	7	N	Post-ex in section
22/05/2019	IMG_1325	136	7		Note to self
22/05/2019	IMG_1326	140	7		Stake ID
22/05/2019	IMG_1327	140	7	N	Post-ex in plan
22/05/2019	IMG_1328	140	7	N	Post-ex in plan
22/05/2019	IMG_1329	140	7	N	Post-ex in section
22/05/2019	IMG_1330	140	7	N	Post-ex in section
22/05/2019	IMG_1331	140	7	N	Post-ex in section
22/05/2019	IMG_1332	140	7		Backfilled TU
22/05/2019	IMG_1333	136	7		Backfilled TU
22/05/2019	IMG_1334	141	7	N	Stake ID
22/05/2019	IMG_1335	141	7	N	Post-ex in plan
22/05/2019	IMG_1336	141	7	N	Post-ex in plan
22/05/2019	IMG_1337	141	7	N	Post-ex in section
22/05/2019	IMG_1338	141	7	N	Post-ex in section
22/05/2019	IMG_1339	141	7	N	Post-ex in section
22/05/2019	IMG_1340	139	7	N	Stake ID
22/05/2019	IMG_1341	139	7	N	Post-ex in plan
22/05/2019	IMG_1342	139	7	N	Post-ex in plan
22/05/2019	IMG_1343	139	7	N	Post-ex in section
22/05/2019	IMG_1344	139	7	N	Post-ex in section
22/05/2019	IMG_1345	139	7		Backfilled TU
22/05/2019	IMG_1346	141	7		Backfilled TU
22/05/2019	IMG_1347	137	7		Stake ID
22/05/2019	IMG_1348	137	7	N	Post-ex in plan
22/05/2019	IMG_1349	137	7	N	Post-ex in plan
22/05/2019	IMG_1350	137	7	N	Post-ex in section
22/05/2019	IMG_1351	137	7	N	Post-ex in section
22/05/2019	IMG_1352	137	7		Backfilled TU
22/05/2019	IMG_1353	138	7		Stake ID

Date	Photo #	TU	Zone	Orientation	Description
22/05/2019	IMG_1354	138	7	N	Post-ex in plan
22/05/2019	IMG_1355	138	7	N	Post-ex in plan
22/05/2019	IMG_1356	138	7	N	Post-ex in section
22/05/2019	IMG_1357	138	7	N	Post-ex in section
22/05/2019	IMG_1358	138	7		Backfilled TU

Date	Photo#	TU	Zone	Orientation	Description
Tuesday 24 September 2019					
24/09/2019	IMG_0158	15	1		ID
24/09/2019	IMG_0159	15	1	N	Post-ex: Plan
24/09/2019	IMG_0160	15	1	N	Post-ex: Plan
24/09/2019	IMG_0161	15	1	N	Post-ex: Plan
24/09/2019	IMG_0162	15	1	NW	Post-ex: Oblique
24/09/2019	IMG_0163	15	1	N	Post-ex: Plan/section
24/09/2019	IMG_0164	15	1	N	Post-ex: Section
24/09/2019	IMG_0165	15	1	N	Post-ex: Landscape
24/09/2019	IMG_0166	14	1	E	Mid-ex: Detail bone feature layer
24/09/2019	IMG_0167	14	1	E	Mid-ex: Detail bone feature layer
24/09/2019	IMG_0168	14	1	E	Mid-ex: Detail bone feature layer
24/09/2019	IMG_0169	14	1		ID
24/09/2019	IMG_0170	15	1	N	Backfilled TU
24/09/2019	IMG_0171	17	1		ID
24/09/2019	IMG_0172	17	1	N	Post-ex: Plan
24/09/2019	IMG_0173	17	1	N	Post-ex: Section
24/09/2019	IMG_0174	17	1	NW	Post-ex: Oblique
24/09/2019	IMG_0175	17	1	N	Landscape
24/09/2019	IMG_0176	17	1	N	Backfilled
24/09/2019	IMG_0177	16	1		ID
24/09/2019	IMG_0178	16	1	N	Post-ex: Plan
24/09/2019	IMG_0179	16	1	N	Post-ex: Plan
24/09/2019	IMG_0180	16	1	N	Post-ex: Section
24/09/2019	IMG_0181	16	1	NW	Post-ex: Oblique
24/09/2019	IMG_0182	16	1	N	Post-ex: Landscape
24/09/2019	IMG_0183	16	1	N	Post-ex: Backfilled
24/09/2019	IMG_0184	6	1		ID
24/09/2019	IMG_0185	6	1	N	Post-ex: Plan
24/09/2019	IMG_0186	6	1	N	Post-ex: Plan
24/09/2019	IMG_0187	6	1	N	Post-ex: Section
24/09/2019	IMG_0188	6	1	NW	Post-ex: Oblique
24/09/2019	IMG_0189	6	1	SW	Post-ex: Landscape
24/09/2019	IMG_0190	6	1	SW	Post-ex: Landscape

Date	Photo#	TU	Zone	Orientation	Description
24/09/2019	IMG_0191	6	1	SW	Backfilled
24/09/2019	IMG_0192	20	1		ID
24/09/2019	IMG_0193	20	1		ID
24/09/2019	IMG_0194	20	1	N	Post-ex: Plan
24/09/2019	IMG_0195	20	1	N	Post-ex: Section
24/09/2019	IMG_0196	20	1	NW	Post-ex: Oblique
24/09/2019	IMG_0197	20	1	N	Post-ex: Landscape
24/09/2019	IMG_0198	20	1	N	Backfilled
Wednesday 25 September 2019					
25/09/2019	IMG_0199	24	1		ID
25/09/2019	IMG_0200	24	1	N	Post-ex: Plan
25/09/2019	IMG_0201	24	1	N	Post-ex: Section
25/09/2019	IMG_0202	24	1	N	Post-ex: Section
25/09/2019	IMG_0203	24	1	NE	Post-ex: Oblique
25/09/2019	IMG_0204	24	1	NE	Post-ex: Oblique
25/09/2019	IMG_0205	24	1	E	Post-ex: Landscape (train tracks in background)
25/09/2019	IMG_0206	24	1	E	Post-ex: Landscape (train tracks in background)
25/09/2019	IMG_0207	24	1	E	Backfilled
25/09/2019	IMG_0208	14	1		ID
25/09/2019	IMG_0209	14	1	N	Post-ex: Plan
25/09/2019	IMG_0210	14	1	N	Post-ex: Plan
25/09/2019	IMG_0211	14	1	W	Post-ex: Plan
25/09/2019	IMG_0212	14	1	N	Post-ex: Section
25/09/2019	IMG_0213	14	1	NW	Post-ex: Oblique
25/09/2019	IMG_0214	14	1	NW	Post-ex: Oblique
25/09/2019	IMG_0215	14	1	NE	Post-ex: Landscape
25/09/2019	IMG_0216	19	1	N	Post-ex: Plan
25/09/2019	IMG_0217	19	1	N	Post-ex: Section
25/09/2019	IMG_0218	19	1	NW	Post-ex:Oblique
25/09/2019	IMG_0219	19	1	NW	Post-ex: Oblique
25/09/2019	IMG_0220	19	1	N	Post-ex: Landscape
25/09/2019	IMG_0221	14	1	N	Backfilled
25/09/2019	IMG_0222	19	1	N	Backfilled

Date	Photo#	TU	Zone	Orientation	Description
25/09/2019	IMG_0223	23	1		ID
25/09/2019	IMG_0224	23	1	N	Post-ex: Plan
25/09/2019	IMG_0225	23	1	N	Post-ex: Plan
25/09/2019	IMG_0226	23	1	N	Post-ex: Section
25/09/2019	IMG_0227	23	1	N	Section
25/09/2019	IMG_0228	23	1	NE	Post-ex: Oblique
25/09/2019	IMG_0229	23	1	NE	Post-ex: Oblique
25/09/2019	IMG_0230	23	1	N	Post-ex: Landscape
25/09/2019	IMG_0231	23	1	E	Backfilled
25/09/2019	IMG_0232	22	1		ID
25/09/2019	IMG_0233	22	1	N	Post-ex: Plan
25/09/2019	IMG_0234	22	1	N	Post-ex: Plan
25/09/2019	IMG_0235	22	1	N	Post-ex: Section
25/09/2019	IMG_0236	22	1	N	Post-ex: Section
25/09/2019	IMG_0237	22	1	NE	Post-ex: Oblique
25/09/2019	IMG_0238	22	1	NE	Post-ex: Oblique
25/09/2019	IMG_0239	22	1	N	Post-ex: Landscape
25/09/2019	IMG_0240	22	1	N	Post-ex: Landscape
25/09/2019	IMG_0241	18	1		ID
25/09/2019	IMG_0242	18	1	N	Post-ex: Plan
25/09/2019	IMG_0243	18	1	N	Post-ex: Plan
25/09/2019	IMG_0244	18	1	N	Post-ex: Section
25/09/2019	IMG_0245	18	1	N	Post-ex: Section
25/09/2019	IMG_0246	18	1	NE	Post-ex: Oblique
25/09/2019	IMG_0247	18	1	NE	Post-ex: Oblique
25/09/2019	IMG_0248	18	1	N	Post-ex: Landscape
25/09/2019	IMG_0249	21	1		ID
25/09/2019	IMG_0250	21	1	N	Post-ex: Plan
25/09/2019	IMG_0251	21	1	N	Post-ex: Plan
25/09/2019	IMG_0252	21	1	N	Post-ex: Section
25/09/2019	IMG_0253	21	1	N	Post-ex: Section
25/09/2019	IMG_0254	21	1	NE	Post-ex: Oblique
25/09/2019	IMG_0255	21	1	NE	Post-ex: Oblique
25/09/2019	IMG_0256	21	1	NE	Post-ex: Oblique

Date	Photo#	TU	Zone	Orientation	Description
25/09/2019	IMG_0257	21	1	NE	Post-ex: Oblique
25/09/2019	IMG_0258	21	1	S	Post-ex: Landscape
25/09/2019	IMG_0259	18	1		Backfilled
25/09/2019	IMG_0260	21	1		Backfilled
25/09/2019	IMG_0261	29	1	N	Post-ex: Plan
25/09/2019	IMG_0262	29	1	N	Post-ex: Section
25/09/2019	IMG_0263	29	1	NW	Post-ex: Oblique
25/09/2019	IMG_0264	29	1	NW	Post-ex: Oblique
25/09/2019	IMG_0265	29	1	NW	Post-ex: Oblique
25/09/2019	IMG_0266	29	1	SE	Post-ex: Landscape
25/09/2019	IMG_0267	29	1		ID
25/09/2019	IMG_0268	29	1	SE	Post-ex: Backfilled
25/09/2019	IMG_0269	25	1		ID
25/09/2019	IMG_0270	25	1	N	Post-ex: Plan
25/09/2019	IMG_0271	25	1	N	Post-ex: Section
25/09/2019	IMG_0272	25	1	NW	Post-ex: Oblique
25/09/2019	IMG_0273	25	1	NW	Post-ex: Oblique
25/09/2019	IMG_0274	25	1	NW	Post-ex: Oblique
25/09/2019	IMG_0275	25	1	NE	Post-ex: Landscape
25/09/2019	IMG_0276	25	1		Backfilled
25/09/2019	IMG_0277	26	1		ID
25/09/2019	IMG_0278	26	1	N	Post-ex: Plan
25/09/2019	IMG_0279	26	1	N	Post-ex: Plan
25/09/2019	IMG_0280	26	1	N	Post-ex: Section
25/09/2019	IMG_0281	26	1	NE	Post-ex: Oblique
25/09/2019	IMG_0282	26	1	NE	Post-ex: Oblique
25/09/2019	IMG_0283	26	1	NE	Post-ex: Oblique
25/09/2019	IMG_0284	26	1	N	Post-ex: Landscape
25/09/2019	IMG_0285	25	1	S	Backfilled
Thursday 26 September 2019					
26/09/2019	IMG_0286	48	1		Trench ID
26/09/2019	IMG_0287	48	1	N	Pre-ex landscape
26/09/2019	IMG_0288	51	1	NE	Pre-ex landscape
26/09/2019	IMG_0289	51	1		ID

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0290	51	1	NE	Pre-landscape
26/09/2019	IMG_0291	54	1		ID
26/09/2019	IMG_0292	54	1	N	Pre-ex landscape
26/09/2019	IMG_0293	57	1		ID
26/09/2019	IMG_0294	57	1	S	Pre-ex landscape
26/09/2019	IMG_0295	60	1		ID
26/09/2019	IMG_0296	60	1	W	Pre-ex landscape
26/09/2019	IMG_0297	59	1		ID
26/09/2019	IMG_0298	59	1	N	Pre-ex landscape
26/09/2019	IMG_0299	56	1		ID
26/09/2019	IMG_0300	56	1	SW	Pre-ex landscape
26/09/2019	IMG_0301	53	1		ID
26/09/2019	IMG_0302	53	1	S	Pre-ex landscape
26/09/2019	IMG_0303	50	1		ID
26/09/2019	IMG_0304	50	1	N	Pre-ex landscape
26/09/2019	IMG_0305	47	1		ID
26/09/2019	IMG_0306	47	1	N	Pre-ex landscape
26/09/2019	IMG_0307	46	1		ID
26/09/2019	IMG_0308	46	1	N	Pre-ex landscape
26/09/2019	IMG_0309	49	1		SE
26/09/2019	IMG_0310	49	1	NE	Pre-ex Landscape
26/09/2019	IMG_0311	52	1		ID
26/09/2019	IMG_0312	52	1	NW	Pre-ex landscape
26/09/2019	IMG_0313	55	1		ID
26/09/2019	IMG_0314	55	1	S	Pre-ex landscape
26/09/2019	IMG_0315	58	1		ID
26/09/2019	IMG_0316	58	1	NE	Pre-ex landscape
26/09/2019	IMG_0317	32	1		ID
26/09/2019	IMG_0318	32	1	N	Post-ex landscape plan
26/09/2019	IMG_0319	32	1	N	Post-ex section
26/09/2019	IMG_0320	32	1	NE	Post-ex oblique
26/09/2019	IMG_0321	32	1	NE	Post-ex oblique
26/09/2019	IMG_0322	32	1	NE	Post-ex oblique
26/09/2019	IMG_0323	32	1	SW	Post-ex landscape

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0324	33	1	N	Post-ex plan (trench in SW corner)
26/09/2019	IMG_0325	33	1	N	Post-ex in plan
26/09/2019	IMG_0326	33	1	N	Post-ex plan
26/09/2019	IMG_0327	33	1	E	Post-ex section
26/09/2019	IMG_0328	33	1	E	Post-ex section
26/09/2019	IMG_0329	33	1	NE	Post-ex oblique
26/09/2019	IMG_0330	33	1	S	Post-ex in landscape
26/09/2019	IMG_0331	36	1		ID
26/09/2019	IMG_0332	36	1	N	Post-ex in plan
26/09/2019	IMG_0333	36	1	E	Post-ex in section
26/09/2019	IMG_0334	36	1	E	Post-ex in section
26/09/2019	IMG_0335	36	1	NE	Post-ex in oblique
26/09/2019	IMG_0336	36	1	SW	Post-ex in landscape
26/09/2019	IMG_0337	36	1		Backfilled
26/09/2019	IMG_0338	33	1		Backfilled
26/09/2019	IMG_0339	32	1		ID
26/09/2019	IMG_0340	32	1		Backfilled
26/09/2019	IMG_0341	28	1		ID
26/09/2019	IMG_0342	28	1	N	Post-ex in plan
26/09/2019	IMG_0343	28	1	N	Post-ex in plan
26/09/2019	IMG_0344	28	1	N	Post-ex in plan
26/09/2019	IMG_0345	28	1	N	Post-ex in section
26/09/2019	IMG_0346	28	1	N	Post-ex in section
26/09/2019	IMG_0347	28	1	NE	post-ex oblique
26/09/2019	IMG_0348	28	1	NE	Post-ex oblique
26/09/2019	IMG_0349	28	1	NE	Post-ex oblique
26/09/2019	IMG_0350	28	1	SW	Post-ex landscape
26/09/2019	IMG_0351	31	1		ID
26/09/2019	IMG_0352	31	1	E	Mid-ex charcoal feature
26/09/2019	IMG_0353	31	1	NE	Mid-ex charcoal feature
26/09/2019	IMG_0354	31	1	E	Mid-ex charcoal feature
26/09/2019	IMG_0355	28	1		ID
26/09/2019	IMG_0356	28	1		Backfilled
26/09/2019	IMG_0357	34	1		ID

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0358	34	1	N	Post-ex in plan
26/09/2019	IMG_0359	34	1	N	Post-ex in section
26/09/2019	IMG_0360	34	1	NE	Post-ex oblique
26/09/2019	IMG_0361	34	1	NW	Post-ex oblique
26/09/2019	IMG_0362	34	1	N	Post-ex landscape
26/09/2019	IMG_0363	34	1		ID
26/09/2019	IMG_0364	34	1		Backfilled
26/09/2019	IMG_0365	31	1		ID
26/09/2019	IMG_0366	31	1	N	Post-ex in plan
26/09/2019	IMG_0367	31	1	E	Post-ex in section
26/09/2019	IMG_0368	31	1	NE	Post-ex oblique
26/09/2019	IMG_0369	31	1	NE	Post-ex oblique
26/09/2019	IMG_0370	31	1	NE	Post-ex landscape
26/09/2019	IMG_0371	31	1		ID
26/09/2019	IMG_0372	31	1	NW	Backfilled
26/09/2019	IMG_0373	27	1		ID
26/09/2019	IMG_0374	27	1		Post-ex plan (TU halted due to in service buffer zone)
26/09/2019	IMG_0375	27	1	N	Post-ex in section (TU halted due to service in buffer zone)
26/09/2019	IMG_0376	27	1	NE	Post-ex oblique (TU halted due to in service buffer zone)
26/09/2019	IMG_0377	27	1	E	Post-ex landscape
26/09/2019	IMG_0378	27	1		ID
26/09/2019	IMG_0379	27	1	SE	Backfilled
26/09/2019	IMG_0380	44	1	N	Post-ex in plan
26/09/2019	IMG_0381	44	1	N	Post-ex in plan
26/09/2019	IMG_0382	44	1	N	Post-ex in section
26/09/2019	IMG_0383	44	1	NW	Post-ex oblique
26/09/2019	IMG_0384	44	1	NW	Post-ex oblique
26/09/2019	IMG_0385	44	1	NW	Post-ex plan
26/09/2019	IMG_0386	44	1	W	Post-ex landscape
26/09/2019	IMG_0387		1	N	Ring tree
26/09/2019	IMG_0388		1	NE	Ring tree
26/09/2019	IMG_0389		1	NW	Ring tree (far right) and RAPS

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0390	35	1	N	Post-ex in plan
26/09/2019	IMG_0391	35	1	N	Post-ex in section
26/09/2019	IMG_0392	35	1	NE	Post-ex oblique
26/09/2019	IMG_0393	35	1	NE	Post-ex oblique
26/09/2019	IMG_0394	35	1	N	Post-ex landscape
26/09/2019	IMG_0395	35	1		ID
26/09/2019	IMG_0396	35	1	NW	Backfilled
26/09/2019	IMG_0397	48	1		ID
26/09/2019	IMG_0398	48	1	N	Pre-ex landscape (offset TU)
26/09/2019	IMG_0399	48	1	N	Pre-ex landscape (offset TU)
26/09/2019	IMG_0401	42	1	NW	Pre-ex landscape (offset TU 42)
26/09/2019	IMG_0403	42	1		ID
26/09/2019	IMG_0404	1	1		
26/09/2019	IMG_0405	1	1	N	Post-ex in plan
26/09/2019	IMG_0406	1	1	N	Post-ex section
26/09/2019	IMG_0407	1	1	N	Post-ex section
26/09/2019	IMG_0408	1	1	NW	Post-ex oblique
26/09/2019	IMG_0409	1	1	NW	Post-ex oblique
26/09/2019	IMG_0410	1	1	SW	Post-ex landscape
26/09/2019	IMG_0411	1	1		ID
26/09/2019	IMG_0412	1	1	W	Backfilled TU
26/09/2019	IMG_0413	2	1		ID
26/09/2019	IMG_0414	2	1	N	Post-ex in plan
26/09/2019	IMG_0415	2	1	N	Post-ex in plan
26/09/2019	IMG_0416	2	1	N	Post-ex in section
26/09/2019	IMG_0417	2	1	N	Post-ex in section
26/09/2019	IMG_0418	2	1	NW	Post-ex oblique
26/09/2019	IMG_0419	2	1	NW	Post-ex oblique
26/09/2019	IMG_0420	2	1	SW	Post-ex landscape
26/09/2019	IMG_0421	2	1		ID
26/09/2019	IMG_0422	2	1	N	Backfilled
26/09/2019	IMG_0423	3	1		ID
26/09/2019	IMG_0424	3	1	N	Post-ex in plan
26/09/2019	IMG_0425	3	1	N	Post-ex in section

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0426	3	1	NW	Post-ex oblique
26/09/2019	IMG_0427	3	1	E	Post-ex landscape
26/09/2019	IMG_0428	38	1		ID
26/09/2019	IMG_0429	38	1	N	Post-ex in plan
26/09/2019	IMG_0430	38	1	N	Post-ex in plan
26/09/2019	IMG_0431	38	1	N	Post-ex in section
26/09/2019	IMG_0432	38	1	N	Post-ex in section
26/09/2019	IMG_0433	38	1	NW	Post-ex oblique
26/09/2019	IMG_0434	38	1	NW	Post-ex oblique
26/09/2019	IMG_0435	38	1	N	Post-ex landscape
26/09/2019	IMG_0436	38	1		Backfilled TU
26/09/2019	IMG_0437	43	1		ID
26/09/2019	IMG_0438	43	1	N	Post-ex in plan
26/09/2019	IMG_0439	43	1	N	Post-ex in plan
26/09/2019	IMG_0440	43	1	N	Post-ex in section
26/09/2019	IMG_0441	43	1	N	Post-ex in section
26/09/2019	IMG_0442	43	1	NW	Post-ex oblique
26/09/2019	IMG_0443	43	1	NW	Post-ex oblique
26/09/2019	IMG_0444	43	1	E	Post-ex landscape
26/09/2019	IMG_0445	43	1		Backfilled
26/09/2019	IMG_0446	37	1		ID
26/09/2019	IMG_0447	37	1	N	Post-ex in plan
26/09/2019	IMG_0448	37	1	N	Post-ex in section
26/09/2019	IMG_0449	37	1	N	Post-ex in section
26/09/2019	IMG_0450	37	1	NW	Post-ex oblique
26/09/2019	IMG_0451	37	1	NW	Post-ex oblique
26/09/2019	IMG_0452	37	1	NW	Post-ex oblique
26/09/2019	IMG_0453	37	1	N	Post-ex landscape
26/09/2019	IMG_0454	37	1	E	Backfilled TU
26/09/2019	IMG_0455	42	1		ID
26/09/2019	IMG_0456	42	1	N	Post-ex plan
26/09/2019	IMG_0457	42	1	N	Post-ex section
26/09/2019	IMG_0458	42	1	NW	Post-ex oblique
26/09/2019	IMG_0459	42	1	NW	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
26/09/2019	IMG_0460	42	1	SW	Post-ex landscape
26/09/2019	IMG_0461	1	1		ID
26/09/2019	IMG_0462	1	1	E	Backfilled
26/09/2019	IMG_0463	42	1		Backfilled
26/09/2019	IMG_0464	40	1		ID
26/09/2019	IMG_0465	40	1	N	Post-ex plan
26/09/2019	IMG_0466	40	1	N	Post-ex plan
26/09/2019	IMG_0467	40	1	N	Post-ex section
26/09/2019	IMG_0468	40	1	N	Post-ex section
26/09/2019	IMG_0469	40	1	NE	Post-ex oblique
26/09/2019	IMG_0470	40	1	NE	Post-ex oblique
26/09/2019	IMG_0471	40	1	N	Post-ex landscape
26/09/2019	IMG_0472	40	1		Backfilled
26/09/2019	IMG_iphone 1	1	1	S	Pre-ex
26/09/2019	IMG_iphone 2	1	1		ID
26/09/2019	IMG_iphone 3	2	1		ID
26/09/2019	IMG_iphone 4	2	1	N	Pre-ex
26/09/2019	IMG_iphone 5	3	1		ID
26/09/2019	IMG_iphone 6	3	1	N	Pre-ex
Friday 27 September 2019					
27/09/2019	IMG_0473	41	1		ID
27/09/2019	IMG_0474	41	1	N	Post-ex plan
27/09/2019	IMG_0475	41	1	N	Post-ex plan
27/09/2019	IMG_0476	41	1	N	Post-ex section
27/09/2019	IMG_0477	41	1	N	Post-ex section
27/09/2019	IMG_0478	41	1	NE	Post-ex oblique
27/09/2019	IMG_0479	41	1	NE	Post-ex oblique
27/09/2019	IMG_0480	41	1	S	Post-ex landscape
27/09/2019	IMG_0481	41	1		Backfilled
27/09/2019	IMG_0482	48	1		ID
27/09/2019	IMG_0483	48	1	N	Post-ex plan
27/09/2019	IMG_0484	48	1	N	Post-ex plan
27/09/2019	IMG_0485	48	1	N	Post-ex section
27/09/2019	IMG_0486	48	1	N	Post-ex section

Date	Photo#	TU	Zone	Orientation	Description
27/09/2019	IMG_0487	48	1	NE	Post ex oblique
27/09/2019	IMG_0488	48	1	N	Post-ex plan
27/09/2019	IMG_0489	48	1	N	Backfilled
27/09/2019	IMG_0490	53	1		ID
27/09/2019	IMG_0491	53	1	N	Post-ex plan
27/09/2019	IMG_0492	53	1	N	Post-ex plan
27/09/2019	IMG_0493	53	1	N	Post-ex section
27/09/2019	IMG_0494	53	1	N	Post-ex section
27/09/2019	IMG_0495	53	1	NE	Post-ex oblique
27/09/2019	IMG_0496	53	1	NE	Post-ex oblique
27/09/2019	IMG_0497	53	1	N	Landscape
27/09/2019	IMG_0498	53	1		Backfilled
27/09/2019	IMG_0499	47	1		ID
27/09/2019	IMG_0500	47	1	N	Post-ex in plan
27/09/2019	IMG_0501	47	1	N	Post-ex in plan
27/09/2019	IMG_0502	47	1	N	Post-ex in section
27/09/2019	IMG_0503	47	1	N	Post-ex in section
27/09/2019	IMG_0504	47	1	NE	Post-oblique
27/09/2019	IMG_0505	47	1	NW	Post-ex landscape
27/09/2019	IMG_0512	58	1		ID
27/09/2019	IMG_0513	58	1	N	Post-ex in plan
27/09/2019	IMG_0514	58	1	N	Post-ex section
27/09/2019	IMG_0515	58	1	NE	Post-ex oblique
27/09/2019	IMG_0516	58	1	NE	Post-ex oblique
27/09/2019	IMG_0517	58	1	E	Post-ex landscape
27/09/2019	IMG_0518	47	1		Backfilled
27/09/2019	IMG_0519	54	1		ID
27/09/2019	IMG_0520	54	1	N	Post-ex plan
27/09/2019	IMG_0521	54	1	N	Post-ex section
27/09/2019	IMG_0522	54	1	N	Post-ex section
27/09/2019	IMG_0523	54	1	NW	Post-ex oblique
27/09/2019	IMG_0524	54	1	NW	Post-ex oblique
27/09/2019	IMG_0525	54	1	NW	Post-ex oblique
27/09/2019	IMG_0526	54	1	E	Post-ex plan

Date	Photo#	TU	Zone	Orientation	Description
27/09/2019	IMG_0527	54	1		Backfilled
27/09/2019	IMG_0528	51	1	N	Post-ex plan
27/09/2019	IMG_0529	51	1	N	Post-ex plan
27/09/2019	IMG_0530	51	1	N	Post-ex section
27/09/2019	IMG_0531	51	1	NW	Post-ex oblique
27/09/2019	IMG_0532	51	1	N	Post-ex plan
27/09/2019	IMG_0533	51	1		Backfilled
27/09/2019	IMG_0534	58	1		Backfilled
27/09/2019	IMG_0535	50	1		ID
27/09/2019	IMG_0536	50	1	N	Post-ex plan
27/09/2019	IMG_0537	50	1	N	Post-ex plan
27/09/2019	IMG_0538	50	1	N	Post-ex section
27/09/2019	IMG_0539	50	1	NW	Post-ex oblique
27/09/2019	IMG_0540	50	1	NW	Post-ex landscape
27/09/2019	IMG_0541	57	1		ID
27/09/2019	IMG_0542	57	1	N	Post-ex in plan
27/09/2019	IMG_0543	57	1	N	Post-ex in plan
27/09/2019	IMG_0544	57	1	N	Post-ex in section
27/09/2019	IMG_0545	57	1	N	Post-ex in section
27/09/2019	IMG_0546	57	1	NW	Post-ex oblique
27/09/2019	IMG_0547	57	1	W	Post-ex plan
27/09/2019	IMG_0548	57	1		Backfilled
27/09/2019	IMG_0549	55	1		ID
27/09/2019	IMG_0550	55	1	N	Post-ex in plan
27/09/2019	IMG_0551	55	1	N	Post-ex in section
27/09/2019	IMG_0552	55	1	NE	Post-ex oblique
27/09/2019	IMG_0553	55	1	NE	Post-ex oblique
27/09/2019	IMG_0554	55	1	W	Post-ex landscape
27/09/2019	IMG_0555	55	1	W	Post-ex landscape
27/09/2019	IMG_0556	55	1		ID
27/09/2019	IMG_0557	50	1		Post-ex backfilled
27/09/2019	IMG_0558	46	1		ID
27/09/2019	IMG_0559	46	1	N	Post-ex in plan
27/09/2019	IMG_0560	46	1	N	Post-ex in plan

Date	Photo#	TU	Zone	Orientation	Description
27/09/2019	IMG_0561	46	1	N	Post-ex in section
27/09/2019	IMG_0562	46	1	NW	Post-ex oblique
27/09/2019	IMG_0563	46	1	NW	Post-ex oblique
27/09/2019	IMG_0564	46	1	NW	Post-ex landscape
27/09/2019	IMG_0565	56	1		ID
27/09/2019	IMG_0566	56	1	N	Post-ex in plan
27/09/2019	IMG_0567	56	1	N	Post-ex section
27/09/2019	IMG_0568	56	1	NW	Post-ex oblique
27/09/2019	IMG_0569	56	1	NW	Post-ex oblique
27/09/2019	IMG_0570	56	1	E	Post-ex in landscape
27/09/2019	IMG_0571	56	1		Backfilled
27/09/2019	IMG_0572	46	1		Backfilled
Monday 30 September 2019					
30/09/2019	IMG_0573	60	1		ID
30/09/2019	IMG_0574	60	1	N	Post- ex in plan
30/09/2019	IMG_0575	60	1	N	Post-ex in section
30/09/2019	IMG_0576	60	1	N	Post-ex in section
30/09/2019	IMG_0577	60	1	NW	Post-ex oblique
30/09/2019	IMG_0578	60	1	N	Post-ex landscape
30/09/2019	IMG_0579	49	1		ID
30/09/2019	IMG_0580	49	1	N	Post-ex in plan
30/09/2019	IMG_0581	49	1	N	Post-ex in plan
30/09/2019	IMG_0582	49	1	N	Post-ex in section
30/09/2019	IMG_0583	49	1	N	Post-ex in section
30/09/2019	IMG_0584	49	1	NE	Post-ex oblique
30/09/2019	IMG_0585	49	1	NW	Post-ex landscape
30/09/2019	IMG_0586	60	1		Backfilled
30/09/2019	IMG_0587	49	1		Backfilled
30/09/2019	IMG_0595	59	1		ID
30/09/2019	IMG_0597	59	1	N	Post-ex plan
30/09/2019	IMG_0598	59	1	N	Post-ex plan
30/09/2019	IMG_0599	59	1	N	Post-ex section
30/09/2019	IMG_0600	59	1	NW	Post-ex oblique
30/09/2019	IMG_0601	59	1	NW	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
30/09/2019	IMG_0602	59	1	W	Post-ex landscape
30/09/2019	IMG_0603	59	1		Post-ex ID
30/09/2019	IMG_0604	33	1		ID
30/09/2019	IMG_0606	33	1	N	Post-ex in plan
30/09/2019	IMG_0607	33	1	N	Post-ex in plan
30/09/2019	IMG_0608	33	1	N	Post-ex in section
30/09/2019	IMG_0609	33	1	N	Post-ex in section
30/09/2019	IMG_0610	33	1	NW	Post-ex oblique
30/09/2019	IMG_0611	33	1	NW	Post-ex oblique
30/09/2019	IMG_0612	33	1	N	Post-ex landscape
30/09/2019	IMG_0613	33	1	SE	Post-ex landscape
30/09/2019	IMG_0614	33	1	E	Post-ex landscape
30/09/2019	IMG_0621	33	1		Backfilled
30/09/2019	IMG_0622	27	1	W	Post-ex landscape
30/09/2019	IMG_0623	27	1	W	Post-ex section
30/09/2019	IMG_0624	27	1	W	Post-ex section
30/09/2019	IMG_0625	27	1	NW	Post-ex oblique
30/09/2019	IMG_0626	27	1	W	Post-ex landscape
30/09/2019	IMG_0627	27	1	NW	Post-ex oblique
30/09/2019	IMG_0628	27	1	NW	Post-ex oblique
30/09/2019	IMG_0629	27	1		ID
30/09/2019	IMG_0630	27	1		ID
30/09/2019	IMG_0631	27	1		Post-ex backfilled
30/09/2019	IMG_0633	52	1		ID
30/09/2019	IMG_0634	52	1	N	Post-ex plan
30/09/2019	IMG_0635	52	1	N	Post-ex plan
30/09/2019	IMG_0636	52	1	N	Post-ex section
30/09/2019	IMG_0637	52	1	N	Post-ex section
30/09/2019	IMG_0638	52	1	NW	Post-ex oblique
30/09/2019	IMG_0639	52	1	NW	Post-ex oblique
30/09/2019	IMG_0640	52	1	N	Post-ex landscape
30/09/2019	IMG_0641	52	1		Backfilled
30/09/2019	IMG_0642	30	1		ID
30/09/2019	IMG_0643	30	1	N	Post-ex plan

Date	Photo#	TU	Zone	Orientation	Description
30/09/2019	IMG_0644	30	1	N	Post-ex section
30/09/2019	IMG_0645	30	1	NW	Post-ex oblique
30/09/2019	IMG_0647	30	1	NW	Post-ex oblique
30/09/2019	IMG_0648	30	1	N	Post-ex landscape
30/09/2019	IMG_0650	36	1		ID
30/09/2019	IMG_0651	36	1	N	Post-ex landscape
30/09/2019	IMG_0652	36	1	N	Post-ex landscape
30/09/2019	IMG_0653	36	1	N	Post-ex section
30/09/2019	IMG_0654	36	1	N	Post-ex section
30/09/2019	IMG_0655	36	1	NW	Post-ex oblique
30/09/2019	IMG_0656	36	1	NW	Post-ex oblique
30/09/2019	IMG_0657		1	NE	Working shot - pits 39 (right) and 46 (left) being dug
30/09/2019	IMG_0658		1	N	Working shot- pit 46 in background
30/09/2019	IMG_0659	36	1	NE	Post-ex landscape
30/09/2019	IMG_0660	36	1	W	Backfilled
30/09/2019	IMG_0662	46	1		ID
30/09/2019	IMG_0663	46	1	N	Post-ex landscape
30/09/2019	IMG_0664	46	1	N	Post-ex landscape
30/09/2019	IMG_0665	46	1	N	Post-ex section
30/09/2019	IMG_0666	46	1	N	Post-ex section
30/09/2019	IMG_0667	46	1	NW	Post-ex oblique
30/09/2019	IMG_0668	46	1	NW	Post-ex landscape
30/09/2019	IMG_0669	39	1		ID
30/09/2019	IMG_0670	39	1	N	Post-ex landscape
30/09/2019	IMG_0671	39	1	N	Post-ex section
30/09/2019	IMG_0672	39	1	NW	Post-ex oblique
30/09/2019	IMG_0673	39	1	NE	Post-ex landscape
30/09/2019	IMG_0674	46	1		ID
30/09/2019	IMG_0675	46	1	N	Backfilled
30/09/2019	IMG_0676	39	1		ID
30/09/2019	IMG_0677	39	1		Backfilled
Tuesday 1 October 2019					
1/09/2019	IMG_0573	187	11		ID
1/09/2019	IMG_0574	187	11	E	Pre-ex

Date	Photo#	TU	Zone	Orientation	Description
1/09/2019	IMG_0575	186	11		ID
1/09/2019	IMG_0576	186	11	S	Pre-ex
1/09/2019	IMG_0577	185	11		ID
1/09/2019	IMG_0578	185	11	W	Pre-ex
1/09/2019	IMG_0579	184	11		ID
1/09/2019	IMG_0580	184	11	S	Pre-ex
1/09/2019	IMG_0581	182	11		ID
1/09/2019	IMG_0582	182	11	NE	Pre-ex
1/09/2019	IMG_0583	172	11		ID
1/09/2019	IMG_0584	172	11	N	Pre-ex
1/09/2019	IMG_0585	174	11		ID
1/09/2019	IMG_0586	174	11	W	Pre-ex
1/09/2019	IMG_0587	178	11	E	Pre-ex
1/09/2019	IMG_0588	173	11		ID
1/09/2019	IMG_0589	173	11	NW	Pre-ex
1/09/2019	IMG_0590	176	11		ID
1/09/2019	IMG_0591	176	11	N	Pre-ex
1/09/2019	IMG_0592	172	11		ID
1/09/2019	IMG_0593	172	11	S	Pre-ex
1/09/2019	IMG_0594	175	11		ID
1/09/2019	IMG_0595	175	11	S	Pre-ex
1/09/2019	IMG_0596	171	11		ID
1/09/2019	IMG_0597	171	11	N	Pre-ex
1/09/2019	IMG_0598	181	11		ID
1/09/2019	IMG_0599	181	11	NE	Pre-ex
1/09/2019	IMG_0600	180	11		ID
1/09/2019	IMG_0601	180	11	E	Pre-ex
1/09/2019	IMG_0602	183	11		ID
1/09/2019	IMG_0603	183	11	N	Pre-ex
1/09/2019	IMG_0604	187	11		ID
1/09/2019	IMG_0605	187	11	N	Post-ex plan
1/09/2019	IMG_0606	187	11	N	Post-ex section
1/09/2019	IMG_0607	187	11	N	Post-ex section
1/09/2019	IMG_0608	187	11	NE	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
1/09/2019	IMG_0609	187	11	NE	Post-ex oblique
1/09/2019	IMG_0610	187	11	NE	Post-ex landscape
1/09/2019	IMG_0611	184	11		ID
1/09/2019	IMG_0612	184	11	N	Post-ex plan
1/09/2019	IMG_0613	184	11	N	Post-ex plan
1/09/2019	IMG_0614	184	11	N	Post-ex section
1/09/2019	IMG_0615	184	11	N	Post-ex section
1/09/2019	IMG_0616	184	11	NE	Post-ex oblique
1/09/2019	IMG_0617	184	11	NE	Post-ex oblique
1/09/2019	IMG_0618	184	11	S	Post-ex landscape
1/09/2019	IMG_0619	184	11		ID
1/09/2019	IMG_0620	184	11		Backfilled
1/09/2019	IMG_0621	187	11		ID
1/09/2019	IMG_0622	187	11		Backfilled
1/09/2019	IMG_0623	174	11		ID
1/09/2019	IMG_0624	174	11	N	Post-ex in plan
1/09/2019	IMG_0625	174	11	N	Post-ex in section
1/09/2019	IMG_0626	174	11	N	Post-ex in section
1/09/2019	IMG_0627	174	11	NW	Post-ex oblique
1/09/2019	IMG_0628	174	11	NE	Post-ex landscape
1/09/2019	IMG_0629	186	11		ID
1/09/2019	IMG_0630	186	11	N	Post-ex plan
1/09/2019	IMG_0631	186	11	N	Post-ex plan
1/09/2019	IMG_0632	186	11	N	Post-ex section
1/09/2019	IMG_0633	186	11	N	Post-ex section
1/09/2019	IMG_0634	186	11	NE	Post-ex oblique
1/09/2019	IMG_0635	186	11	NE	Post-ex oblique
1/09/2019	IMG_0636	186	11	S	Post-ex landscape
1/09/2019	IMG_0637	185	11		ID
1/09/2019	IMG_0638	185	11	N	Post-ex plan
1/09/2019	IMG_0639	185	11	N	Post-ex plan
1/09/2019	IMG_0640	185	11	N	Post-ex section
1/09/2019	IMG_0641	185	11	NE	Post-ex oblique
1/09/2019	IMG_0642	185	11	NE	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
1/09/2019	IMG_0643	185	11	S	Post-ex landscape
1/09/2019	IMG_0644	186	11		Backfilled
1/09/2019	IMG_0645		11		
1/09/2019	IMG_0646		11		
1/09/2019	IMG_0647		11		
1/09/2019	IMG_0648	185	11		Backfilled
1/09/2019	IMG_0649	174	11		Backfilled
1/09/2019	IMG_0650		11		
1/09/2019	IMG_0651		11		
1/09/2019	IMG_0652		11		
1/09/2019	IMG_0653		11		
1/09/2019	IMG_0654		11		
1/09/2019	IMG_0655		11		
1/09/2019	IMG_0656	177	11		ID
1/09/2019	IMG_0657	177	11	N	Post-ex plan
1/09/2019	IMG_0658	177	11	N	Post-ex plan
1/09/2019	IMG_0659	177	11	N	Post-ex section
1/09/2019	IMG_0660	177	11	NW	Post-ex oblique
1/09/2019	IMG_0661	177	11	NW	Post-ex oblique
1/09/2019	IMG_0662	177	11	N	Post-ex landscape
1/09/2019	IMG_0663	180	11	N	Post-ex landscape
1/09/2019	IMG_0664	180	11	N	Post-ex section
1/09/2019	IMG_0665	180	11	N	Post-ex section
1/09/2019	IMG_0666	180	11	NW	Post-ex oblique
1/09/2019	IMG_0667	180	11	NW	Post-ex oblique
1/09/2019	IMG_0668	180	11	SE	Post-ex landscape
1/09/2019	IMG_0669	180	11		ID
1/09/2019	IMG_0670	183	11		ID
1/09/2019	IMG_0671	183	11	N	Post-ex landscape
1/09/2019	IMG_0672	183	11	N	Post-ex landscape
1/09/2019	IMG_0673	183	11	N	Post-ex section
1/09/2019	IMG_0674	183	11	N	Post-ex section
1/09/2019	IMG_0675	183	11	N	Post-ex oblique
1/09/2019	IMG_0676	183	11	NW	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
1/09/2019	IMG_0677	183	11	N	Post-ex landscape
1/09/2019	IMG_0678	177	11		Backfilled
1/09/2019	IMG_0679	173	11		Backfilled
1/09/2019	IMG_0680	178	11	N	Post-ex plan
1/09/2019	IMG_0681	178	11	N	Post-ex plan
1/09/2019	IMG_0682	178	11	N	Post-ex section
1/09/2019	IMG_0683	178	11	N	Post-ex section
1/09/2019	IMG_0684	178	11	NW	Post-ex section
1/09/2019	IMG_0685	178	11	NE	Post-ex landscape
1/09/2019	IMG_0686	185	11		Backfilled
1/09/2019	IMG_0687	185	11		Backfilled
1/09/2019	IMG_0688	185	11		Backfilled
1/09/2019	IMG_0689	180	11		Backfilled
1/09/2019	IMG_0690	180	11		ID
1/09/2019	IMG_0691	178	11		Semi-backfilled
Wednesday 2 October 2019					
2/09/2019	IMG_0768	182	11	N	Post-ex plan
2/09/2019	IMG_0769	182	11	N	Post-ex plan
2/09/2019	IMG_0770	182	11	N	Post-ex section
2/09/2019	IMG_0771	182	11	N	Post-ex section
2/09/2019	IMG_0772	182	11	N	Post-ex section
2/09/2019	IMG_0773	182	11	NE	Post-ex oblique
2/09/2019	IMG_0774	182	11	NE	Post-ex oblique
2/09/2019	IMG_0775	182	11	N	Post-ex landscape
2/09/2019	IMG_0776	182	11	N	Backfilled
2/09/2019	IMG_0777	178	11		Backfilled
2/09/2019	IMG_0778	172	11		ID
2/09/2019	IMG_0779	172	11	N	Post-ex plan
2/09/2019	IMG_0780	172	11	N	Post-ex plan
2/09/2019	IMG_0781	172	11	N	Post-ex section
2/09/2019	IMG_0782	172	11	N	Post-ex section
2/09/2019	IMG_0783	172	11	NE	Post-ex oblique
2/09/2019	IMG_0784	172	11	NE	Post-ex oblique
2/09/2019	IMG_0785	172	11	E	Post-ex landscape

Date	Photo#	TU	Zone	Orientation	Description
2/09/2019	IMG_0786	176	11		ID
2/09/2019	IMG_0787	176	11	N	Post-ex plan
2/09/2019	IMG_0788	176	11	N	Post-ex plan
2/09/2019	IMG_0789	176	11	N	Post-ex section
2/09/2019	IMG_0790	176	11	N	Post-ex section
2/09/2019	IMG_0791	176	11	NW	Post-ex oblique
2/09/2019	IMG_0792	176	11	NW	Post-ex oblique
2/09/2019	IMG_0793	176	11	NE	Post-ex landscape
2/09/2019	IMG_0794	171	11		ID
2/09/2019	IMG_0795	171	11	N	Post-ex plan
2/09/2019	IMG_0796	171	11	N	Post-ex plan
2/09/2019	IMG_0797	171	11	N	Post-ex section
2/09/2019	IMG_0798	171	11	N	Post-ex section
2/09/2019	IMG_0799	171	11	NE	Post-ex oblique
2/09/2019	IMG_0800	171	11	E	Post-ex in landscape
2/09/2019	IMG_0801	181	11		ID
2/09/2019	IMG_0802	181	11	N	Post-ex plan
2/09/2019	IMG_0803	181	11	N	Post-ex section
2/09/2019	IMG_0804	181	11	N	Post-ex section
2/09/2019	IMG_0805	181	11	NW	Post-ex oblique
2/09/2019	IMG_0806	181	11	NE(?)	Post-ex oblique
2/09/2019	IMG_0807	181	11	N	Post-ex plan
2/09/2019	IMG_0808	181	11	NE	Post-ex landscape
2/09/2019	IMG_0809	172	11		Backfilled
2/09/2019	IMG_0810	172	11		Backfilled
2/09/2019	IMG_0811	176	11		Backfilled
2/09/2019	IMG_0812	182	11		Backfilled
2/09/2019	IMG_0813	181	11		Backfilled
2/09/2019	IMG_0814	175	11		ID
2/09/2019	IMG_0815	175	11	N	Post-ex plan
2/09/2019	IMG_0816	175	11	N	Post-ex section
2/09/2019	IMG_0817	175	11	N	Post-ex section
2/09/2019	IMG_0818	175	11	NE	Post-ex oblique
2/09/2019	IMG_0819	175	11	NW	Post-ex oblique

Date	Photo#	TU	Zone	Orientation	Description
2/09/2019	IMG_0820	175	11	NW	Post- ex oblique
2/09/2019	IMG_0821	175	11	N	Post-ex landscape
2/09/2019	IMG_0824	175	11		Backfilled

Date	Photo #	TU	Zone	Orientation	Description
Monday 7 December 2020					
7/12/2020	239		11 East		Working shot
7/12/2020	240	225	11 East	North	Pre-Ex photo
7/12/2020	241	225	11 East	North	Pre-Ex photo
7/12/2020	242	227	11 East	North	Flag ID
7/12/2020	243	227	11 East	North	Pre-Ex photo
7/12/2020	244	227	11 East	North	Pre-Ex photo
7/12/2020	245	227	11 East	North	Pre-Ex photo
7/12/2020	246	228	11 East	North	Flag ID
7/12/2020	247	228	11 East	North	Pre-Ex photo
7/12/2020	248	228	11 East	North	Pre-Ex photo
7/12/2020	249	229	11 East	North	Flag ID
7/12/2020	250	229	11 East	North	Pre-Ex photo
7/12/2020	251		11 East	North	Group/Working shot
7/12/2020	253	218	11 East	North	Flag ID
7/12/2020	254	218	11 East	North	Flag ID
7/12/2020	255	218	11 East	North	Pre-Ex photo
7/12/2020	256	219	11 East	North	Flag ID
7/12/2020	257	219	11 East	North	Pre-Ex photo
7/12/2020	258	220	11 East	North	Flag ID
7/12/2020	259	220	11 East	North	Pre-Ex photo
7/12/2020	260	225	11 East	North	Flag ID
7/12/2020	261	225	11 East	North	Pre-Ex photo
7/12/2020	262	224	11 East	North	Flag ID
7/12/2020	263	224	11 East	North	Pre-Ex photo
7/12/2020	264	223	11 East	North	Flag ID
7/12/2020	265	223	11 East	North	Pre-Ex photo
7/12/2020	266	222	11 East	North	Flag ID
7/12/2020	267	222	11 East	North	Pre-Ex photo
7/12/2020	268	221	11 East	North	Flag ID
7/12/2020	269	221	11 East	North	Pre-Ex photo
7/12/2020	270	226	11 East	North	Flag ID
7/12/2020	271	226	11 East	North	Pre-Ex photo
7/12/2020	272	227	11 East	North	Flag ID

Date	Photo #	TU	Zone	Orientation	Description
7/12/2020	273	227	11 East	North	Pre-Ex photo
7/12/2020	274	228	11 East	North	Flag ID
7/12/2020	275	228	11 East	North	Pre-Ex photo
7/12/2020	276	229	11 East	North	Flag ID
7/12/2020	277	229	11 East	North	Pre-Ex photo
7/12/2020	278	230	11 East	North	Flag ID
7/12/2020	279	230	11 East	North	Pre-Ex photo
7/12/2020	280	231	11 East	North	Flag ID
7/12/2020	281	231	11 East	North	Pre-Ex photo
7/12/2020	282	233	11 East	North	Flag ID
7/12/2020	283	233	11 East	North	Pre-Ex photo
7/12/2020	284	232	11 East	North	Flag ID
7/12/2020	285	232	11 East	North	Pre-Ex photo
7/12/2020	286	234	11 East	North	Flag ID
7/12/2020	287	234	11 East	North	Pre-Ex photo
7/12/2020	288	235	11 East	North	Flag ID
7/12/2020	289	235	11 East	North	Pre-Ex photo
7/12/2020	290	236	11 East	North	Flag ID
7/12/2020	291	236	11 East	North	Pre-Ex photo
7/12/2020	292	237	11 East	North	Flag ID
7/12/2020	293	237	11 East	North	Pre-Ex photo
7/12/2020	294	238	11 East	North	Flag ID
7/12/2020	295	238	11 East	North	Pre-Ex photo
7/12/2020	296	239	11 East	North	Flag ID
7/12/2020	297	239	11 East	North	Pre-Ex photo
7/12/2020	298	240	11 East	North	Flag ID
7/12/2020	299	240	11 East	North	Pre-Ex photo
7/12/2020	300	241	11 East	North	Flag ID
7/12/2020	301	241	11 East	North	Pre-Ex photo
7/12/2020	302	242	11 East	North	Flag ID
7/12/2020	303	242	11 East	North	Pre-Ex photo
Tuesday 8 December 2020					
8/12/2020	306	230	11 East	North	Flag ID
8/12/2020	307	230	11 East	North-East	Post-ex landscape

Date	Photo #	TU	Zone	Orientation	Description
8/12/2020	308	230	11 East	North	Post-ex TU in plan
8/12/2020	309	230	11 East	North	Post-ex TU section
8/12/2020	310	230	11 East	East	Post-ex TU section
8/12/2020	311	230	11 East	East	Post-ex TU section
8/12/2020	312	230	11 East	North	Backfilled
8/12/2020	313	226	11 East	North	Pre-Ex photo
8/12/2020	314	226	11 East	North-East	Post-ex landscape
8/12/2020	315	226	11 East	West	Post-ex TU in plan
8/12/2020	316	226	11 East	North	Post-ex TU section
8/12/2020	317	221	11 East	North	Flag ID
8/12/2020	318	221	11 East	North	Post-ex TU in plan
8/12/2020	319	221	11 East	North	Post-ex TU in plan
8/12/2020	320	221	11 East	North	Post-ex TU section
8/12/2020	321	221	11 East	East	Post-ex TU section
8/12/2020	322	221	11 East	East	Post-ex TU section
8/12/2020	323	221	11 East	East	Post-ex TU section
8/12/2020	324	221	11 East	North	Backfilled
8/12/2020	325	226	11 East	North	Flag ID
8/12/2020	326	226	11 East		Post-ex landscape
8/12/2020	327	222	11 East	North	Flag ID
8/12/2020	328	222	11 East	North	Post-ex TU in plan
8/12/2020	329	222	11 East	North	Post-ex TU section
8/12/2020	330	222	11 East	East	Post-ex TU section
8/12/2020	331	231	11 East	North	Flag ID
8/12/2020	332	231	11 East	South	Post-ex TU in plan
8/12/2020	333	231	11 East	East	Post-ex landscape
8/12/2020	334	231	11 East	North	Post-ex TU in plan
8/12/2020	335	231	11 East	North	Post-ex TU section
8/12/2020	336	231	11 East	North	Post-ex TU section
8/12/2020	337	222	11 East	North	Backfilled
8/12/2020	338	222	11 East	North	Backfilled
8/12/2020	339	222	11 East	North	Flag ID
8/12/2020	340	231	11 East	North	Backfilled
8/12/2020	341	227	11 East	South	Flag ID

Date	Photo #	TU	Zone	Orientation	Description
8/12/2020	342	227	11 East	North	Post-ex landscape
8/12/2020	343	227	11 East	North	Post-ex TU in plan
8/12/2020	344	227	11 East	North	Post-ex TU section
8/12/2020	345	227	11 East	North	Post-ex TU section
8/12/2020	346	223	11 East	North	Flag ID
8/12/2020	347	223	11 East	North	Post-ex TU in plan
8/12/2020	348	223	11 East	North	Post-ex TU in plan
8/12/2020	349	223	11 East	North	Post-ex TU section
8/12/2020	350	223	11 East	East	Post-ex TU section
8/12/2020	351	227	11 East	North	Flag ID
8/12/2020	352	227	11 East	North	Backfilled
8/12/2020	353	223	11 East	North	Flag ID
8/12/2020	354	223	11 East	North	Backfilled
8/12/2020	355	229	11 East	North	Flag ID
8/12/2020	356	229	11 East	East	Post-ex landscape
8/12/2020	357	229	11 East	North	Post-ex landscape
8/12/2020	358	229	11 East	North	Post-ex TU in plan
8/12/2020	359	229	11 East	North	Post-ex TU section
8/12/2020	360	229	11 East	North	Post-ex TU section
8/12/2020	361	229	11 East	North	Backfilled
8/12/2020	362	229	11 East	North	Backfilled
8/12/2020	363	224	11 East	North	Flag ID
8/12/2020	364	224	11 East	North	Post-ex TU in plan
8/12/2020	365	224	11 East	North	Post-ex TU in plan
8/12/2020	366	224	11 East	North	Post-ex TU section
8/12/2020	367	228	11 East	North	Flag ID
8/12/2020	368	228	11 East	North	Post-ex TU in plan
8/12/2020	369	228	11 East	West	Post-ex landscape
8/12/2020	370	228	11 East	West	Post-ex landscape
8/12/2020	371	228	11 East	North	Post-ex TU section
8/12/2020	372	228	11 East	North	Post-ex TU section
8/12/2020	373	224	11 East	North	Backfilled
8/12/2020	374	224	11 East	North	Backfilled
8/12/2020	375	228	11 East	North	Flag ID

Date	Photo #	TU	Zone	Orientation	Description
8/12/2020	376	228	11 East	North	Backfilled
8/12/2020	377	228	11 East	North	Post-ex landscape
8/12/2020	378	220	11 East	North	Flag ID
8/12/2020	379	220	11 East	South	Post-ex landscape
8/12/2020	380	220	11 East	North	Post-ex TU in plan
8/12/2020	381	220	11 East	North	Post-ex TU section
8/12/2020	382	225	11 East	North	Flag ID
8/12/2020	383	225	11 East	North	Post-ex TU section
8/12/2020	384	226	11 East	North	Post-ex TU section
8/12/2020	385	226	11 East	West	Post-ex TU in plan
8/12/2020	386	226	11 East	North	Post-ex TU section
8/12/2020	387	220	11 East	North	Backfilled
8/12/2020	388	220	11 East	North	Backfilled
8/12/2020	389	220	11 East	North	Backfilled
8/12/2020	390	220	11 East	North	Flag ID
8/12/2020	391	225	11 East	North	Flag ID
8/12/2020	392	225	11 East	North	Backfilled
8/12/2020	393	225	11 East	North	Backfilled
Wednesday 9 December 2020					
9/12/2020	394	233	11 East	North	Flag ID
9/12/2020	395	233	11 East	North	Post-ex TU in plan
9/12/2020	396	233	11 East	North	Post-ex TU section
9/12/2020	397	233	11 East	West	
9/12/2020	398	233	11 East	North	Backfilled
9/12/2020	399	233	11 East	North	Flag ID
9/12/2020	400	234	11 East	North	Flag ID
9/12/2020	401	234	11 East	North-East	Post-ex landscape
9/12/2020	402	234	11 East	North-East	Post-ex landscape
9/12/2020	403	234	11 East	North	Post-ex TU in plan
9/12/2020	404	234	11 East	North	Post-ex TU section
9/12/2020	405	234	11 East	North-East	Post-ex landscape
9/12/2020	406	234	11 East	North	Flag ID
9/12/2020	407	234	11 East	North	Flag ID
9/12/2020	408	232	11 East	North	Post-ex TU in plan

Date	Photo #	TU	Zone	Orientation	Description
9/12/2020	409	232	11 East	North	Post-ex TU in plan
9/12/2020	410	232	11 East	North	Post-ex TU section
9/12/2020	411	232	11 East	North	Post-ex TU in plan
9/12/2020	412	232	11 East	East	Post-ex TU section
9/12/2020	413	232	11 East	North	Flag ID
9/12/2020	414	232	11 East	North	Backfilled
9/12/2020	415	218	11 East	North	Flag ID
9/12/2020	416	218	11 East	North	Post-ex landscape
9/12/2020	417	218	11 East	North	Post-ex TU in plan
9/12/2020	418	218	11 East	North	Post-ex TU in plan
9/12/2020	419	218	11 East	North	Post-ex TU section
9/12/2020	420	218	11 East	North	Post-ex TU section
9/12/2020	421	218	11 East	North	Post-ex landscape
9/12/2020	422	218	11 East	North	Backfilled
9/12/2020	423	219	11 East	North	Flag ID
9/12/2020	424	219	11 East	North	Post-ex TU in plan
9/12/2020	425	219	11 East	North	Post-ex TU section
9/12/2020	426	219	11 East	North	Post-ex landscape
9/12/2020	427	219	11 East	North	Post-ex landscape
9/12/2020	428	235	11 East	North	Flag ID
9/12/2020	429	235	11 East	North-West	Post-ex landscape
9/12/2020	430	235	11 East	East	Post-ex TU in plan
9/12/2020	431	235	11 East	North	Post-ex TU in plan
9/12/2020	432	235	11 East	North	Post-ex TU section
9/12/2020	435		11 East		Group/Working shot
9/12/2020	436	236	11 East	West	Post-ex TU in plan
9/12/2020	437	236	11 East		Flag ID
9/12/2020	438	235	11 East	West	Backfilled
9/12/2020	439	237	11 East	North	Flag ID
9/12/2020	440	237	11 East	West	Post-ex landscape
9/12/2020	441	237	11 East	North	Post-ex TU in plan
9/12/2020	442	237	11 East	North	Post-ex TU section
9/12/2020	443	238	11 East	North	Flag ID
9/12/2020	444	238	11 East	South	Post-ex landscape

Date	Photo #	TU	Zone	Orientation	Description
9/12/2020	445	238	11 East	South-West	Post-ex landscape
9/12/2020	446	238	11 East	North	Post-ex TU in plan
9/12/2020	447	238	11 East	North	Post-ex TU in plan
9/12/2020	448	238	11 East	North	Post-ex TU in plan
9/12/2020	449	238	11 East	North	Post-ex TU section
9/12/2020	450	237	11 East	North	Flag ID
9/12/2020	451		11 East		Group/Working shot
9/12/2020	452		11 East		Group/Working shot
9/12/2020	453	237	11 East	South West	Group/Working shot
9/12/2020	454		11 East		Group/Working shot
9/12/2020	455		11 East		Group/Working shot
9/12/2020	456	238	11 East	North	Flag ID
9/12/2020	457	240	11 East	North	Flag ID
9/12/2020	458	240	11 East	North	Post-ex TU in plan
9/12/2020	459	240	11 East	North	Post-ex TU in plan
9/12/2020	460	240	11 East	East	Post-ex TU section
9/12/2020	461	240	11 East	West	Post-ex TU section
9/12/2020	462	240	11 East	West	Post-ex TU section
9/12/2020	463	240	11 East	North	Flag ID
9/12/2020	464	240	11 East	North	Flag ID
Thursday 10 December 2020					
10/12/2020	465	243	11 East	North	Flag ID
10/12/2020	466	243	11 East	North	Flag ID
10/12/2020	467	243	11 East	North	Pre-Ex photo
10/12/2020	468	244	11 East	North	Flag ID
10/12/2020	469	244	11 East	North	Flag ID
10/12/2020	470	244	11 East	North	Pre-Ex photo
10/12/2020	471	245	11 East	North	Flag ID
10/12/2020	472	245	11 East	North	Pre-Ex photo
10/12/2020	473	246	11 East	North	Flag ID
10/12/2020	474	246	11 East	North	Pre-Ex photo
10/12/2020	475	243	11 East	North	Flag ID
10/12/2020	476	243	11 East	North	Post-ex TU in plan
10/12/2020	477	243	11 East	North	Post-ex TU section

Date	Photo #	TU	Zone	Orientation	Description
10/12/2020	478	243	11 East	North	Post-ex TU section
10/12/2020	479	243	11 East	North	Post-ex TU section
10/12/2020	480	243	11 East	West	Post-ex TU section
10/12/2020	481	243	11 East	North	Flag ID
10/12/2020	482	243	11 East	North	Backfilled
10/12/2020	483	239	11 East	North-East	Flag ID
10/12/2020	484	239	11 East	North	Post-ex landscape
10/12/2020	485	239	11 East	North	Post-ex TU in plan
10/12/2020	486	239	11 East	North	Post-ex TU section
10/12/2020	487		11 East		Group/Working shot
10/12/2020	488	239	11 East	North	Flag ID
10/12/2020	489	239	11 East	North	Backfilled
10/12/2020	490	241	11 East	North	Flag ID
10/12/2020	491	241	11 East	North	Post-ex landscape
10/12/2020	492	241	11 East	West	Post-ex landscape
10/12/2020	493	241	11 East	North	Post-ex TU in plan
10/12/2020	494	241	11 East	North	Post-ex TU in plan
10/12/2020	495	241	11 East	North	Post-ex TU section
10/12/2020	496	241	11 East	East	Post-ex TU section
10/12/2020	497	242	11 East	North	Backfilled
10/12/2020	498	242	11 East	North	Post-ex TU in plan
10/12/2020	499	242	11 East	North	Post-ex TU in plan
10/12/2020	500	242	11 East	North	Post-ex TU section
10/12/2020	501	242	11 East	North-West	Post-ex landscape
10/12/2020	502	242	11 East	North	Post-ex TU in plan
10/12/2020	503	246	11 East	North	Flag ID
10/12/2020	504	246	11 East	North	Post-ex TU in plan
10/12/2020	505	246	11 East	East	Post-ex TU section
10/12/2020	506	246	11 East	West	Post-ex TU section
10/12/2020	507	246	11 East	West	Post-ex TU section
10/12/2020	508	246	11 East	North	Flag ID
10/12/2020	509	246	11 East	North	Backfilled
10/12/2020	510	246	11 East	North	Flag ID
10/12/2020	511	245	11 East	North	Flag ID

Date	Photo #	TU	Zone	Orientation	Description
10/12/2020	512	245	11 East	North	Post-ex TU in plan
10/12/2020	513	245	11 East	North	Post-ex TU in plan
10/12/2020	514	245	11 East	North	Post-ex TU section
10/12/2020	515	245	11 East	East	Post-ex TU section
10/12/2020	516	245	11 East	West	Post-ex TU section
10/12/2020	517	241	11 East	North	Backfilled
10/12/2020	518	242	11 East	North	Backfilled
10/12/2020	519	244	11 East	North	Flag ID
10/12/2020	520	244	11 East	North	Post-ex TU in plan
10/12/2020	521	244	11 East	North	Post-ex TU section
10/12/2020	522	244	11 East	East	Post-ex TU section
10/12/2020	523	244	11 East	West	Post-ex TU section
10/12/2020	524	244	11 East	North	Flag ID
10/12/2020	525	244	11 East	North	Backfilled
10/12/2020	526	245	11 East	North	Flag ID
10/12/2020	527	245	11 East	North	Backfilled
10/12/2020	528	246	11 East	North	Flag ID
10/12/2020	529	246	11 East	North	Backfilled
10/12/2020	530	243	11 East	North	Flag ID
10/12/2020	531	243	11 East	North	Backfilled

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix J Photographs

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix J

Photographs taken during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations


IMG_0001


IMG_0003


IMG_0004


IMG_0005


IMG_0006


IMG_0007


IMG_0008


IMG_0009


IMG_0010


IMG_0011


IMG_0012


IMG_0013


IMG_0014


IMG_0015


IMG_0016


IMG_0017


IMG_0018


IMG_0019


IMG_0020


IMG_0021

IMG_0022

IMG_0023

IMG_0024

IMG_0025

IMG_0026

IMG_0027

IMG_0028

IMG_0029

IMG_0030

IMG_0031

IMG_0032

IMG_0033

IMG_0034

IMG_0035

IMG_0036

IMG_0037

IMG_0038

IMG_0039

IMG_0040

IMG_0041

IMG_0042

IMG_0043

IMG_0044

IMG_0045

IMG_0046

IMG_0047

IMG_0048

IMG_0049

IMG_0050

IMG_0051

IMG_0052

IMG_0053

IMG_0054

IMG_0055

IMG_0056

IMG_0057

IMG_0058

IMG_0059

IMG_0060

IMG_0061

IMG_0062

IMG_0063

IMG_0064

IMG_0065

IMG_0066

IMG_0067

IMG_0068

IMG_0069

IMG_0070

IMG_0071

IMG_0072

IMG_0073

IMG_0074

IMG_0075

IMG_0076

IMG_0077

IMG_0078

IMG_0079

IMG_0080

IMG_0081

IMG_0082

IMG_0083

IMG_0084

IMG_0085

IMG_0086

IMG_0087

IMG_0088

IMG_0089

IMG_0090

IMG_0091

IMG_0092

IMG_0093

IMG_0094

IMG_0095

IMG_0096

IMG_0097

IMG_0098

IMG_0099

IMG_0100

IMG_0101

IMG_0102


IMG_0104


IMG_0105


IMG_0106


IMG_0107

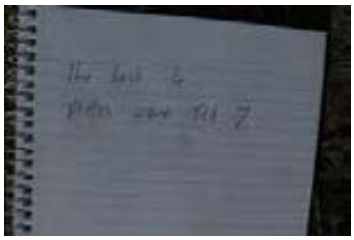

IMG_0108


IMG_0109


IMG_0110


IMG_0111


IMG_0112


IMG_0113


IMG_0114


IMG_0115


IMG_0116


IMG_0117


IMG_0118


IMG_0119


IMG_0120


IMG_0121


IMG_0122


IMG_0123

IMG_0124

IMG_0125

IMG_0126

IMG_0127

IMG_0128

IMG_0129

IMG_0130

IMG_0131

IMG_0132

IMG_0133

IMG_0134


IMG_0136


IMG_0137


IMG_0138


IMG_0139


IMG_0140


IMG_0141


IMG_0142


IMG_1440


IMG_1442


IMG_1444


IMG_1445


IMG_1446


IMG_1447


IMG_1448


IMG_1449


IMG_1450


IMG_1451


IMG_1452


IMG_1455


IMG_1456


IMG_1457


IMG_1458


IMG_1459


IMG_1460


IMG_1461


IMG_1462


IMG_1463


IMG_1464


IMG_1465


IMG_1466


IMG_1467


IMG_1468


IMG_1469


IMG_1470


IMG_1471


IMG_1472


IMG_1473


IMG_1476


IMG_1487


IMG_1488


IMG_1489


IMG_1490


IMG_1491


IMG_1492


IMG_1493


IMG_1494


IMG_1495


IMG_1496


IMG_1497


IMG_1498


IMG_1499


IMG_1500


IMG_1501


IMG_1502


IMG_1503


IMG_1504


IMG_1505


IMG_1506


IMG_1507


IMG_1508


IMG_1509


IMG_1510


IMG_1511


IMG_1512


IMG_1513


IMG_1514


IMG_1515


IMG_1516


IMG_1517


IMG_1518


IMG_1519


IMG_1520


IMG_1521


IMG_1522


IMG_1523


IMG_1524


IMG_1525


IMG_0144


IMG_0145

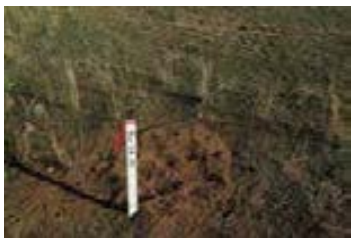

IMG_0146


IMG_0147


IMG_0148


IMG_0149


IMG_0150


IMG_0151


IMG_0152


IMG_0153


IMG_0154


IMG_0156


IMG_0157


IMG_0158


IMG_0159


IMG_0160


IMG_0161


IMG_0162


IMG_0163


IMG_0164

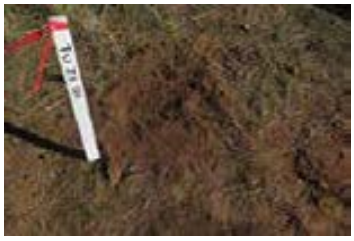

IMG_0165


IMG_0166


IMG_0167


IMG_0168


IMG_0169


IMG_0170


IMG_0171


IMG_0172


IMG_0173


IMG_0174


IMG_0175


IMG_0176


IMG_0177


IMG_0178


IMG_0179


IMG_0180


IMG_0181


IMG_0182

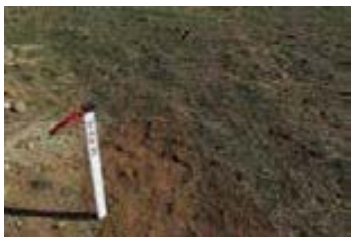

IMG_0184


IMG_0185

IMG_0186

IMG_0187

IMG_0188



IMG_0189

IMG_0190

IMG_0191

IMG_0192

IMG_0193

IMG_0194

IMG_0195

IMG_0196

IMG_0197

IMG_0198

IMG_0199

IMG_0200

IMG_0201

IMG_0202

IMG_0203

IMG_0204

IMG_0205

IMG_0206

IMG_0207

IMG_0208

IMG_0209

IMG_0210

IMG_0211

IMG_0212

IMG_0213

IMG_0214

IMG_0215

IMG_0216

IMG_0217

IMG_0218

IMG_0219

IMG_0220

IMG_0221

IMG_0222

IMG_0223

IMG_0224

IMG_0225

IMG_0226

IMG_0227

IMG_0228

IMG_0229

IMG_0230

IMG_0231

IMG_0232

IMG_0233

IMG_0234

IMG_0235

IMG_0236

IMG_0237

IMG_0238

IMG_0239

IMG_0240

IMG_0241

IMG_0243

IMG_0244

IMG_0245

IMG_0246

IMG_0247

IMG_0248

IMG_0249

IMG_0250

IMG_0251

IMG_0252

IMG_0253

IMG_0254

IMG_0255

IMG_0256

IMG_0257

IMG_0258

IMG_0259

IMG_0260

IMG_0261

IMG_0262

IMG_0263

IMG_0264

IMG_0265

IMG_0266

IMG_0267

IMG_0268

IMG_0270

IMG_0271

IMG_0272

IMG_0273

IMG_0274

IMG_0275

IMG_0276

IMG_0277

IMG_0278

IMG_0279

IMG_0280

IMG_0281

IMG_0282

IMG_0283

IMG_0284

IMG_0285

IMG_0286

IMG_0287

IMG_0288

IMG_0289

IMG_0290

IMG_0291

IMG_0292

IMG_0293


IMG_0295


IMG_0296


IMG_0297


IMG_0298


IMG_0299


IMG_0300


IMG_0301


IMG_0302


IMG_0303


IMG_0304


IMG_0305


IMG_0306


IMG_0307


IMG_0308


IMG_0309


IMG_0310


IMG_0311


IMG_0312


IMG_0313


IMG_0314


IMG_0315


IMG_0316


IMG_0317


IMG_0318


IMG_0319


IMG_0320


IMG_0321


IMG_0322


IMG_0323


IMG_0324


IMG_0325


IMG_0326


IMG_0327


IMG_0328


IMG_0329


IMG_0330


IMG_0331


IMG_0332


IMG_0333


IMG_0334

IMG_0335

IMG_0336

IMG_0337

IMG_0338

IMG_0339

IMG_0340

IMG_0341

IMG_0342

IMG_0343

IMG_0344

IMG_0345

IMG_0346

IMG_0347

IMG_0348

IMG_0349

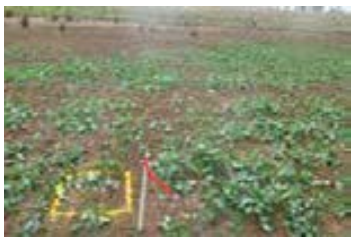
IMG_0350

IMG_0351

IMG_0352

IMG_0353

IMG_0354



IMG_0355

IMG_0356

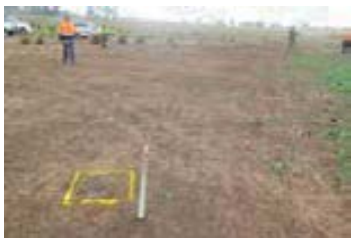
IMG_0357

IMG_0358

IMG_0359

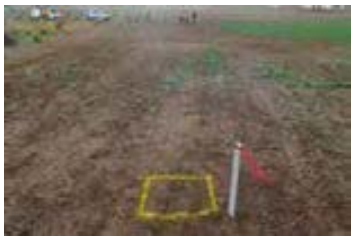
IMG_0360

IMG_0361



IMG_0362

IMG_0363

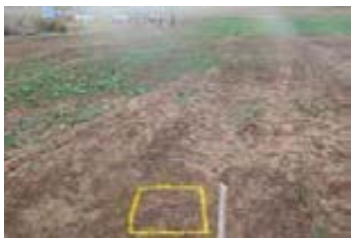


IMG_0364

IMG_0365

IMG_0366

IMG_0367



IMG_0368

IMG_0369

IMG_0370

IMG_0371

IMG_0372

IMG_0373

IMG_0374

IMG_0375

IMG_0376

IMG_0377

IMG_0378

IMG_0379

IMG_0380

IMG_0381

IMG_0382

IMG_0383

IMG_0384

IMG_0385

IMG_0386

IMG_0387

IMG_0388

IMG_0389

IMG_0390

IMG_0391

IMG_0392

IMG_0394

IMG_0395

IMG_0397

IMG_0398

IMG_0399

IMG_0401

IMG_0402

IMG_0403

IMG_0404

IMG_0405

IMG_0406

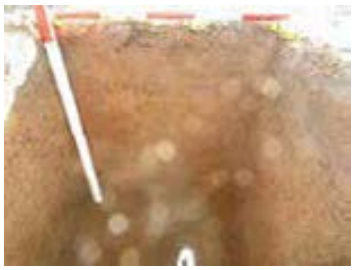
IMG_0407

IMG_0408

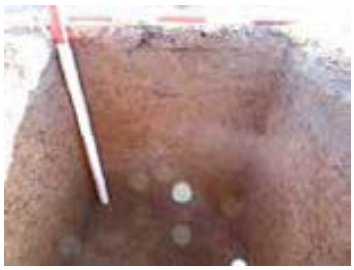
IMG_0410

IMG_0411

IMG_0412



IMG_0413



IMG_0415

IMG_0416

IMG_0417

IMG_0418

IMG_0419


IMG_0420


IMG_0421


IMG_0422


IMG_0423


IMG_0424


IMG_0426


IMG_0427


IMG_0428


IMG_0429


IMG_0430


IMG_0431


IMG_0432


IMG_0433


IMG_0434

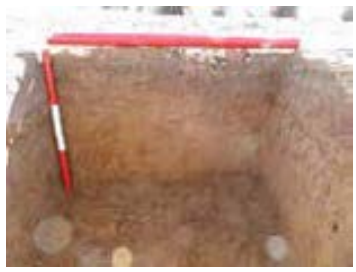

IMG_0436


IMG_0437


IMG_0438


IMG_0439


IMG_0440


IMG_0441


IMG_0442


IMG_0443


IMG_0444

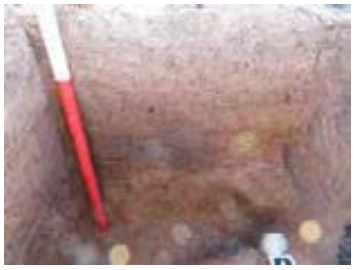

IMG_0445


IMG_0446


IMG_0447


IMG_0448


IMG_0449


IMG_0450


IMG_0451


IMG_0452


IMG_0453


IMG_0454


IMG_0455


IMG_0456


IMG_0457


IMG_0458


IMG_0459


IMG_0460


IMG_0461


IMG_0462


IMG_0463


IMG_0464


IMG_0465


IMG_0466


IMG_0467


IMG_0468


IMG_0469


IMG_0470


IMG_0471


IMG_0472


IMG_0473


IMG_0474


IMG_0475


IMG_0476


IMG_0477


IMG_0478


IMG_0479


IMG_0480


IMG_0481


IMG_0482


IMG_0483


IMG_0484


IMG_0485


IMG_0486


IMG_0487

IMG_0488


IMG_0489


IMG_0490


IMG_0491


IMG_0492


IMG_0493


IMG_0494


IMG_0495


IMG_0496


IMG_0497


IMG_0498


IMG_0499

IMG_0500


IMG_0501


IMG_0502


IMG_0503

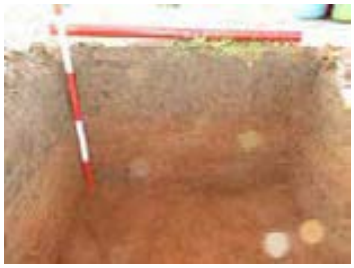

IMG_0504


IMG_0505

IMG_0506


IMG_0507


IMG_0508


IMG_0509


IMG_0510


IMG_0511


IMG_0512


IMG_0513


IMG_0514


IMG_0515


IMG_0516


IMG_0518


IMG_0519


IMG_0520


IMG_0521


IMG_0522


IMG_0523


IMG_0524


IMG_0525


IMG_0527


IMG_0528


IMG_0529


IMG_0530


IMG_0531


IMG_0532


IMG_0533


IMG_0534


IMG_0536


IMG_0537


IMG_0538


IMG_0539


IMG_0541


IMG_0542


IMG_0543


IMG_0544


IMG_0545


IMG_0546


IMG_0547


IMG_0548


IMG_0549


IMG_0550


IMG_0551


IMG_0552


IMG_0553


IMG_0554


IMG_0555


IMG_0556


IMG_0557


IMG_0558


IMG_0559


IMG_0560


IMG_0561


IMG_0562


IMG_0563


IMG_0564


IMG_0565


IMG_0566


IMG_0567


IMG_0568


IMG_0569


IMG_0570


IMG_0571


IMG_0573


IMG_0574


IMG_0575


IMG_0576


IMG_0577


IMG_0579


IMG_0580


IMG_0582


IMG_0583


IMG_0584


IMG_0585


IMG_0586


IMG_0587


IMG_0588


IMG_0589


IMG_0590


IMG_0592

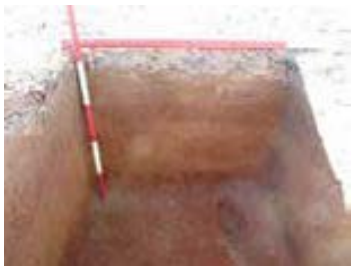

IMG_0593


IMG_0594


IMG_0595


IMG_0596


IMG_0597


IMG_0598


IMG_0599


IMG_0600


IMG_0601


IMG_0602


IMG_0603


IMG_0604


IMG_0605


IMG_0606


IMG_0607


IMG_0608


IMG_0609


IMG_0610


IMG_0611


IMG_0612


IMG_0613


IMG_0614


IMG_0615


IMG_0616


IMG_0617


IMG_0618


IMG_0620


IMG_0621


IMG_0622


IMG_0623


IMG_0624


IMG_0625


IMG_0626


IMG_0627


IMG_0628


IMG_0630


IMG_0631


IMG_0632


IMG_0633


IMG_0636


IMG_0637


IMG_0638


IMG_0639


IMG_0640


IMG_0641


IMG_0642


IMG_0643


IMG_0644


IMG_0645


IMG_0646


IMG_0647


IMG_0648

IMG_0649

IMG_0650

IMG_0651

IMG_0652

IMG_0653

IMG_0654

IMG_0655


IMG_0656


IMG_0657


IMG_0658


IMG_0659


IMG_0666


IMG_0674


IMG_0677


IMG_0692


IMG_0696


IMG_0697


IMG_0698

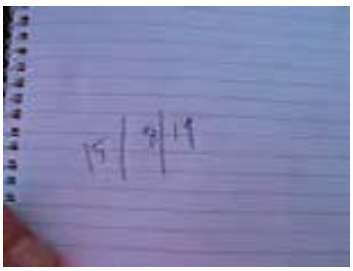

IMG_0699


IMG_0700


IMG_0701


IMG_0704


IMG_0705


IMG_0706


IMG_0707


IMG_0708


IMG_0709


IMG_0710


IMG_0711


IMG_0712


IMG_0713


IMG_0714


IMG_0715


IMG_0716


IMG_0717


IMG_0718


IMG_0721


IMG_0722

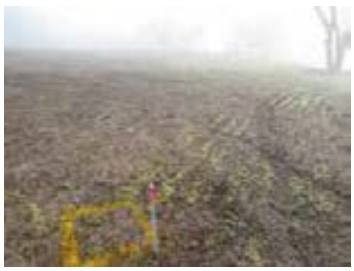

IMG_0723

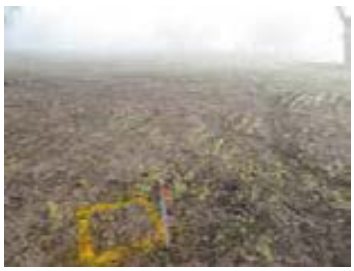

IMG_0724

IMG_0725


IMG_0726


IMG_0727


IMG_0728


IMG_0729


IMG_0730


IMG_0731


IMG_0732


IMG_0733


IMG_0734


IMG_0735

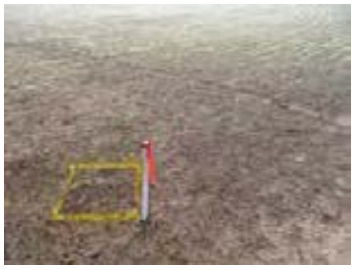

IMG_0736


IMG_0737


IMG_0738


IMG_0739


IMG_0740


IMG_0741

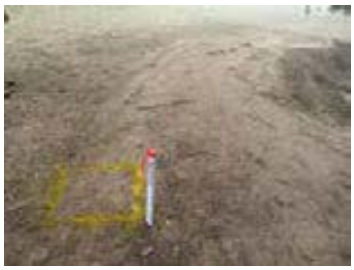

IMG_0742


IMG_0743


IMG_0744


IMG_0745


IMG_0746


IMG_0747


IMG_0748


IMG_0749


IMG_0750


IMG_0751


IMG_0752


IMG_0753


IMG_0754


IMG_0755


IMG_0756


IMG_0757


IMG_0758


IMG_0759


IMG_0760


IMG_0761


IMG_0762


IMG_0763


IMG_0764


IMG_0765


IMG_0766


IMG_0767


IMG_0768


IMG_0769


IMG_0770


IMG_0771


IMG_0772


IMG_0773


IMG_0774


IMG_0775


IMG_0776


IMG_0777


IMG_0778


IMG_0779


IMG_0780


IMG_0781

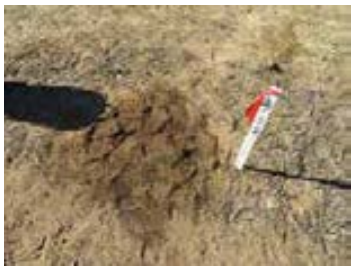

IMG_0782


IMG_0783


IMG_0784


IMG_0785


IMG_0786


IMG_0787


IMG_0788


IMG_0789


IMG_0790


IMG_0791


IMG_0792


IMG_0793


IMG_0794


IMG_0795


IMG_0796


IMG_0797


IMG_0798


IMG_0799


IMG_0800


IMG_0801


IMG_0802


IMG_0803


IMG_0804

IMG_0805


IMG_0806


IMG_0807


IMG_0808


IMG_0809


IMG_0810


IMG_0811

IMG_0812

IMG_0813

IMG_0814

IMG_0815

IMG_0816

IMG_0817


IMG_0819


IMG_0820


IMG_0821


IMG_0822


IMG_0823


IMG_0824


IMG_0825


IMG_0826


IMG_0827


IMG_0828


IMG_0829


IMG_0830


IMG_0831


IMG_0832


IMG_0833


IMG_0834


IMG_0835


IMG_0836


IMG_0837


IMG_0838


IMG_0839


IMG_0840


IMG_0841


IMG_0842


IMG_0843


IMG_0844


IMG_0845


IMG_0846


IMG_0847


IMG_0848


IMG_0849


IMG_0850


IMG_0851


IMG_0852


IMG_0853


IMG_0855


IMG_0856


IMG_0857


IMG_0858


IMG_0861


IMG_0862


IMG_0863


IMG_0864


IMG_0865


IMG_0866


IMG_0867


IMG_0868


IMG_0869


IMG_0870


IMG_0872


IMG_0873


IMG_0874


IMG_0876


IMG_0880


IMG_0881


IMG_0882


IMG_0883


IMG_0884


IMG_0885


IMG_0886


IMG_0889


IMG_0890


IMG_0893


IMG_0894


IMG_0895


IMG_0896


IMG_0897


IMG_0898


IMG_0902


IMG_0903


IMG_0904


IMG_0905


IMG_0906


IMG_0911


IMG_0912


IMG_0914


IMG_0916


IMG_0917


IMG_0918

IMG_0919


IMG_0921


IMG_0923


IMG_0925


IMG_0926


IMG_0927


IMG_0928


IMG_0929


IMG_0931


IMG_0932


IMG_0933


IMG_0934


IMG_0935


IMG_0936


IMG_0937


IMG_0938


IMG_0939


IMG_0940


IMG_0946


IMG_0947


IMG_0948


IMG_0949


IMG_0951


IMG_0952


IMG_0953


IMG_0954


IMG_0956


IMG_0957


IMG_0958


IMG_0959


IMG_0960


IMG_0961


IMG_0962


IMG_0963


IMG_0964


IMG_0972


IMG_0973


IMG_0978


IMG_0981


IMG_0982


IMG_0985


IMG_0986


IMG_0987


IMG_0988


IMG_0989


IMG_0990


IMG_0991


IMG_0992


IMG_0993


IMG_0994


IMG_1002


IMG_1003


IMG_1004


IMG_1005


IMG_1006


IMG_1007


IMG_1012


IMG_1013


IMG_1014


IMG_1015


IMG_1016


IMG_1017


IMG_1018


IMG_1019


IMG_1020


IMG_1023


IMG_1024


IMG_1025


IMG_1027


IMG_1028


IMG_1029


IMG_1031


IMG_1032


IMG_1033

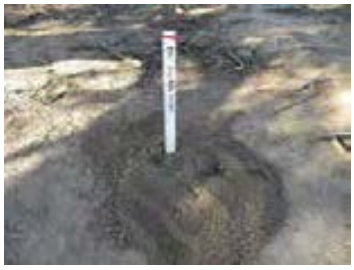
IMG_1034


IMG_1035


IMG_1036


IMG_1037

IMG_1039



IMG_1040


IMG_1042


IMG_1043


IMG_1044


IMG_1045


IMG_1046


IMG_1047


IMG_1048


IMG_1049


IMG_1050


IMG_1051


IMG_1052


IMG_1053


IMG_1054


IMG_1055


IMG_1056


IMG_1057


IMG_1058


IMG_1059


IMG_1060


IMG_1061


IMG_1062


IMG_1063


IMG_1064


IMG_1065


IMG_1066


IMG_1067


IMG_1068


IMG_1069


IMG_1070


IMG_1071


IMG_1072


IMG_1073


IMG_1074


IMG_1075


IMG_1076


IMG_1077


IMG_1078


IMG_1079


IMG_1080


IMG_1081


IMG_1082


IMG_1083


IMG_1084


IMG_1085


IMG_1086


IMG_1087


IMG_1088


IMG_1089

IMG_1090


IMG_1091


IMG_1092


IMG_1093

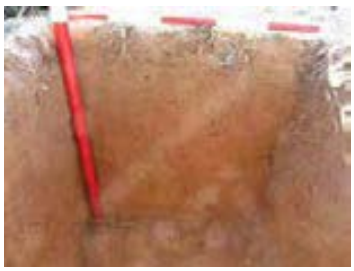

IMG_1094


IMG_1095


IMG_1096


IMG_1097


IMG_1098


IMG_1099


IMG_1100


IMG_1101


IMG_1102


IMG_1103


IMG_1104


IMG_1105


IMG_1106


IMG_1107


IMG_1108


IMG_1109


IMG_1110


IMG_1111


IMG_1112


IMG_1113


IMG_1114


IMG_1115


IMG_1116


IMG_1117


IMG_1118


IMG_1119


IMG_1120


IMG_1121

IMG_1122

IMG_1123

IMG_1124

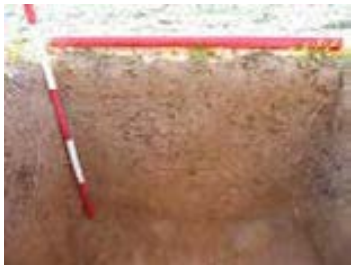
IMG_1125

IMG_1126

IMG_1127

IMG_1128

IMG_1129



IMG_1130

IMG_1131

IMG_1132

IMG_1133

IMG_1134

IMG_1135

IMG_1136

IMG_1137

IMG_1138


IMG_1140


IMG_1141


IMG_1142


IMG_1143


IMG_1144


IMG_1145


IMG_1146


IMG_1147


IMG_1148


IMG_1149


IMG_1150


IMG_1151


IMG_1152


IMG_1153


IMG_1154


IMG_1155


IMG_1156


IMG_1157


IMG_1158


IMG_1159


IMG_1160


IMG_1161


IMG_1162


IMG_1163


IMG_1164


IMG_1165


IMG_1166


IMG_1167


IMG_1168


IMG_1169


IMG_1170


IMG_1171


IMG_1172


IMG_1173


IMG_1174


IMG_1175


IMG_1176


IMG_1177


IMG_1178


IMG_1179

IMG_1180

IMG_1181

IMG_1182

IMG_1183

IMG_1184

IMG_1185

IMG_1186

IMG_1187

IMG_1188

IMG_1189

IMG_1190

IMG_1191

IMG_1192

IMG_1193

IMG_1194

IMG_1195

IMG_1196

IMG_1197

IMG_1198

IMG_1199


IMG_1200


IMG_1201


IMG_1202


IMG_1203


IMG_1204


IMG_1205


IMG_1206


IMG_1207


IMG_1208


IMG_1209


IMG_1210


IMG_1211


IMG_1212


IMG_1213


IMG_1214


IMG_1215


IMG_1216


IMG_1217


IMG_1218


IMG_1219


IMG_1220


IMG_1221


IMG_1222


IMG_1223


IMG_1224


IMG_1225


IMG_1226


IMG_1227


IMG_1228


IMG_1229


IMG_1230


IMG_1231


IMG_1232


IMG_1233


IMG_1235


IMG_1236


IMG_1237


IMG_1238


IMG_1239


IMG_1240


IMG_1243


IMG_1244


IMG_1245


IMG_1246


IMG_1247


IMG_1248


IMG_1249


IMG_1250


IMG_1251


IMG_1252


IMG_1253


IMG_1254


IMG_1255


IMG_1256


IMG_1257


IMG_1258


IMG_1259


IMG_1260


IMG_1261


IMG_1262

IMG_1263

IMG_1264

IMG_1265

IMG_1266

IMG_1267

IMG_1268

IMG_1269

IMG_1270

IMG_1271

IMG_1272

IMG_1273

IMG_1274


IMG_1276


IMG_1277


IMG_1278


IMG_1279


IMG_1280


IMG_1282


IMG_1283


IMG_1284


IMG_1285


IMG_1286


IMG_1288


IMG_1289


IMG_1290


IMG_1291


IMG_1292


IMG_1293


IMG_1294


IMG_1295


IMG_1296

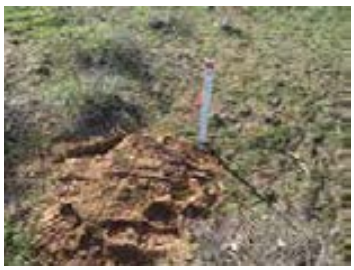

IMG_1297


IMG_1298


IMG_1299


IMG_1300


IMG_1301


IMG_1302


IMG_1303


IMG_1304


IMG_1305


IMG_1306


IMG_1307


IMG_1308


IMG_1309


IMG_1310


IMG_1312


IMG_1313


IMG_1314


IMG_1315


IMG_1316

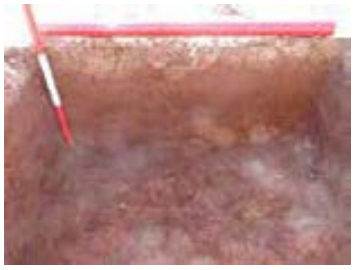

IMG_1317


IMG_1318


IMG_1319

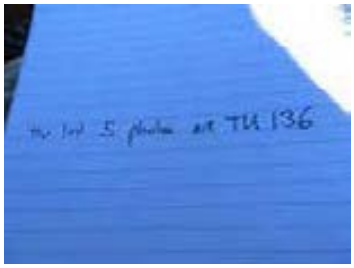

IMG_1320


IMG_1321


IMG_1322


IMG_1323

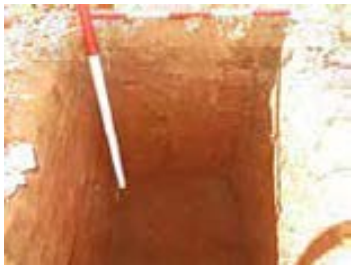

IMG_1324


IMG_1325


IMG_1326


IMG_1327


IMG_1328


IMG_1329


IMG_1330


IMG_1331


IMG_1332


IMG_1333


IMG_1334


IMG_1335


IMG_1336


IMG_1337


IMG_1338


IMG_1339


IMG_1340


IMG_1341


IMG_1342


IMG_1343


IMG_1344


IMG_1345


IMG_1346


IMG_1347


IMG_1348


IMG_1349


IMG_1350


IMG_1351


IMG_1352


IMG_1353


IMG_1354


IMG_1355


IMG_1356


IMG_1357


IMG_1358


IMG_0158


IMG_0159


IMG_0160


IMG_0161


IMG_0162


IMG_0163


IMG_0164


IMG_0165


IMG_0166


IMG_0167


IMG_0168


IMG_0169


IMG_0170


IMG_0171


IMG_0172


IMG_0173


IMG_0174


IMG_0175


IMG_0176


IMG_0177


IMG_0178


IMG_0179


IMG_0180


IMG_0181


IMG_0182


IMG_0183

IMG_0184


IMG_0185


IMG_0186


IMG_0187


IMG_0188


IMG_0189


IMG_0190


IMG_0191


IMG_0192


IMG_0193


IMG_0194


IMG_0195


IMG_0196


IMG_0197

IMG_0198


IMG_0199


IMG_0200


IMG_0201


IMG_0202


IMG_0203


IMG_0204


IMG_0205


IMG_0206


IMG_0207


IMG_0208


IMG_0209


IMG_0210


IMG_0211


IMG_0212


IMG_0213


IMG_0214


IMG_0215


IMG_0216


IMG_0217


IMG_0218


IMG_0219


IMG_0220


IMG_0221


IMG_0222


IMG_0223


IMG_0224


IMG_0225


IMG_0226


IMG_0227


IMG_0228


IMG_0229


IMG_0230


IMG_0231


IMG_0232


IMG_0233


IMG_0234


IMG_0235


IMG_0236


IMG_0237


IMG_0238


IMG_0239


IMG_0240

IMG_0241


IMG_0242


IMG_0243


IMG_0244


IMG_0245


IMG_0246


IMG_0247


IMG_0248


IMG_0249


IMG_0250


IMG_0251


IMG_0252


IMG_0253


IMG_0254


IMG_0255


IMG_0256


IMG_0257


IMG_0258


IMG_0259


IMG_0260


IMG_0261


IMG_0262


IMG_0263


IMG_0264


IMG_0265


IMG_0266

IMG_0267


IMG_0268

IMG_0269


IMG_0270


IMG_0271


IMG_0272


IMG_0273


IMG_0274


IMG_0275


IMG_0276

IMG_0277


IMG_0278

IMG_0279

IMG_0280

IMG_0281

IMG_0282

IMG_0283

IMG_0284

IMG_0285


IMG_0286


IMG_0287


IMG_0288


IMG_0289


IMG_0290


IMG_0291


IMG_0292


IMG_0293


IMG_0294


IMG_0295


IMG_0296


IMG_0297


IMG_0298


IMG_0299


IMG_0300


IMG_0301


IMG_0302


IMG_0303


IMG_0304


IMG_0305


IMG_0306


IMG_0307


IMG_0308


IMG_0309


IMG_0310


IMG_0311


IMG_0312


IMG_0313


IMG_0314


IMG_0315


IMG_0316


IMG_0317


IMG_0318


IMG_0319


IMG_0320


IMG_0321


IMG_0322


IMG_0323


IMG_0324


IMG_0325


IMG_0326


IMG_0327


IMG_0328


IMG_0329


IMG_0330


IMG_0331

IMG_0332


IMG_0333


IMG_0334


IMG_0335


IMG_0336


IMG_0337


IMG_0338


IMG_0339


IMG_0340


IMG_0341


IMG_0342


IMG_0343


IMG_0344


IMG_0345


IMG_0346


IMG_0347


IMG_0348


IMG_0349


IMG_0350


IMG_0351


IMG_0352


IMG_0353


IMG_0354


IMG_0355


IMG_0356


IMG_0357


IMG_0358


IMG_0359


IMG_0360


IMG_0361


IMG_0362


IMG_0363


IMG_0364


IMG_0365


IMG_0366


IMG_0367


IMG_0368


IMG_0369


IMG_0370


IMG_0371


IMG_0372


IMG_0373


IMG_0374


IMG_0375


IMG_0376


IMG_0377


IMG_0378


IMG_0379


IMG_0380


IMG_0381


IMG_0382


IMG_0383


IMG_0384


IMG_0385


IMG_0386


IMG_0387


IMG_0388


IMG_0389


IMG_0390


IMG_0391


IMG_0392


IMG_0393


IMG_0394


IMG_0395


IMG_0396


IMG_0397


IMG_0398


IMG_0399


IMG_0401


IMG_0403


IMG_0404


IMG_0405

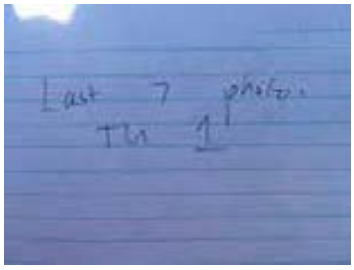

IMG_0406


IMG_0407


IMG_0408


IMG_0409


IMG_0410



IMG_0411


IMG_0412


IMG_0413


IMG_0414


IMG_0415


IMG_0416


IMG_0417


IMG_0418


IMG_0419


IMG_0420


IMG_0421


IMG_0422

IMG_0423


IMG_0424


IMG_0425


IMG_0426


IMG_0427


IMG_0428


IMG_0429


IMG_0430


IMG_0431


IMG_0432


IMG_0433


IMG_0434


IMG_0435


IMG_0436

IMG_0437


IMG_0438


IMG_0439


IMG_0440


IMG_0441


IMG_0442


IMG_0443


IMG_0444


IMG_0445

IMG_0446


IMG_0447


IMG_0448


IMG_0449

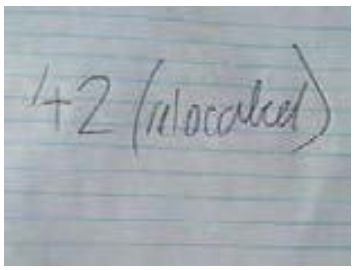

IMG_0450


IMG_0451


IMG_0452


IMG_0453


IMG_0454



IMG_0455


IMG_0456


IMG_0457


IMG_0458


IMG_0459


IMG_0460

IMG_0461


IMG_0462


IMG_0463


IMG_0464


IMG_0465


IMG_0466


IMG_0467

IMG_0468

IMG_0469

IMG_0470

IMG_0471

IMG_0472

iphone 1

iphone 2

iphone 3

iphone 4

iphone 5

iphone 6


IMG_0473


IMG_0474


IMG_0475


IMG_0476


IMG_0477


IMG_0478


IMG_0479


IMG_0480


IMG_0481


IMG_0482


IMG_0483


IMG_0484


IMG_0485


IMG_0486


IMG_0487


IMG_0488


IMG_0489


IMG_0490


IMG_0491


IMG_0492


IMG_0493


IMG_0494


IMG_0495


IMG_0496


IMG_0497


IMG_0498


IMG_0499


IMG_0500


IMG_0501


IMG_0502


IMG_0503


IMG_0504


IMG_0505


IMG_0512


IMG_0513


IMG_0514


IMG_0515


IMG_0516


IMG_0517


IMG_0518


IMG_0519


IMG_0520


IMG_0521


IMG_0522


IMG_0523


IMG_0524


IMG_0525


IMG_0526


IMG_0527


IMG_0528


IMG_0529


IMG_0530


IMG_0531


IMG_0532

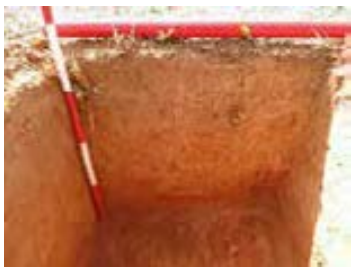

IMG_0533


IMG_0534


IMG_0535


IMG_0536


IMG_0537


IMG_0538


IMG_0539


IMG_0540


IMG_0541


IMG_0542


IMG_0543


IMG_0544


IMG_0545


IMG_0546


IMG_0547


IMG_0548

IMG_0549


IMG_0550


IMG_0551


IMG_0552


IMG_0553


IMG_0554


IMG_0555


IMG_0556


IMG_0557


IMG_0558

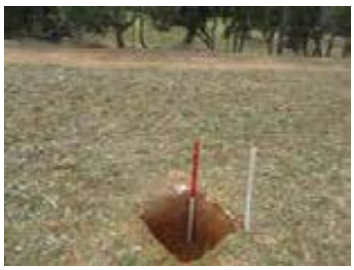
IMG_0559

IMG_0560

IMG_0561

IMG_0562

IMG_0563



IMG_0564

IMG_0565

IMG_0566

IMG_0567

IMG_0568

IMG_0569

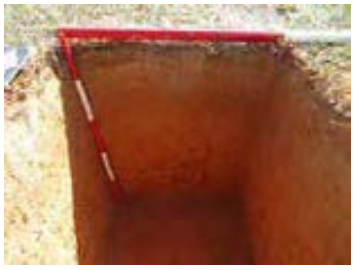
IMG_0570

IMG_0571

IMG_0572


IMG_0573


IMG_0574


IMG_0575


IMG_0576


IMG_0577


IMG_0578

IMG_0579


IMG_0580


IMG_0581


IMG_0582


IMG_0583


IMG_0584


IMG_0585


IMG_0586


IMG_0587


IMG_0595


IMG_0597


IMG_0598


IMG_0599


IMG_0600


IMG_0601


IMG_0602


IMG_0603


IMG_0606


IMG_0607


IMG_0608


IMG_0609


IMG_0610


IMG_0611


IMG_0612


IMG_0613


IMG_0614


IMG_0621


IMG_0622


IMG_0623


IMG_0624


IMG_0625


IMG_0626


IMG_0627


IMG_0628


IMG_0631

IMG_0633


IMG_0634


IMG_0635


IMG_0636

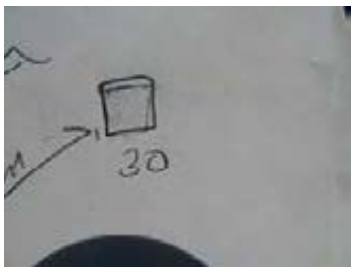

IMG_0637


IMG_0638


IMG_0639


IMG_0640


IMG_0641



IMG_0642


IMG_0643


IMG_0644


IMG_0645


IMG_0647


IMG_0648


IMG_0651


IMG_0652


IMG_0653


IMG_0654


IMG_0655


IMG_0656


IMG_0657


IMG_0658

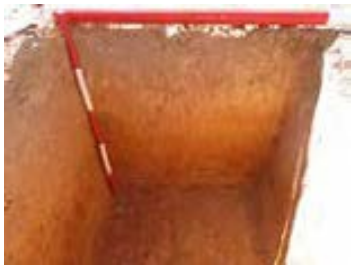

IMG_0659


IMG_0660


IMG_0663


IMG_0664


IMG_0665


IMG_0666


IMG_0667


IMG_0668


IMG_0670


IMG_0671


IMG_0672


IMG_0673


IMG_0675


IMG_0677


IMG_0573


IMG_0574


IMG_0575


IMG_0576


IMG_0577


IMG_0578


IMG_0579


IMG_0580


IMG_0581


IMG_0582


IMG_0583


IMG_0584


IMG_0585


IMG_0586


IMG_0587


IMG_0588


IMG_0589


IMG_0590


IMG_0591


IMG_0592


IMG_0593


IMG_0594


IMG_0595


IMG_0596


IMG_0597


IMG_0598


IMG_0599


IMG_0600


IMG_0601


IMG_0602


IMG_0603


IMG_0604


IMG_0605


IMG_0606


IMG_0607


IMG_0608


IMG_0609


IMG_0610


IMG_0611


IMG_0612


IMG_0613


IMG_0614


IMG_0615


IMG_0616


IMG_0617


IMG_0618


IMG_0620


IMG_0622


IMG_0623


IMG_0624


IMG_0625


IMG_0626


IMG_0627


IMG_0628


IMG_0629


IMG_0630


IMG_0631


IMG_0632


IMG_0633


IMG_0634


IMG_0635


IMG_0636


IMG_0637


IMG_0638


IMG_0639


IMG_0640


IMG_0641


IMG_0642


IMG_0643


IMG_0644

IMG_0645

IMG_0646


IMG_0647


IMG_0648


IMG_0649

IMG_0650


IMG_0651


IMG_0652


IMG_0653


IMG_0654


IMG_0655


IMG_0656


IMG_0657


IMG_0658


IMG_0659


IMG_0660


IMG_0661


IMG_0662


IMG_0663


IMG_0664


IMG_0665


IMG_0666


IMG_0667


IMG_0668


IMG_0670


IMG_0671


IMG_0672


IMG_0673


IMG_0674


IMG_0675


IMG_0676


IMG_0677


IMG_0678


IMG_0679


IMG_0680


IMG_0681


IMG_0682


IMG_0683


IMG_0684


IMG_0685


IMG_0686


IMG_0687


IMG_0688


IMG_0689


IMG_0691


IMG_0768


IMG_0769


IMG_0770


IMG_0771


IMG_0772


IMG_0773


IMG_0774


IMG_0775


IMG_0776


IMG_0777


IMG_0778


IMG_0779


IMG_0780


IMG_0781


IMG_0782


IMG_0783


IMG_0784


IMG_0785


IMG_0786


IMG_0787


IMG_0788


IMG_0789


IMG_0790


IMG_0791


IMG_0792


IMG_0793


IMG_0794


IMG_0795


IMG_0796


IMG_0797


IMG_0798


IMG_0799


IMG_0800


IMG_0801


IMG_0802


IMG_0803


IMG_0804


IMG_0805


IMG_0806


IMG_0807


IMG_0808


IMG_0809


IMG_0810


IMG_0811


IMG_0812


IMG_0813


IMG_0814


IMG_0815


IMG_0816


IMG_0817


IMG_0818


IMG_0819


IMG_0820


IMG_0821


IMG_0824

DSC_0240

DSC_0241

DSC_0242

DSC_0243

DSC_0244

DSC_0245

DSC_0246

DSC_0247

DSC_0248

DSC_0249

DSC_0250

DSC_0253

DSC_0254

DSC_0255

DSC_0256

DSC_0257

DSC_0258

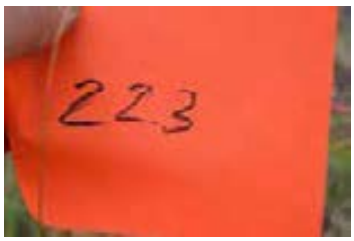
DSC_0259

DSC_0260

DSC_0261

DSC_0262

DSC_0263



DSC_0264

DSC_0265

DSC_0266

DSC_0267

DSC_0268

DSC_0269

DSC_0270

DSC_0271

DSC_0272

DSC_0273

DSC_0274

DSC_0275

DSC_0276

DSC_0277

DSC_0278

DSC_0279

DSC_0280

DSC_0281

DSC_0282

DSC_0283

DSC_0284

DSC_0285

DSC_0286

DSC_0287

DSC_0288

DSC_0289

DSC_0290

DSC_0291

DSC_0292

DSC_0293

DSC_0294

DSC_0295

DSC_0296

DSC_0297

DSC_0298

DSC_0299

DSC_0300

DSC_0301

DSC_0302

DSC_0303

DSC_0306

DSC_0307

DSC_0308

DSC_0309

DSC_0310

DSC_0311

DSC_0312

DSC_0313

DSC_0314

DSC_0315

DSC_0316

DSC_0317

DSC_0318

DSC_0319

DSC_0320

DSC_0321

DSC_0322

DSC_0323

DSC_0324

DSC_0325

DSC_0326

DSC_0327

DSC_0328

DSC_0329

DSC_0330

DSC_0331

DSC_0332

DSC_0333

DSC_0334

DSC_0335

DSC_0336

DSC_0337

DSC_0338

DSC_0339

DSC_0340

DSC_0341

DSC_0342

DSC_0343

DSC_0344

DSC_0345

DSC_0346

DSC_0347

DSC_0348

DSC_0349

DSC_0350

DSC_0351

DSC_0352

DSC_0353

DSC_0354

DSC_0355

DSC_0356

DSC_0357

DSC_0358

DSC_0359

DSC_0360

DSC_0361

DSC_0362

DSC_0363

DSC_0364

DSC_0365

DSC_0366

DSC_0367

DSC_0368

DSC_0369

DSC_0370

DSC_0371

DSC_0372

DSC_0373

DSC_0374

DSC_0375

DSC_0375

DSC_0376

DSC_0376

DSC_0377

DSC_0377

DSC_0378

DSC_0379

DSC_0380

DSC_0381

DSC_0382

DSC_0383

DSC_0384

DSC_0385

DSC_0386

DSC_0387

DSC_0388

DSC_0389

DSC_0390

DSC_0391

DSC_0392

DSC_0393

DSC_0394

DSC_0395

DSC_0396

DSC_0397

DSC_0398

DSC_0399

DSC_0400

DSC_0401

DSC_0402

DSC_0403

DSC_0404

DSC_0405

DSC_0406

DSC_0407

DSC_0408

DSC_0409

DSC_0410

DSC_0411

DSC_0412

DSC_0413

DSC_0414

DSC_0415

DSC_0416

DSC_0417

DSC_0418

DSC_0419

DSC_0420

DSC_0421

DSC_0422

DSC_0423

DSC_0424

DSC_0425

DSC_0426

DSC_0427

DSC_0428

DSC_0429

DSC_0430

DSC_0431

DSC_0432

DSC_0435

DSC_0436

DSC_0437

DSC_0438

DSC_0439

DSC_0440

DSC_0441

DSC_0442

DSC_0443

DSC_0444

DSC_0445

DSC_0446

DSC_0447

DSC_0448

DSC_0449

DSC_0450

DSC_0451

DSC_0455

DSC_0456

DSC_0457

DSC_0458

DSC_0459

DSC_0460

DSC_0461

DSC_0462

DSC_0463

DSC_0464

DSC_0465

DSC_0466

DSC_0467

DSC_0468

DSC_0469

DSC_0470

DSC_0471

DSC_0472

DSC_0473

DSC_0474

DSC_0475

DSC_0476

DSC_0477

DSC_0478

DSC_0479

DSC_0480

DSC_0481

DSC_0482

DSC_0483

DSC_0484

DSC_0485

DSC_0486

DSC_0488

DSC_0489

DSC_0490

DSC_0491

DSC_0492

DSC_0493

DSC_0494

DSC_0495

DSC_0496

DSC_0497

DSC_0498

DSC_0499

DSC_0500

DSC_0501

DSC_0502

DSC_0503

DSC_0504

DSC_0505

DSC_0506

DSC_0507

DSC_0508

DSC_0509

DSC_0510

DSC_0511

DSC_0512

DSC_0513

DSC_0514

DSC_0515

DSC_0516

DSC_0517

DSC_0518

DSC_0519

DSC_0520

DSC_0521

DSC_0522

DSC_0523

DSC_0524

DSC_0525

DSC_0526

DSC_0527

DSC_0528

DSC_0529

DSC_0530

DSC_0531

TECHNICAL REPORT 7

Aboriginal Cultural Heritage Assessment Report

Appendix K Aboriginal heritage information system site cards

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT

Appendix K

Aboriginal Heritage Information Management System (AHIMS) site cards for Aboriginal sites recorded prior to and during May 2019, September 2019, and December 2020 Aboriginal archaeological excavations

This Appendix removed due to sensitive data