Greta Train Support Facility

ABORIGINAL CULTURAL HERITAGE ASSESSMENT REPORT

- Authors: Joseph Brooke, Simon Crocker, Vanessa Edmonds and Robyn Jenkins

- Final Report
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Sinclair Knight Merz
ABN 37 001 024 095
590 Orrong Road, Armadale 3143
PO Box 2500
Malvern VIC 3144 Australia
Tel: +61 3 9248 3100
Fax: +61 3 9500 1180
Web: www.skmconsulting.com

LIMITATION: The sole purpose of this report and the associated services performed by Sinclair Knight Merz Pty Ltd (SKM) is to review, at a desktop level, the existing Aboriginal cultural heritage values of the proposed Greta Train Support Facility study area, in accordance with the scope of services set out in the contract between SKM and Pacific National. That scope of services, as described in this report, was developed with Pacific National.

In preparing this report, SKM has relied upon, and presumed accurate, certain information (or absence thereof) provided by the Client and other sources. Except as otherwise stated in the report, SKM has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

SKM derived the data in this report from a variety of sources. The sources are identified at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose of the project and by reference to applicable standards, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by SKM for use of any part of this report in any other context.

The report contains inaccuracies which are inherent in the registers searched for cultural heritage items.

This report has been prepared on behalf of, and for the exclusive use of, Pacific National, and is subject to, and issued in connection with, the provisions of the agreement between SKM and Pacific National. SKM accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Executive Summary

This Aboriginal Cultural Heritage Assessment forms part of the greater Environmental Assessment for the proposed Greta Train Support Facility, in Greta, NSW. Pacific National plan to construct a train support facility in the study area, including rail infrastructure, a site office and access road.

The proposed Greta Train Support Facility is considered to be major infrastructure to which Part 3A of the *Environmental Planning and Assessment Act* 1979 (details below) applies. As such, approvals and permit requirements under the *National Parks and Wildlife Act* 1974 are not required for the project. However, as the same general processes must be followed, the requirements under these Acts apply.

Consultation

Consultation was undertaken in accordance with the *Draft Community Consultation Requirements for Proponents, for Aboriginal Cultural Heritage* (*Requirements*) (DECCW 2005). The consultation process aimed to ensure that Aboriginal stakeholders had the opportunity to contribute to the assessment by:

- Contributing to the development and design of the archaeological and cultural assessment methodologies;
- Assisting with the identification of specific Aboriginal heritage values to inform the design process of attempting to avoid Aboriginal cultural heritage; and
- Contributing to the development of recommendations for the management of Aboriginal cultural heritage sites.

Aboriginal Stakeholders involved in this project are (listed in alphabetic order):

- Aboriginal Native Title Consultants;
- Lower Hunter Wonnarua Council Incorporated;
- Mindaribba LALC;
- Ungooroo Cultural and Community Services; and,
- Yarrawalk Aboriginal Corporation.

Desktop Assessment

The study area was traditionally occupied by the *Wonnarua* (also spelt Wanaruah) who occupied lands from just above Maitland south to Wollombi and west through to the dividing range (Tindale 1974: 201). They shared a western boundary with the *Wiradjuri*, one of the largest tribal groupings in Australia.

The study area is gently undulating plain in the south, and becomes undulating to rolling hills in north of Sawyers Creek. Sawyers Creek, a tributary to Anvil Creek (just to the east of the study area) dissects the study area in the south, while several ephemeral drainage lines dissect the study area in the northern two thirds of the study area, before draining towards the east into Anvil Creek. Small outcrops of the underlying sandstone bedrock outcrop in the drainage line at the tip of the study area, and on the soft high ridge north of Sawyers Creek.

Artefact scatters represent the most common Indigenous site type within the Hunter Valley, followed by isolated finds (ERM 2008). Other site types identified within the Hunter Valley include grinding grooves, potential archaeological deposits, scarred trees and Aboriginal Resources.

Based on the search of the AHIMS database, the review of previous cultural heritage investigations completed within the region, and environmental factors, the following predictive model has been developed:

- The most common site type will be artefact scatters/open campsites followed by isolated finds;
- Sites will be most commonly associated with a water source and adjacent elevated landforms such as creek banks, specifically Sawyers Creek in the south of the study area or the northern tributaries of Anvil Creek;
- Surface scatters are more likely to be identified in eroding landscapes due to high levels of ground surface exposure;
- Stone artefacts are likely to be found in sub-surface contexts in PADs, meaning that survey may not identify the extent of Aboriginal cultural heritage values in the study area; and,
- Other sites which may occur include axe grinding grooves, however the likelihood of these site types occurring in the study area are low due to the general dearth of suitable outcrops of sandstone.

Field Survey

To complement and test the findings of the desktop assessment, a field survey was undertaken. The aims of the survey were to:

- Identify Aboriginal cultural and/or archaeological sites in conjunction with representatives of the registered stakeholders;
- Identify areas of Potential Archaeological Deposit (PAD) where Aboriginal archaeological material may exist below the ground surface; and,
- Discuss recommendations for the management of any identified Aboriginal cultural heritage site or PAD, as well as any potential recommendations for further investigation (e.g. sub-surface test excavation in PADs) with representatives of the registered stakeholders.

During field survey, a total of 151 flaked stone artefacts were identified, as well as two Potential Archaeological Deposits (PADs)

Sub-Surface Testing

Due to the following factors, it was decided that sub-surface test excavation should be undertaken to explore the nature of PADs where works are proposed:

- There is a high likelihood of buried sub-surface deposit existing within the PADs;
- There is a high likelihood of at least some areas existing where these deposits are intact; and,
- There is the potential for these deposits to increase knowledge of Aboriginal occupation of this area, particularly considering the general dearth of previous excavation undertaken to date in the local region.

Sub-surface testing was undertaken on Monday 11th, Tuesday 12th, Wednesday 13th and Thursday 14th of January, 2010. Only areas that are not able to be avoided by the Greta Train Support Facility were test-excavated. This is to ensure that areas that will not be impacted by construction were not unnecessarily disturbed by test-excavations. All excavation was undertaken manually, using trowel and shovel.

A total of 125 test-excavations were undertaken as part of this sub-surface testing program. As a result of the sub-surface testing a total of 90 new artefacts were recorded, 8 within PAD 1, and 82 within PAD 2. These artefacts form, with the results of the field survey, two discrete areas of past Aboriginal activity or archaeological cultural heritage *sites* (Sawyers Creek Artefact Scatter 1 [AHIMS# 37-6-2165] and Sawyers Creek Artefact Scatter 2 [AHIMS# 37-6-2164]). These sites are in the vicinities of PAD 1 (Sawyers Creek Artefact Scatter 1) and PAD 2 (Sawyers Creek Artefact Scatter 2).

Significance and Impact Assessment

Construction of the Greta Train Support Facility will result in impact to these sites; significance of these sites and impact is shown in the Table below.

AHIMS Site Number	Site Name	Site Type	Scientific Significance	Aboriginal Significance	Impacted by Proposal	Management
37-6-2165	Sawyers Creek Artefact Scatter 1	Artefact Scatter and PAD	Low-Moderate	High	Part impact	Collection and protection
37-6-2164	Sawyers Creek Artefact Scatter 2	Artefact Scatter and PAD	Low-Moderate	High	Part impact	Salvage, collection and protection

Recommendations

Recommendations for impact mitigation strategies for the places and sites identified are presented below; Section 9 also includes a contingency for the unlikely discovery of human skeletal remains.

Pacific National would be responsible for any costs arising from undertaking the management recommendations.

Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165)

The majority of this site will not be disturbed by the Greta Train Support Facility, and the areas that will be impacted have suffered degradation from prior land use and erosion. The more intact parts of this site have been avoided by Pacific National's realignment of their access track. Consequently, it is recommended that:

1) All artefacts identified to date within the proposed impact zone should be collected. Representatives of the registered stakeholders should be invited to take part in this collection, in recognition of the cultural significance of this site. The archaeologist should facilitate the involvement of the registered Aboriginal stakeholders and in consultation decide the most appropriate course of action for the collected material. This may include reburial of the material in a durable container to an area unlikely to be disturbed. If reburial is undertaken, the location of this should be updated on the AHIMS site card;
2) The remainder of the site (artefacts and PAD) to the west, which is not affected by construction, should be protected. Protection should take the form of some sort of robust, permanent, highly visible fencing and be put in place prior to construction work taking place. Pacific National may like to consider a local Indigenous company to undertake this work. Pacific National should ensure that everyone who enters the study area is made aware of this fencing and that it is a 'no-go zone' – the area should be marked on all plans, including the Safety, Health and Environment Plan. No construction activities should take place inside this fenced 'no-go zone', including vehicle movement, etc. Pacific National is committed to the protection of and preservation of heritage items and sites on land which it owns (see Heritage Management Standard in Pacific National's Integrated Safety Management System). In line with this, the protective fencing on this site should be left in place following construction and, if necessary, maintained for the duration of operation of the Train Support Facility.

- Other than the above two points, no further investigation is recommended.

Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164)

Significant proportions of this site have avoided being impacted by the Greta Train Support Facility, due to design changes, such as moving buildings and realignments of infrastructure. However, one area of intact, dense deposit and two other areas of disturbed, dense deposit will be impacted by the access road and one section of rail track. Consequently, it is recommended that:

1) All artefacts identified to date within the proposed impact zone should be collected;
2) In the area of intact dense deposit on the banks of Sawyers Creek (see Figure 19), controlled manual salvage excavation should be undertaken. This should take the form of a series of 4-6

interconnected 1 m x 1 m excavation squares to open up the location of and explore the nature of the deposit, including attempting to identify any stratified features and deposit. If concentrations greater than 150 artefacts per square metre are encountered and/or *in situ* features such as knapping floors or hearths, then a further two 1 m x 1 m excavation squares should be excavated around the location. If possible, appropriate samples should be collected for radiocarbon dating. The location of transects/trenches should be decided upon in the field by the archaeologist. All excavated sediment should be sieved. The process should be recorded in detail;

3) In the other two areas of disturbed dense deposit (see Figure 19), controlled mechanical salvage excavation should be undertaken. Excavation should be undertaken by machine excavator equipped with a ~90 cm wide mud bucket. Excavation should be undertaken in a series of 2-3 adjacent 5 m long trenches in each location, each excavated in 5 cm spits to sterile basal clay/gravel deposits (usually 20 cm – 30 cm). The location of transects/trenches should be decided upon in the field by the archaeologist. If concentrations greater than 150 artefacts per square metre are encountered and/or *in situ* features such as knapping floors or hearths, then a further two 1 m x 1 m excavation squares should be excavated around the location. Excavation should be fully documented and recorded. All excavated deposit should be sieved using a mechanical sieve fitted with ~ 4 mm gauge punched metal plate or mesh;
4) Representatives of the registered stakeholders should be invited to take part in the above collection and salvage, in recognition of the cultural significance of this site and the educational opportunities it presents;
5) Detailed analysis of all material and any dates recovered from the site should be undertaken, the results of which should form, with the results already displayed here, part of a detailed technical report;
6) The archaeologist should facilitate the involvement of the registered Aboriginal stakeholders and in consultation decide the most appropriate course of action for the salvaged/collected material. This may include reburial of the material in a durable container to an area unlikely to be disturbed. If reburial is undertaken, the location of this should be recorded on the AHIMS site card;
7) The AHIMS site card for this site should be updated within 6 weeks of the completion of salvage excavation; and,
8) The remainder of the site (artefacts and PAD) to the west, which is not affected by construction, should be protected. Protection should take the form of some sort of robust, permanent, highly visible fencing and be put in place prior to construction work taking place. Pacific National may like to consider a local Indigenous company to undertake this work. Pacific National should ensure that everyone who enters the study area is made aware of this fencing and that it is a ‘no-go zone’ – the area should be marked on all plans, including the

Safety, Health and Environment Plan. No construction activities should take place inside this fenced 'no-go zone', including vehicle movement, etc. Pacific National is committed to the protection of and preservation of heritage items and sites on land which it owns (see Heritage Management Standard in Pacific National's Integrated Safety Management System). In line with this, the protective fencing on this site should be left in place following construction and, if necessary, maintained for the duration of operation of the Train Support Facility. Additionally, to aid in protecting this area, fill material may be spread across the area and revegetated.

General Recommendations

Pacific National should include Aboriginal cultural heritage material in their induction for this project for all personnel and contractors involved in construction and operation of the Greta Train Support Facility. The registered Aboriginal stakeholders may useful in preparing this and could be engaged to assist in this.

All collected and salvaged material should be analysed and added to the existing data set (Appendix D), with a report produced on the salvage process, and analysis and discussion of the artefact data. It is recommended that Pacific National consider the possibility of formalising in some way the protected portions of the Sawyers Creek Artefact Scatter 1 and 2 (AHIMS# 37-6-2165 and #37-6-2164). Pacific National should also consider including these sites on their Heritage Register.

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Figures

Acknowledgements

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Abbreviations

AHC	Australian Heritage Council
AHIMS	Aboriginal Heritage Information Management System
CHL	Commonwealth Heritage List
DECCW	Department of Environment, Climate Change and Water
DoP	Department of Planning
EPBC Act	*Environment Protection and Diversity Conservation Act* 1999
CTP	50 cm x 50 cm Cultural shovel test-pit
Guidelines	*Draft Community Consultation Requirements for Proponents, for Aboriginal Cultural Heritage*
HSTP	20 cm x 20 cm shovel test-pit
LEP	Local Environment Plan
NHL	National Heritage List
NSW	New South Wales
PAD	Potential Archaeological Deposit
REP	Regional Environment Plan
RNE	Register of the National Estate
STP	50 cm x 50 cm shovel test-pit
TP	1 m x 1 m test-pit

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SINCLAIR KNIGHT MERZ

1. Introduction

1.1. Project Location

The proposed Greta Train Support Facility (the study area) is identified as the parcel of land in Figure 1, running along the western side of the Main Northern Railway Line, in a north-west direction from Greta Railway Station, bounded to the west by the proposed F3 Freeway to Branxton link. The study area is bounded to the north where the Main Northern Railway Line and the proposed F3 Freeway to Branxton link intersect. Private property and Mansfield Street forms the southern boundary. Greta is situated approximately 27 km north-east of the city of Cessnock, approximately halfway between Singleton and Maitland. Greta is within the Cessnock City Council local government area located within the Hunter region of New South Wales (NSW).

1.2. Background

This Aboriginal Cultural Heritage Assessment forms part of the greater Environmental Assessment for the proposed Greta Train Support Facility, in Greta, NSW. Pacific National plan to construct a train support facility in the study area, including rail infrastructure, a site office and access road. Appendix A contains a copy of the design drawing of the facility showing the locations of specific buildings, tracks and infrastructure.

This report is required as part of an Environmental Assessment prepared under Part 3A of the *Environmental Planning and Assessment Act* 1979. Consequently, it must comply with the Director General Requirements. Specifically, its aims to assess Indigenous Heritage, items and places of significance, natural and landscape values of the site and surrounding area. As part of this assessment, consultation with Aborignal stakeholders will be undertaken. The assessment and consultation will be undertaken according to the *Draft Community Consultation Requirements for Proponents, for Aboriginal Cultural Heritage*, Department of Environment Climate Change and Water (DECCW - 2005).

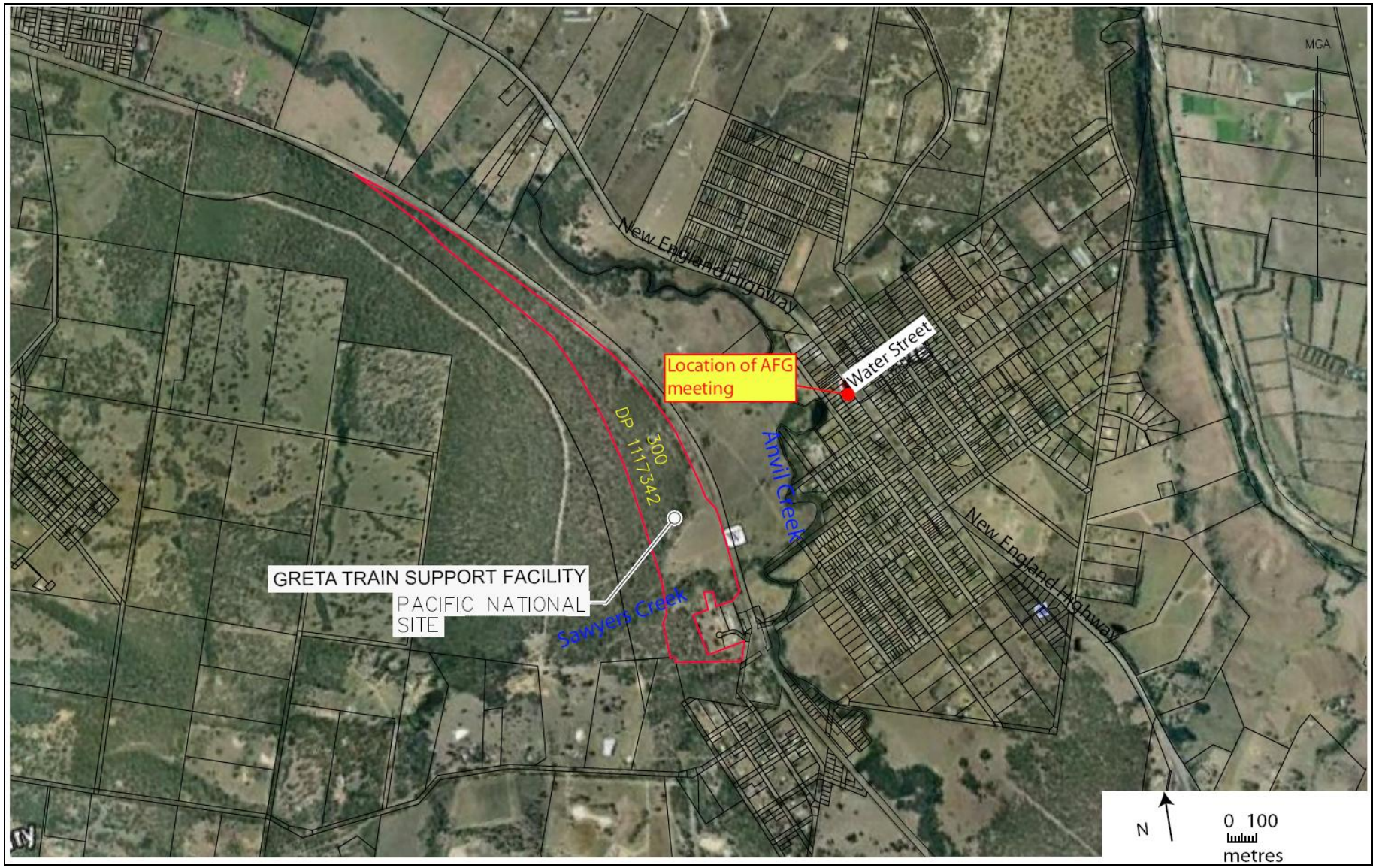
1.3. Report Structure

This Aboriginal Cultural Heritage Assessment report includes the following:

- A summary of relevant State and Commonwealth heritage legislation (Section 2);
- From Section 4 onwards is the Aboriginal Cultural Heritage Assessment, which begins with the Desktop Assessment, which includes an overview of the existing Aboriginal cultural heritage values of the study area, based on an assay of previous cultural heritage assessments relevant to the study area, a search of the Aboriginal Heritage Information

System (AHIMS) database, creation of a brief predictive model of Aboriginal occupation, and observations made during a brief site inspection;

- Details of the aims, methods and results of field survey are provided in Section 5, including rationale for the proceeding sub-surface testing (Section 6);
- Section 7 comprises an assessment of the archaeological (scientific) and Aboriginal cultural significance of the Aboriginal cultural heritage within the study area, then Section 8 gives an assessment of the impacts that construction of the Greta Train Support Facility will have on the cultural heritage; and,
- Finally, Section 9 provides recommendations for management actions to ensure Aboriginal cultural heritage values are properly managed within the Greta Train Support Facility study area.



- **Figure 1 - Location of Greta Train Support Facility study area.**

2. Legislation Review

2.1. State Legislation

The proposed Greta Train Support Facility is considered to be major infrastructure to which Part 3A of the *Environmental Planning and Assessment Act* 1979 (details below) applies. As such, approvals and permit requirements under the *National Parks and Wildlife Act* 1974 are not required for the project. However, as the same general processes must be followed, the requirements under these Acts are summarised below.

2.1.1. *National Parks and Wildlife Act* 1974

The principal legislation for the protection, conservation and management of Aboriginal objects and places in NSW is the *National Parks and Wildlife Act* 1974, administered by the Department of Environment and Climate Change (DECCW). The objective of the Act is the conservation of places, objects and features of cultural value within the landscape, including, but not limited to:

- Places, objects and features of signficance to Aboriginal people.
- Places of social value to the people of NSW.
- Places of historic, architectural or scientific significance.

An 'Aboriginal object' is any deposit, object or material evidence, including Aboriginal remains, relating to the Aboriginal habitation of NSW, before or concurrent with occupation by non-Aboriginal people.

An 'Aboriginal place' is an area declared by the Minister to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects).

There are two sections under Part 6 of the Act relating to offences associated with the disturbance or destruction of Aboriginal objects.

Section 86 states that a person is guilty of an offence if, except in accordance with a permit granted under Section 87, he or she:

- Disturbs or excavates any land, or causes any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object.
- Disturbs or moves an Aboriginal object on any land that is the property of the Crown, other than an Aboriginal object that is in the custody or control of the Australian Museum Trust.

- Takes possession of an Aboriginal object that is in a national park, historic site, state recreation area, regional park, nature reserve, state game reserve, karst conservation reserve or Aboriginal area.
- Removes relics from a national park, historic site, state recreation area, regional park, nature reserve, state game reserve, karst conservation reserve or Aboriginal area.
- Erects or maintains, in a national park, historic site, state recreation area, regional park, nature reserve, state game reserve, karst conservation reserve or Aboriginal area, a building or structure for the safe custody, storage or exhibition of any Aboriginal objects.

Section 90 of the *National Parks and Wildlife Act* 1974 states that a person who, without consent, knowingly destroys, defaces or damages or knowingly causes or allows the destruction or defacement of or damage to an Aboriginal object is also guilty of an offence.

A person who knowingly destroys, defaces, damages or knowingly causes or allows the destruction or defacement of, or damage to an Aboriginal place is guilty of an offence (Section 90).

As discussed below, the Greta Train Support Facility will be assessed under Part 3A of the *Environmental Planning and Assessment Act* 1979 (details below), approvals under Part 6, Section 87 and 90 of the *National Parks and Wildlife Act* 1974 are not required. Despite this, works would need to be undertaken in accordance with the processes of the *National Parks and Wildlife Act* 1974, including the *Draft Community Consultation Requirements for Proponents, for Aboriginal Cultural Heritage*, DECCW (2009).

2.1.2. *Environmental Planning and Assessment Act* 1979

The *Environmental Planning and Assessment Act* 1979 provides a framework for environmental planning and assessment in NSW. The Act requires proponents to examine and take into account the impact of its projects on Aboriginal and Historical cultural heritage.

Planning assessment and authorisation to carry out projects under this Act will generally proceed in one of the following three ways:

- Part 3A of the Act applies to major infrastructure or other development that, in the opinion of the Minister for Planning, is of State or regional planning significance, or is likely to have a signficant environmental impact. Under Section 75U, a range of approvals are not required including:
  - Section 87 permits and Section 90 consents under the *National Parks and Wildlife Act* 1974; and,

- Part 4 of the Act applies to the undertaking of development that require the approval of a consent authority – usually a local council.
- Part 5 of the Act applies to the undertaking of activities where Part 4 consent is not required, but either some form of statutory approval is required from a public authority, or the activity is being carried out by a public authority. A Part 5 project is assessed by way of a review of environmental factors.

Commonwealth Heritage Legislation

2.1.3. Introduction

Environment and Heritage Legislation Amendment Act (No. 1) 2003

Australian Heritage Council Act 2003

Australian Heritage Council (Consequential and Transitional Provisions) Act 2003

Together the above three *Acts* provide protection for Australia's natural, Indigenous and non-Indigenous heritage. The new features include:

- A new National Heritage List of places of national heritage significance.
- A new Commonwealth Heritage List of heritage places owned or managed by the Commonwealth.
- The creation of the Australian Heritage Council, an independent expert body to advise the Minster on the listing and protection of heritage places.
- Continued management of the Register of the National Estate.

The *Environment and Heritage Legislation Amendment Act (No. 1)* 2003 amends the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) to include 'national heritage' as a new matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution. It also establishes the National Heritage List and the Commonwealth Heritage List.

The *Australian Heritage Council Act* 2003 establishes a new heritage advisory body - the Australian Heritage Council (AHC), to the Minister for the Environment and Heritage and retains the Register of the National Estate (RNE).

The *Australian Heritage Council (Consequential and Transitional Provisions) Act* 2003 repeals the *Australian Heritage Commission Act* 1975, amends various *Acts* as a consequence of this repeal and allows the transition to the new heritage system.

The following is a description of each of the Heritage Lists and the protection afforded them.

2.1.3.1. National Heritage List (NHL)

The NHL is a list of places with outstanding heritage value to our nation, including places overseas. So important are the heritage values of these places that they are protected under the EPBC Act. This means that a person cannot take an action that has, will have, or is likely to have, a significant impact on the national heritage values of a national heritage place without

the approval of the Australian Government Minister for the Environment and Heritage. It is a criminal offence not to comply with this law and there are significant penalties.

2.1.3.2. Commonwealth Heritage List (CHL)

The CHL is a list of places managed or owned by the Australian Government. The list will include places, or groups of places, that are in Commonwealth lands and waters or under Commonwealth control, and are identified by the Minister as having Commonwealth heritage values. These places will be protected under the EPBC Act, which requires that, actions:

- Taken on Commonwealth land which are likely to have a significant impact on the environment will require the approval of the Minister;
- Taken outside Commonwealth land which are likely to have a significant impact on the environment on Commonwealth land will require the approval of the Minister;
- Taken by the Australian Government or its agencies which are likely to have a significant impact on the environment anywhere will require the approval of the Minister.

As the definition of 'environment' in the EPBC Act includes the heritage values of places, these provisions of the Act in the context of their operation, provide protection for the values of Commonwealth Heritage places.

2.1.3.3. Register of the National Estate (RNE)

The RNE is an evolving record of Australia's natural, cultural and Aboriginal heritage places that are worth keeping for the future. The AHC compiles and maintains the RNE under the *Australian Heritage Council Act* 2003. Places on the RNE that are in Commonwealth areas, or subject to actions by the Australian Government, are protected under the EPBC Act) by the same provisions that protect Commonwealth Heritage places (see above).

Following amendments to the *Australian Heritage Council Act* 2003, the RNE was frozen on 19th February 2007, which means that no new places can be added, or removed. The Register will continue as a statutory register until February 2012. During this period the Commonwealth Minister for the Environment, Heritage and the Arts is required to continue considering the Register when making some decisions under the EPBC Act. This transition period also allows State, Local and Commonwealth Government to complete the task of transferring places to appropriate heritage registers where necessary and to amend legislation that refers to the RNE as a statutory list.

From February 2012 all references to the Register will be removed from the EPBC Act and the AHC Act. The RNE will be maintained after this time on a non-statutory basis as a publicly available archive.

2.1.4. Aboriginal and Torres Strait Islander Heritage Protection Act 1984

Whereas the State Act provides legal protection for all the physical evidence of past Aboriginal occupation, the Commonwealth Act deals with Aboriginal cultural property in a wider sense. Such cultural property includes any places, objects and folklore that 'are of particular significance to Aboriginals in accordance with Aboriginal tradition'. In most cases, Aboriginal archaeological sites registered under the State Act will also be Aboriginal places subject to the provisions of the Commonwealth Act.

There is no cut-off date and the Act may apply to contemporary Aboriginal cultural property as well as ancient sites. The Commonwealth Act takes precedence over State cultural heritage legislation where there is conflict. The responsible Minister may make a declaration under Section 10 of the Act in situations where state or territory laws do not provide adequate protection of heritage places.

2.1.5. Native Title Act 1993

The main purpose of the *Native Title Act* 1993 is to recognise and protect 'native title'. Native title is the rights and interests in land and waters that Aboriginal and Torres Strait Islanders have under their traditional laws and customs.

The following list is indicative of the type of land, which might be subject to native title;

- Vacant Crown land and any other public or Crown lands including oceans and inland waterways, beaches and foreshores, State forests, national parks and public reserves;
- Pastoral leases;
- Land held by government agencies;
- Land held in trust for Aboriginal communities.

Under the amended *Native Title Act* 1993, native title is extinguished by the following;

- Private freehold land, valid grants of private freehold land or waters;
- Residential, commercial or exclusive possession leases;
- Mining dissection leases;
- Community purpose leases (e.g. religious, sporting or charitable purposes);
- Scheduled interests that give exclusive possession;
- Public works (e.g. schools, public amenities, hospitals etc.).

It is likely that Native Title has also been extinguished along the footprint of existing roads and rail reserves, which have been cleared or are currently in use.

Section 24KA of the *Native Title Act*, requires that native title claimants are notified of any 'future act' which may result in a change in land use for Crown lands affected by claims. 'Future act' is defined in Section 233 of the Act as a proposed activity or development on land and/or waters that may affect native title, by extinguishing (removing) it or creating interests that are inconsistent with the existence or exercise of native title. If after one month there has been no response then the proponent will be deemed to have fulfilled their obligations under the Act.

Native title will have been extinguished within the Greta Train Support Facility study area, as the land was previously private freehold land.

3. Consultation

All consultation was undertaken in accordance with the *Draft Community Consultation Requirements for Proponents, for Aboriginal Cultural Heritage* (*Requirements*) (DECCW 2005). The consultation process aimed to ensure that Aboriginal stakeholders had the opportunity to contribute to the assessment by:

- Contributing to the development and design of the archaeological and cultural assessment methodologies;
- Assisting with the identification of specific Aboriginal heritage values to inform the design process of attempting to avoid Aboriginal cultural heritage; and
- Contributing to the development of recommendations for the management of Aboriginal cultural heritage sites.

3.1. Consultation Requirements

There are recommended guidelines (the DECCW *Requirements*) for the notification, identification, and registration of stakeholders, and subsequent consultation with registered Aboriginal stakeholders. The intent of the guidelines is to ensure Aboriginal communities have the opportunity to improve assessment outcomes by:

- Influencing the design of the assessment of cultural and scientific significance;
- Providing relevant information regarding the cultural significance values of the objects/places;
- Contributing to the development of cultural heritage management recommendations; and,
- Providing comment on draft assessment reports prior to their submission.

These guidelines outline 3 main stages to the consultation process:

- Stage 1: Notification and registration of interests;
- Stage 2: Preparation for the assessment design, in which registered stakeholders are to be given the opportunity to comment on the design of the proposed assessment methodology; and,
- Stage 3: Drafting, review and finalisation of the Cultural Heritage Assessment Report, in which stakeholders are to be provided with the completed draft report for comment.

Table 1shows where accordance with the DECCW *Requirements* is shown in this Aboriginal Cultural Heritage Assessment Report. Detail of consultation undertaken with Aboriginal stakeholders is included in Sections 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2 and specific written correspondence provided in Appendix C. Comments from stakeholders resulted in changes or

updates to methodology, design, management recommendations, etc. and have been acknowledged in the relevant sections, unless acknowledged in this section.

- **Table 1 - Accordance with the DECCW Requirements.**

DECC Requirement Stage	Where this is addressed in the Aboriginal Cultural Heritage Assessment
Stage 1 – Notification and registration of interests	Section 3.1.1 0 Appendix C
Stage 2 – Preparation for the assessment (design)	Sections 3.1.2 Appendix C
Stage 3 - Drafting, review and finalisation of the Cultural Heritage Assessment Report	Sections 3.1.3 and 3.1.4 Appendix C

3.1.1. Stakeholder Registration

As per the DECCW *Requirements*, at the commencement of the Cultural Heritage Assessment stakeholder registration was undertaken by:

- Placing an advertisement in the Newcastle Herald on 16th September, 2009, outlining the project and requesting Indigenous stakeholders (see 0);
- Providing written notification (see to the Local Aboriginal Land Council (LALC) whose area covers the study area – Mindaribba LALC; and,
- Providing written notification to:
  - the Registrar of Aboriginal Owners;
  - Native Title Services;
  - Cessnock City Council; and,
  - DECCW.

Ten working days was the period given for registration of stakeholder interests. All stakeholders responded within this time. Stakeholders registered for this project are (listed in alphabetic order):

- Aboriginal Native Title Consultants;
- Cessnock City Council;
- Lower Hunter Wonnarua Council Incorporated;
- Mindaribba LALC;
- Ungooroo Cultural and Community Services; and,

- Yarrawalk Aboriginal Corporation.

The Department of Environment Climate Change and Water did not provide a response within the allotted time, but were included in future consultation.

3.1.2. Comment on Assessment Methodology

All stakeholders were provided with an information pack (see Appendix C) that included background information on the project and its location, as well as the proposed methodology. Stakeholders were given 21 days to comment on the methodology, in which time an Aboriginal Focus Group (AFG) Meeting (AFG #1) was held to provide the best possible opportunity for stakeholders to provide input/comment into the assessment methodology. The minutes of AFG#1 are shown in Appendix C.

3.1.2.1. Comment on Sub-surface Testing Methodology

All stakeholders were provided with a statement of findings of the survey to provide comment and input regarding any specific issues in regards to the development, or specific cultural values of the study area. Also in the statement of findings, recommendations were made outlining the intent to undertake further assessment in the form of archaeological sub-surface testing. Comments were sought on this intent and the proposed methodology outlined. All comments received were incorporated into the sub-surface testing methodology. Changes resulting from stakeholder comment (both at AFG#2, by email and by phone) include:

- Ensuring that transects were excavated in a checkerboard fashion (alternating sides of the transect baseline);
- Spacing test-pits at 10 m intervals;
- Excavating further test-pits at 5 m intervals radiating from test-pits where 5 artefacts or more were encountered; and,
- Sub-surface testing outside the identified Potential Archaeological Deposits in recognition of the cultural significance of the study area.

3.1.3. Participation in Fieldwork

Fieldwork involvement was varied and included:

- Pedestrian survey (Section 5);
- Sub-surface testing at locations proposed for geotechnical investigations (Section 6); and,
- Sub-surface testing within areas of PAD (Section 6).

Participants in fieldwork are detailed in Sections 5.2 and 6.3. During fieldwork, field representatives of the registered stakeholders were encouraged to comment on the process, the development, and their thoughts on the Aboriginal cultural heritage sites within the study area. All attendants were satisfied with the field survey stage of the fieldwork. Following the field survey, Mindaribba LALC requested that one of their representatives be allowed to inspect the study area. To accommodate this, a second field survey was undertaken (details Section 5.2).

Although wary at the beginning of the sub-surface testing program, at the completion of the program, all representatives agreed that they were happy with the program and that the job had been done properly.

3.1.4. Comment on Draft Report

Following completion of this Aboriginal Cultural Heritage Assessment report, all registered stakeholders were provided with a copy for comment. Comments were received from Scott Franks (see Appendix C for details) of Yarrawalk Aboriginal Corporation to the effect that he was concerned about the disturbance of traditional Wonnarua land in the greater region and felt that some form of compensation was appropriate to offset the disturbance. Franks also requested that sites should be fenced with something more permanent than construction webbing and that any salvaged/collected artefacts should be reburied on-site in non-biodegradable containers. Franks was happy with the archaeological detail and content of the report. Rhonda Ward (Ungooroo Cultural and Community Services) and Margaret Matthews (Aboriginal Native Title Services) stated that both sites discovered were very important and of high significance to Wonnarua people. Rhonda Ward recommended that Pacific National engage representatives of the registered Aboriginal stakeholders to monitor removal of topsoil for the project. However, this is considered overly onerous to Pacific National considering the above recommendations for Sawyers Creek Artefact Scatter 1 and 2 (AHIMS# 37-6-2165 and #37-6-2164) and these general recommendations and below contingencies.

Despite several efforts made by the author to obtain further information from the other Aboriginal stakeholders regarding cultural significance or other comments on the report (including several telephone attempts and emails), no further comments were received from other stakeholders during the 3 month comment period before this report was finalised. It should be noted that despite requests, no formal statements of support were issued by the registered Aboriginal stakeholders, though informal support for this report and the process in general was given by several stakeholders.

3.2. Aboriginal Focus Group Meetings

Over the course of undertaking this Aboriginal Cultural Heritage Assessment, two Aboriginal Focus Group (AFG) meetings were held to ensure stakeholders were meaningfully engaged

and had an opportunity to provide input and comment on the process. Aboriginal stakeholder groups were asked to nominate any knowledge holders that may have specific knowledge regarding Aboriginal occupation or stories relating to the study area and surrounds – no specific knowledge holders were nominated. An AFG meeting was held at the commencement of the assessment to facilitate stakeholder comment on the proposed assessment methodology (see Section 3.1.2). The second AFG meeting was held following the archaeological survey to discuss the proposed sub-surface testing methodology, changes to design that reduced impact to Aboriginal cultural heritage and preliminary management recommendations for the Aboriginal cultural heritage discovered in the study area (see Section 3.1.4). The minutes of these AFG meetings are shown in Appendix C.

4. Desktop Assessment

4.1. Introduction

The remainder of the report details the Aboriginal Cultural Heritage Assessment, which is divided into Desktop Assessment (Section 4), Field Survey (Section 5), Sub-surface Testing (Section 6), Significance and Impact Assessment (Section 7) and Management (Section 9).

4.2. Ethnography

Clans were the basic units of pre-European Aboriginal society and comprised patrilineal or matrilineal descent groups with territories defined by ritual and economic responsibilities. Clusters of neighbouring clans, which shared a common dialect and political and economic interests distinguished themselves from other clusters by the use of a language name and are commonly what we consider to be 'tribes' (Barwick 1984; Tindale 1974).

The study area was traditionally occupied by the *Wonnarua* (also spelt Wanaruah) who occupied lands from just above Maitland south to Wollombi and west through to the dividing range (Tindale 1974: 201). They shared a western boundary with the *Wiradjuri*, one of the largest tribal groupings in Australia, and a hostile southern boundary with the *Darkinung*.

Each clan within the *Wonnarua* tribe had rights and responsibilities over their land, having specific customs, laws and myths related to their area (Blyton *et al.* 2004:12). These beliefs and ways of life are reflected in the landscape, and specific landscape features, such as rock formations and waterways, as well as being reflected in natural phenomena, such as rain and thunder. A rainbow for example, was thought to be an appearance of the rainbow serpent of creation myth and was a symbol of the link between the earth and the sky worlds (Needham 1981:69). Place names within the area reflect the connection and relationship that Wonnarua people had with the land; some examples of these names that persist today are: Bulga (area south of Singleton), which means 'isolated mountain'; Ellalong (Swamp near Paxton), Low Swampy Ground; and Nulkaba (area just north of Cessnock), place of ironstone (Needham 1981). Ellalong Swamp is believed to be one of the resting places of the mythological rainbow serpent, which was consequently a place taboo to bathe in, as it was believed that the serpent would swallow any bather whole (Needham 1981:69).

Many of the implements of the *Wonnarua* people, particularly weapons, were wooden, such as spears, boomerangs, shields, water carrying vessels and message sticks (Needham 1981:41). Consequently, many of these will have decomposed over time, leaving stone artefacts overrepresented in the material record. Stone artefacts were used for a variety of uses, such as cutting flesh from hides, softening hide, trimming wooden implements, carving designs into

wooden implements, processing food, processing ochre, and were either used directly from the hand or hafted into wooden shafts and handles (Needham 1981:47).

As in many Australian Aboriginal peoples, men generally hunted larger animals, while women and children gathered plant resources and shell fish. Many plant sources were used for food, as well as other purposes, such as medicine. Pale sap from eucalypts and wattles was eaten, the flowers of several plants (including Hakea, a large stand of which is found just north of Sawyers Creek in the study area; and grass-trees, of which there are several in the study area) were sucked for their sugary nectar, fruits of plants, such as the Lillipilli, were eaten, as well as the leaves and tuberous roots of several plants (Needham 1981: 52-3). Animals that were hunted include kangaroo, wallaby, koala, possum, wombat, echidna, bandicoots, emu, water birds and various reptiles. The taking and eating of plants and animals was often seasonal and intertwined with totems to restrict foraging at particular times of the year so as to allow the most efficient use of the resource, without over-exploiting.

By the end of the 19th Century, traditional Aboriginal life in the Hunter Valley had declined due to population dispersal. Throughout the 20th Century, the lives of Aboriginal people in the Hunter Valley were controlled under the auspices of government authorities and church groups. By the 1960s, social and political change assisted the mobilisation of Aboriginal people to assert pressure through the media on the government. Today many of the descendants of these tribes are represented by various Local Aboriginal Land Councils, other groups and Native Title claimants.

4.3. Environmental Background

Further information on the environmental context of the study area can be found in the Environmental Assessment and other working papers produced for the Greta Train Support Facility.

4.3.1. Topography

The study area is gently undulating plain in the south, and becomes undulating to rolling hills in north of Sawyers Creek. Sawyers Creek, a tributary to Anvil Creek (just to the east of the study area) dissects the study area in the south, while several ephemeral drainage lines dissect the study area in the northern two thirds of the study area, before draining towards the east into Anvil Creek. Small outcrops of the underlying sandstone bedrock outcrop in the drainage line at the tip of the study area, and on the soft high ridge north of Sawyers Creek.

4.3.2. Vegetation

The bottom third of the study area is predominantly cleared of vegetation, with the upper two thirds generally comprising open woodland that has been logged in the past. Pre-contact vegetation would have included open woodland of spotted gums, red ironbark, forest red gum and stringybark Eucalypts, with swamp oak and paperbarks around waterways and drainage lines.

4.3.3. Geology and Soil

The underlying geology of the study region comprises Permian sandstones, shales, mudstones, siltstones, tuffs, conglomerates, limestone and coal seams of the Singleton Coal Measures, Rutherford Formation, Farley Formation, Branxton Formation, Mulbring Siltstone and Muree Sandstone (Kovac and Lawrie 1991).

The land-systems that cover the study area are the Rothbury (Red Podsolic Soils) unit and the Branxton (Yellow Podsolic Soils) unit. Sawyers Creek is located within the Branxton land-system, while the northern two thirds of the study area are covered by the Rothbury land-system (Kovac and Lawrie 1991). The Branxton land-system is gently undulating and dissected by waterways such as Sawyers Creek, with some erosional problems in areas cleared of vegetation. The Rothbury land-system is similar to Branxton, though tends to be hillier, with slope gradients slightly higher. Soils both Rothbury and Branxton land-systems are similar, comprising brown loams, loamy sands and sandy loams, underlain by a distinct change to yellow to bright brown strong structured medium clays, which are sometimes mottled yellow and/or grey (Kovac and Lawrie 1991). The topsoil horizon generally becomes shallower with further distance from alluvial land forms (e.g. up slopes, away from creeks/drainage lines).

4.3.4. Aboriginal Landscape Significance

Based on the ethnography of the study region and consultation with registered stakeholders, a number of features within the study area, other than any archaeological remains, support the argument that the study area was attractive and of importance to Aboriginal people. The study area contains one minor waterway (Sawyers Creek), and is close to Anvil Creek, a waterway of local importance. Both these locations would have provided numerous resources for Aboriginal people. Although activity was likely concentrated nearby water sources, due to animal and plant resources occurring in more abundance, Aboriginal people would have spent time throughout the study area. For example, the higher soft ridge north of Sawyers Creek would have provided elevated, well drained soils with good views over some of the surrounding area. Additionally grass trees were identified on this ridge, whose resin was used

to seal and strengthen spears, and leaf stems were eaten (Needham 1981:41, 53). This highlights the fact that vegetation from areas away from water sources was also important.

4.4. Background Archaeology

4.4.1. Introduction

The Aboriginal archaeology of the Hunter Region is characterised by extensive scatters of stone artefacts. Stone artefacts are the discarded waste material from the manufacture of implements (tools) such as blades (e.g. for hunting and other activities) and scrapers (woodworking and animal skin/plant processing). Sometimes the implements themselves are also found discarded in these scatters depending on the function of the site (that is stone tool manufacture or plant/animal food processing). Stone artefacts in the Hunter Region are generally made from raw stone materials comprising indurated mudstone, silcrete and quartz. These raw materials are available locally within the region.

Other sites which have been recorded in the Hunter Region include scarred trees (trees which have had their bark removed for a variety of uses), quarries or sources of stone from which raw materials have been obtained for the manufacture of stone artefacts, grinding grooves for sharpening stone axes, ceremonial sites and human burials. All of these site types are much rarer in the landscape than artefact scatters. Non-archaeological sites can include ceremonial areas and Dreaming sites. This type of site can include components of the landscape which are incorporated into stories that are of high significance to the contemporary Aboriginal community. Potential archaeological deposits (PADs) are also frequently identified in the Hunter Region. These PADs are areas of the landscape that, based on the background archaeology, are likely to contain archaeological material below the surface, and may or may not be associated with surface archaeology.

Stone artefact scatters, sometimes called campsites if they have archaeological evidence of other types of occupation such as hearths (fireplaces) or animal bones (cooking), are generally found adjacent to permanent and ephemeral sources of water. Often the artefact scatters are located on relatively flat, elevated areas adjacent to water sources. These provided well drained areas away from flooding and occasionally with views across the surrounding landscape or territory.

4.4.2. Previous Cultural Heritage Assessments

Due to the ambiguity and inaccuracies inherent in the locations of study areas and Aboriginal sites, it is unclear whether previous Aboriginal archaeological assessments may have included parts of the Greta Train Support Facility study area, and also whether some previously recorded archaeological sites occur within the study area, or just outside the boundary.

The following paragraphs provide a summary of previous cultural heritage assessments of relevance to the study area.

Brayshaw (1994, 1997)

Brayshaw (1994) conducted an archaeological assessment of the proposed highway link of the F3 Freeway to the New England Highway at Branxton. Although the precise area assessed by Brayshaw (1994) was not able to be established due to insufficient mapping, it may have partially overlapped with the Greta Train Support Facility study area. A PAD (PAD1) was identified approximately 200 m east of the study area, at Anvil Creek, consisting of a 15 m wide grassed alluvial terrace. An isolated stone artefact, a broken red silcrete core in two pieces, was identified at this location, approximately 5 m north of Anvil Creek and raised 3 m above it. Although PAD1 was considered to have potential for sub-surface *in situ* archaeological material, the subsequent geomorphological assessment revealed that the alluvial deposit was likely to be reworked through flooding (Kerr in Brayshaw 1997). Despite this, artefacts that may be associated with the grassed alluvial terrace at Anvil Creek are likely to be preserved *in situ* (Kerr, cited in Brayshaw 1997). Axe grinding grooves have also been reported on sandstone outcrops associated with Anvil Creek.

Umwelt (2003, 2004, 2005)

Umwelt (2005) conducted further archaeological assessment of the proposed highway link of the F3 Freeway to Branxton. Survey between 2003 and 2004 by Umwelt resulted in the identification of 87 Indigenous sites and 22 PADs, of which five artefact scatters, three isolated finds, one set of three grinding grooves, and three PADs were located within close proximity of the Greta Train Support Facility study area (see AHIMS results below). Of interest is site RTA 15 (AHIMS - 37-6-1317), situated approximately 500 m west of the west perimeter of the Greta Train Support Facility study area. This site consisted of a scatter of over 300 stone artefacts. Furthermore, a set of three axe grinding grooves, RTA 16 GG (AHIMS – 37-6-1318), was identified within close proximity of the southern extent of the Greta Train Support Facility study area.

Following their initial survey, Umwelt (2005) conducted sub-surface testing of a number of previously identified sites and PADs. A number of these excavations were performed within or in close proximity of the Greta Train Support Facility study area. Four one metre test-pits were excavated at PAD 17 (AHIMS – 37-6-1369), the first terrace on the northern side of Anvil Creek, located within the southern perimeter of the Greta Train Support Facility Study area. The deposit in all four test-pits, located at a similar distance from the creek, varied between 75 and 110 cm in depth. Three flakes (mudstone and silcrete) were identified in Square 1 - two identified at 60 cm and one at 70 cm depth below the surface. PAD 17

(AHIMS – 37-6-1369) was located within an area of disturbance resulting from vegetation clearance and grazing.

Four 1 m x 1 m test-pits were excavated at PAD 18 (AHIMS – 37-6-1370), on the footslope on the western side of a northerly flowing tributary of Anvil Creek, located within the northeast perimeter of the Greta Train Support Facility study area. Squares 2 and 4 were located approximately 10 m from the creek with Squares 1and 3 positioned directly behind. Sixteen stone artefacts (silcrete and mudstone flakes and flaked pieces) were identified during the excavations and were located between 20 cm and 60 cm depth below the surface. Although the depth of archaeological deposit increased further north up the creek, there appeared to be no correlation between soil depth and artefact density. Site PAD 18 (AHIMS – 37-6-1370) was located within an area of disturbance resulting from vegetation clearance and grazing.

Four 1 m x 1 m test-pits were excavated at PAD 21 (AHIMS - 37-6-1602), on the first terrace on the northern side of Anvil Creek, located approximately 400 m northeast of the Greta Train Support Facility study area. Square 3 was located closest to Anvil Creek at approximately 15 m. A total of 39 stone artefacts were excavated from PAD 21 (AHIMS - 37-6-1602) consisting of silcrete and mudstone flakes, broken flakes, and flake pieces. A maximum soil depth of 70 cm was reached, with artefacts evident to 40 cm. Artefact density appeared to correlate with soil depth which increased closer to the creek. PAD 21 (AHIMS - 37-6-1602) was located within an area of disturbance resulting from clearing, pole emplacement, cultivation, and grazing.

Several areas of subsurface testing were conducted approximately 4-5 kilometres from the Greta Train Support Facility study area. Testing at Black Creek PAD 20 (AHIMS 37-61371) and RTA 2 (37-6-1339), located approximately 5 km northeast of the northeast limit of the study area, resulted in the excavation of 243 stone artefacts, comprising silcrete, mudstone, and quartzite flakes, flaked pieces, retouched flakes and cores. At Black Creek PAD 20 (AHIMS 37-61371), the soil depth increased from the creek towards the second creek terrace and site RTA 2 (37-6-1339). At RTA 2 (37-6-1339) stone artefacts were encountered between 5 and 125 cm whereas historical material was identified to 35 cm. According to Umwelt (2007), site RTA 2 (37-6-1339) is suggestive of a long period of Indigenous occupation within the area.

Testing at Anvil Creek PAD 16 (AHIMS - 37-6-1368) and Anvil Creek RTA 3 (AHIMS - 37-6-1368), located approximately 4 km southeast of the south perimeter of the Greta Train Support Facility study area, resulted in the excavation of 72 and 135 stone artefacts consecutively. Artefacts at Anvil Creek PAD 16 (AHIMS - 37-6-1368) included silcrete and mudstone flakes, flaked pieces, a retouched flake, and a core. Artefacts at Anvil Creek RTA 3 (AHIMS - 37-6-1368) included silcrete, mudstone, and quartz flakes, flaked pieces, and a core. Artefact numbers at Anvil Creek PAD 16 (AHIMS - 37-6-1368) increased towards the creek

although the soil depth remained relatively constant, whereas at Anvil Creek RTA 3 (AHIMS - 37-6-1368) soil depth increased towards the creek whereas the artefact numbers decreased.

In addition to sites and PADs, several landform units were subjected to subsurface testing, including those at Anvil Creek and Black Creek. The Anvil Creek landform testing incorporated test-pits associated with floodplain/creek terrace, lower, mid and upper slopes and the spur crest associated with a tributary of Anvil Creek, beginning with Anvil Creek PAD 16 (AHIMS - 37-6-1368). The area had been disturbed through erosion, clearance of vegetation, and grazing. The Anvil Creek landform testing resulted in the identification of 32 stone artefacts, located within six 1 m x 1 m test-pits positioned approximately 50 m apart, the majority located within the creek terrace/lower slope landform unit. High density artefact scatters were identified on the creek terrace, with medium density artefact scatters identified on the mid/upper slope landform unit. According to Umwelt (2007) this may indicate two separate areas of occupation, a more frequently utilized area adjacent to the creek and a less frequently utilized area on the mid/upper slopes perhaps during times of flooding. Alternatively, it was proposed erosion may have caused the downslope movement of deposit and artefacts, resulting in a higher density towards the creek.

The Black Creek landform unit testing incorporated the second and third creek terrace landforms as well as the lower slope associated with Black Creek. The first terrace associated with Black Creek was subjected to subsurface testing in Black Creek PAD 20 (AHIMS 37-61371). Seven test-pits were excavated, the first positioned approximately 550 m west of Black Creek, in an area disturbed through erosion, clearance of vegetation, and erosion. Only three stone artefacts were identified, all located on the second creek terrace. The depth of soil decreased substantially further from the creek.

The results of Umwelt's (2005) archaeological assessment indicate that surface and subsurface stone artefact scatters are evident within and around the Greta Train Support Facility study area. Artefacts are evident in higher densities in proximity to the creek, although medium density artefact scatters are also evident on the mid/upper slopes. The most common artefact types are flakes and flaked pieces although cores and retouched flakes are also present. Silcrete and mudstone represents the most common artefact material, although quartz and quartzite were also present. Soil depth reached 110 cm with artefacts identified at 70 cm depth within the Greta Train Support Facility study area, although sites within a 5 km radius reached a depth of 160 cm with artefacts identified at 125 cm. Although soil depth inconsistently varied dependant on proximity to watercourses, this has no definitive effect on artefact density.

Perry (2000)

Perry (2000) conducted an archaeological assessment of a proposed gas main route from Rutherford to Singleton in the Upper Hunter valley. Although Greta was within the proposed gas main route, no artefacts were identified within or immediately adjacent to the Greta Train Support Facility study area.

HLA (2005)

In 2005, HLA conducted an archaeological assessment of the proposed Anvil Creek tourist and residential development located approximately 1.8 km south of the Greta township and less than 1 km south the Greta Train Support Facility study area. The Anvil Creek Development area covers an expanse of approximately 423 hectares. Twelve Indigenous sites were identified during the survey, associated with 215 stone artefacts. Sites were associated with four separate landform units (ridge crest, hill slope, lower order stream, and upper order stream). Flaked stone artefacts were identified in greater frequency within the landform units associated with waterways than with ridge crests and hill slopes, however the higher artefact frequency associated with lower order streams may be a reflection of greater ground exposure. The range of artefact raw material and type is comparable to other regions in the Hunter Valley (HLA 2005: 33).

Insight Heritage (2008)

In 2008, Insight Heritage conducted an archaeological assessment of the proposed augmentation of a powerline, servicing the Rothbury/Greta area. A section of Greta and Truckers Lane (immediately southwest of Greta) were included in the Greta Train Support Facility study area. No artefacts were identified within these areas.

4.4.3. Previous Regional Predictions for Aboriginal Occupation

Dean-Jones and Mitchell (1993) suggest that within the Central Lowlands of the Hunter Valley, Indigenous sites are most common along tributary streams and along the high terrace of the Hunter River. The two environmental factors most influential in the location of Indigenous sites are proximity to adequate water source and a slightly elevated position such as a stream bank, terrace, or low-angled foot slope. However, sites within the Central Lowlands have been identified in areas some distance from water and on ridges and hill slopes, suggesting that there are few environments within the Central Lowlands in which sites do not occur (Dean-Jones & Mitchell 1993).

Artefact scatters represent the most common Indigenous site type within the Hunter Valley, followed by isolated finds (ERM 2008). Other site types identified within the Hunter Valley include grinding grooves, potential archaeological deposits, scarred trees and Aboriginal Resources.

4.5. Aboriginal Cultural Heritage Sites

A search of the Aboriginal Heritage Information Management System (AHIMS) database revealed 40 Aboriginal cultural heritage sites within approximately 5 km of the Greta Train Support Facility study area. More locally, Table 2 lists all (12) Aboriginal cultural heritage sites within 1 km of the study area. The majority (42%) of these are stone artefact scatters, with 25% comprising isolated finds, 25% PADs, and 1 (8%) is grinding grooves site. The vast majority (83%) of sites are within 100 m of water, while the remainder (16%) are within 300 m of a water source.

- **Table 2 - Aboriginal sites recorded on AHIMS, within approximately 1 km of the study area.**

Site ID	Site Name	Easting	Northing	Site type	Landform	Artefact Number	Distance to Water	Subsurface testing
37-6-1312	Anvil Creek RTA 10	346876	6383693	Artefact Scatter	Lower Slope	2	10 m	No
37-6-1316	Anvil Creek RTA 14 IF	347523	6381821	Isolated Find	Lower Slope	1	30 m	No
37-6-1317	Anvil Creek RTA 15	347497	6381914	Artefact Scatter	Creek Bank/Lower Slope	300+	0 m	No
37-6-1318	Anvil Creek RTA 16 GG	347603	6381993	Grinding Groove	Creek bank	3	0 m	No
37-6-1319	Anvil Creek RTA 17	347555	6382486	Artefact Scatter	Upper Slope/Crest	2	100 m	No
37-6-1320	Anvil Creek RTA 18 IF	347514	6383070	Isolated Find	Mid Slope	1	300 m	No
37-6-1321	Anvil Creek RTA 19	347320	6383275	Artefact Scatter	Mid Slope	3	50 m	No
37-6-1322	Anvil Creek RTA 20 IF	346377	6383908	Isolated Find	Lower Slope	1	100 m	No
37-6-1323	Anvil Creek RTA 21	346233	6383950	Artefact Scatter	Upper Slope/Spur Crest	2	15 m	No
37-6-1369	Anvil Creek PAD 17	347968	6382047	PAD	Creek Bank, Floodplain, Creek, Terrace, and Lower Slope	NA	0 m	Yes
37-6-1370	Anvil Creek PAD 18	347289	6383607	PAD	Footslope	NA	0 m	Yes
37-6-1602	Anvil Creek PAD 21	346711	6384511	PAD	Creek Terrace	NA	200 m	Yes

4.6. Predictive Model for Aboriginal Occupation

Based on the search of the AHIMS database, the review of previous cultural heritage investigations completed within the region, and environmental factors, the following predictive model has been developed:

- The most common site type will be artefact scatters/open campsites followed by isolated finds;
- Sites will be most commonly associated with a water source and adjacent elevated landforms such as creek banks, specifically Sawyers Creek in the south of the study area or the northern tributaries of Anvil Creek;
- Surface scatters are more likely to be identified in eroding landscapes due to high levels of ground surface exposure;
- Stone artefacts are likely to be found in sub-surface contexts in PADs, meaning that survey may not identify the extent of Aboriginal cultural heritage values in the study area; and,
- Other sites which may occur include axe grinding grooves, however the likelihood of these site types occurring in the study area are low due to the general dearth of suitable outcrops of sandstone.

5. Field Survey

To complement and test the findings of the desktop assessment, a field survey was undertaken.

5.1. Aims

The aims of the survey were to:

- Identify Aboriginal cultural and/or archaeological sites in conjunction with representatives of the registered stakeholders;
- Identify areas of Potential Archaeological Deposit (PAD) where Aboriginal archaeological material may exist below the ground surface; and,
- Discuss recommendations for the management of any identified Aboriginal cultural heritage site or PAD, as well as any potential recommendations for further investigation (e.g. sub-surface test excavation in PADs) with representatives of the registered stakeholders.

Separate to the Aboriginal cultural heritage survey, but conducted at the same time, was a historical heritage survey, to identify any post-contact heritage sites.

5.2. Timing and Personnel

A field survey was undertaken on Wednesday, November 4th, 2009, by Joseph Brooke (Project Archaeologist, SKM), Vanessa Edmonds (Senior Archaeologist, SKM), Margaret Matthews (representative, Aboriginal Native Title Consultants), Rhonda Ward (representative, Ungooroo Cultural and Community Services) and Brian McGrady (representative, Lower Hunter Wonnarua Council Incorporated).

To accommodate the inclusion of the registered stakeholders (Mindaribba LALC and Yarrawalk Aboriginal Corporation) who missed out on the first field survey, a second survey was undertaken on the Tuesday, 22nd December, 2009. The second field survey was undertaken by Joseph Brooke (Project Archaeologist, SKM) and Ricky-Jo Griffiths (Sites Officer, Mindaribba LALC). The same methodology was utilised for both surveys. John Matthews also attended the survey, accompanying Margaret Matthews.

5.3. Methodology

The survey was conducted in pedestrian transects with all field participants walking across the study area, spaced 10 m apart, covering the entire study area, with particular attention given to areas of ground surface visibility or where the sub-surface was exposed. Ground surface visibility was noted, as well as the proportion of the sub-surface exposed, and previous ground disturbance.

All artefacts found were photographed, and their location recorded using a Trimble GeoXH differential GPS, which gives sub-metre accuracy. Once recorded, the artefacts were left *in*

situ. If numerous artefacts occurred within 1 square metre, all artefacts were recorded under one location point.

5.4. Results

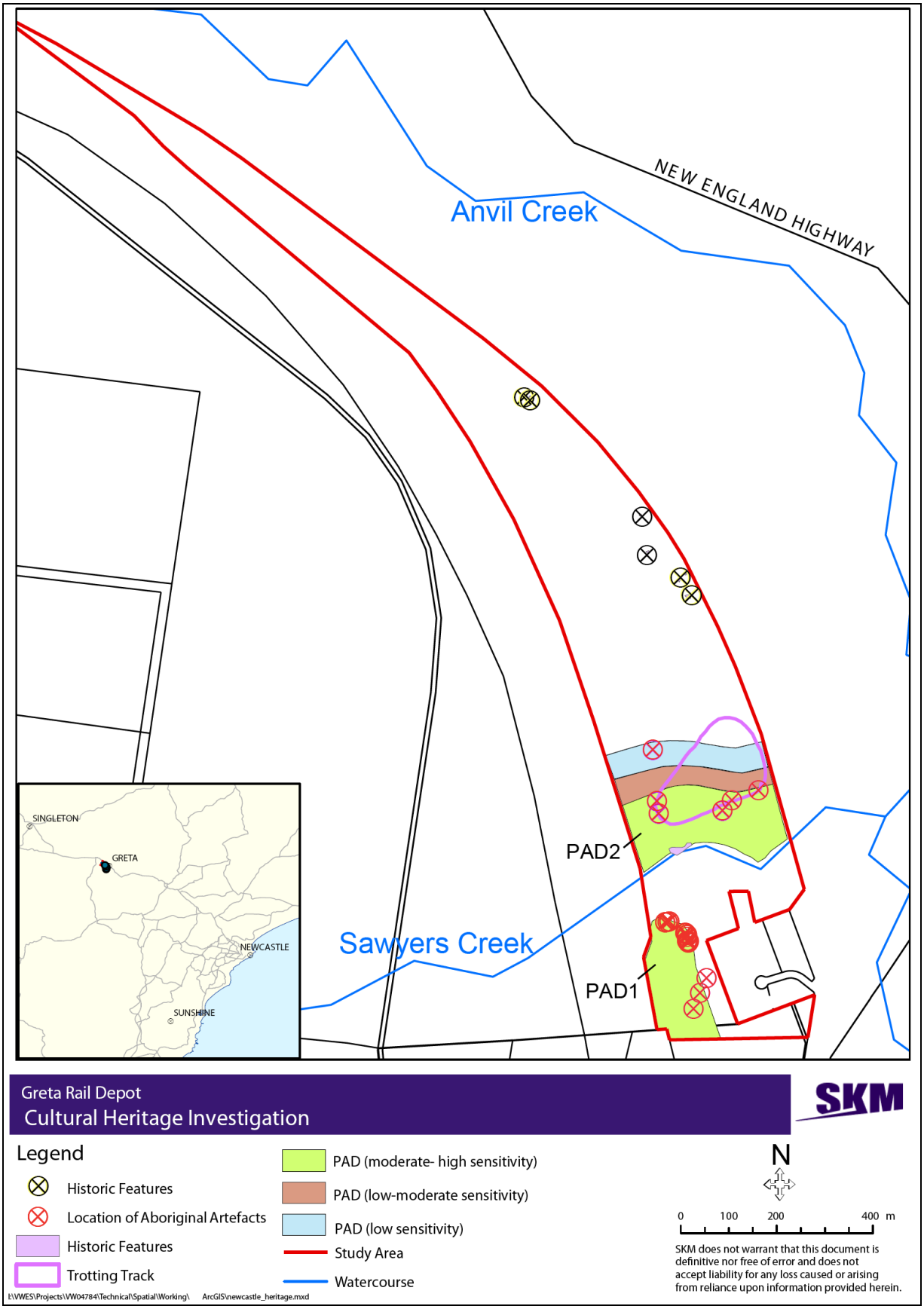
During field survey, a total of 151 flaked stone artefacts were identified, as well as two Potential Archaeological Deposits (PADs) (Figure 2). The locations of these are shown in Figure 2, while some examples of the artefacts identified are shown in Figure 3, Figure 4, Figure 5 and Figure 6; descriptions of the PADs are shown in Table 3.

Site boundaries were not defined at this stage of assessment, as any decision about definition would have been purely arbitrary, without further assessment.

Potential Archaeological Deposits were identified on the basis of background research, the presence of stone artefacts on the surface, and the presence of *in situ* sub-surface artefacts recorded in the wall of an eroding trench in PAD 1 (Figure 7). One hundred and thirty artefacts were located within or around the area of PAD 1, and 21 artefacts were located in PAD 2. All artefacts were found in areas of higher ground surface visibility, and mostly in areas that had been eroded or disturbed, so are likely to have originated from a near surface or sub-surface context.

Within and outside PAD 1, several artefacts were located in significantly disturbed areas. These artefacts are deemed to not be in their original context, due to obvious grading that has occurred there, as well as other previous known disturbance and works (e.g. Figure 8).

Ground surface visibility was variable across the study area, but was generally good (60%) on the southern side of Sawyers Creek due to the presence of an eroding trench (Figure 10), a vehicle track, other vehicle movement outside this, as well as other works (e.g. Figure 8). Ground surface visibility was poorer (15%) on the northern side of Sawyers Creek, (e.g. Figure 12) and generally low (less than 10%) north of this (e.g. Figure 13). Areas where visibility and sub-surface exposure were better to the north of Sawyers Creek were due to ground disturbance such as an informal horse trotting track that had been lightly graded (e.g. Figure 9), vehicle tracks, numerous historic mining works (e.g. Figure 14), as well as occasional more recent excavations.



- **Figure 2 – Map of artefact and PAD locations identified during the Aboriginal cultural heritage survey (historical features also shown).**

- **Table 3 - Potential Archaeological Deposits (PADs) identified during the field survey in the Greta Train Support Facility study area.**

PAD number	PAD location	Potential Archaeological Sensitivity	PAD Description	Associated Aboriginal Cultural Heritage Material
1	Southern side of Sawyers Creek in the south-west of the study area	High	Elevated, flat landform above floodplain of Sawyers Creek	130 flaked stone artefacts of predominantly silcrete and mudstone
2	Northern side of Sawyers Creek in the south of the study area	Moderate-High	Gently to moderately sloping land, including high bank of Sawyers Creek, within ~100 m Creek	20 flaked stone artefacts of predominantly silcrete and mudstone, including several backed and retouched artefacts (see Figure 6)
		Low-Moderate	Gently sloping land between ~100m and 150m of Sawyers Creek	Currently none
		Low	Gently sloping land between ~150m and 200m of Sawyers Creek	1 large yellow mudstone core

Discussion between attendants at the survey surrounded the significance of findings and potential recommendations. During the first survey, the representatives of the registered Aboriginal stakeholders did not see the finds as being unique or of great significance within the context of the Hunter Valley region. However, later, comments from stakeholders in AFG #2 were that these findings were of high significance to Aboriginal people. They agreed that test excavation should be undertaken to explore the nature of PADs where works are proposed. Attendants were pleased with Pacific National's intent to avoid as much cultural heritage as possible.

5.5. Conclusion

Due to the following factors, it was decided that sub-surface test excavation should be undertaken to explore the nature of PADs where works are proposed:

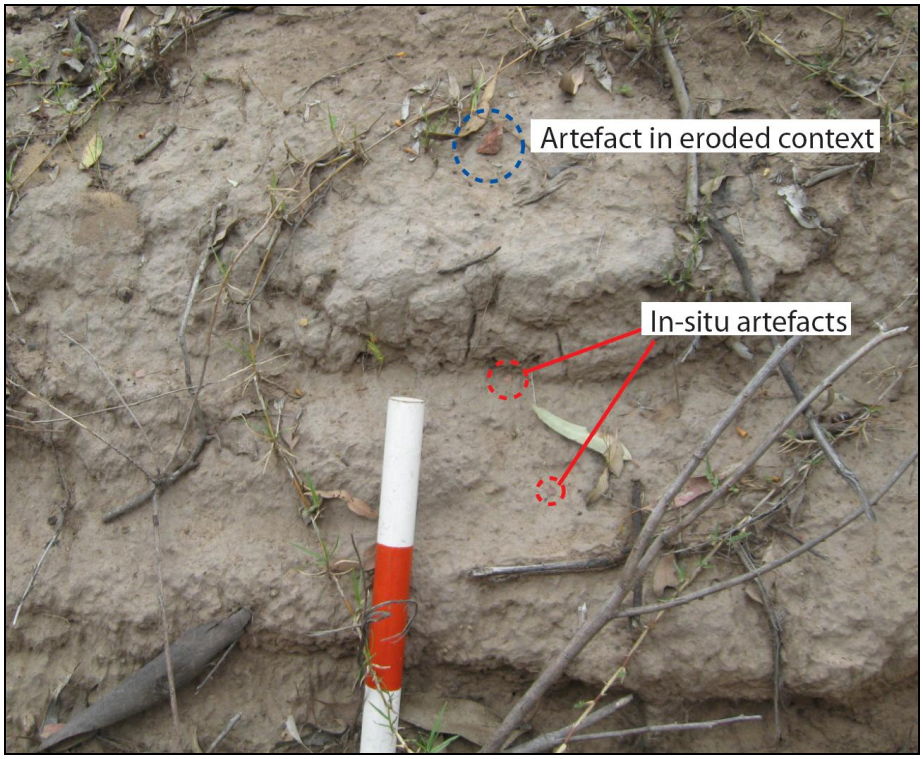
- There is a high likelihood of buried sub-surface deposit existing within the PADs;
- There is a high likelihood of at least some areas existing where these deposits are intact; and,
- There is the potential for these deposits to increase knowledge of Aboriginal occupation of this area, particularly considering the general dearth of previous excavation undertaken to date in the local region.

- **Figure 3 - Example of artefacts recorded in disturbed area in PAD 1.**

- **Figure 4 - Example of artefacts recorded in disturbed area in PAD 1.**

- **Figure 5 - Large core identified in disturbed context in dam wall, in low sensitivity area of PAD 2.**

- **Figure 6 – Artefacts identified in disturbed context in dam wall, in moderate-high sensitivity area of PAD 2**



- **Figure 7 - Example of eroding trench in PAD 1, showing two artefacts *in situ*, and one artefact on the eroded surface adjacent to the trench.**

- **Figure 8 - Disturbance and high ground surface visibility in PAD 1.**

- **Figure 9 - Trotting track (in foreground, right), looking east.**

- **Figure 10 - Eroding trench in PAD 1.**

- **Figure 11 - Area of high visibility in exposed silty sand alluvial sediments in PAD 1.**

- **Figure 12 – Example of low visibility north of Sawyers Creek.**

- **Figure 13 – Example of very low visibility north of Sawyers Creek.**

- **Figure 14 – Workings north of PAD 2 (potentially historical).**

6. Sub-surface Testing

6.1. Introduction

It was decided to undertake sub-surface testing within the study area to gain a better understanding of the nature, significance and extent of archaeological material identified during the field survey. This will enable management recommendations to be drafted that are more meaningful and appropriate to the sites identified. Another reason sub-surface testing was decided to be appropriate was to recognise the connection that Aboriginal people, including the registered stakeholders, have with the study are land.

6.2. Aims

The aims of the sub-surface testing were to:

- Test the archaeological sensitivity of PADs;
- Better determine the nature and extent of sites identified through surface material;
- Determine the intactness of any identified archaeological deposits; and,
- Test areas outside PADs in recognition of Aboriginal cultural sensitivity of the land.

6.3. Timing and Personnel

Sub-surface testing was undertaken on Monday 11th, Tuesday 12th, Wednesday 13th and Thursday 14th of January, 2010. Joseph Brooke (Project Manager and Archaeologist, SKM) supervised excavations due to his qualifications and experience in archaeological sub-surface testing. Registered stakeholders were invited to provide representatives who were fit and experienced in sub-surface test-excavation. Participants in sub-surface testing are listed in Table 4.

- **Table 4 - Participants in sub-surface test-excavations.**

Participants (Organisation)	Date(s) Attended
Barry French (Yarrawalk Aboriginal Corporation)	All dates
Dean Miller (Lower Hunter Wonnarua Council Incorporated)	All dates
Luke Hicky (Aboriginal Native Title Consultants)	Monday 11th January, Tuesday 12th January, Wednesday 13th January
Rhonda Ward (Ungooroo Cultural and Community Services)	Monday 11th January, Tuesday 12th January, Wednesday 13th January
Ricky-Jo Griffiths (Mindaribba LALC)	Monday 11th January, Tuesday 12th January
Ivan Smith (Mindaribba LALC)	Wednesday 13th January, Thursday 14th January

Participants (Organisation)	Date(s) Attended
Sam Ward (Ungooroo Cultural and Community Services)	Thursday 14th January
Katrina Cavanagh (Aboriginal Native Title Consultants)	Thursday 14th January
Joseph Brooke (SKM)	All dates
Robyn Jenkins (SKM)	All dates

6.4. Methodology

Only areas that are not able to be avoided by the Greta Train Support Facility were test-excavated. This is to ensure that areas that will not be impacted by construction were not unnecessarily disturbed by test-excavations. All excavation was undertaken manually, using hand tools (trowel and shovel) as appropriate. All excavated sediment was sieved by hand through 5 mm mesh using aluminium hoop-sieves; smaller mesh size (3.2 mm) was used where possible and practical (e.g. if the soil would pass through efficiently). Several test-pit sections were stratigraphically sketched to gain a sample representative of the different soil stratification encountered. Descriptions of the soil colour, acidity, texture and type were noted during excavations using a gardening pH kit and a Munsell colour chart.

The sub-surface testing program included 125 test-excavations using a combination of testing methods and locations, comprising:

- Two 1m x 1m test-pits (TPs) (one in PAD 1 and one in PAD 2);
- Eight transects of 50 cm x 50 cm shovel test-pits (STPs) – totalling 54 STPs;
- Twenty-nine 50 cm x 50 cm Cultural shovel test-pits (CTPs) at locations generally outside of the PADs, in the locations where geotechnical testing was proposed in recognition of the Aboriginal cultural sensitivity of the study area; and,
- Five transects of 20 cm x 20 cm shovel test-pits (HSTPs) just north of PAD 2 – totalling 40 HSTPs.

The specific methodology for each method is described below.

6.4.1. TPs

Both 1 m x 1 m TPs were located in areas of PAD; TP1 was located in PAD 1, and TP2 in PAD 2. The locations of the TPs were selected in lesser disturbed areas, to try and gain an understanding of the natural stratigraphy of the PADs.

These TPs were excavated in 5 cm spits to ensure tight control over the recording of any artefacts, features and soil changes encountered.

6.4.2. Shovel test-pits (STPs)

All STPs were excavated by shovel in 10 cm spits, using trowel, brush and dust-pans where required. Numbering of each STP was achieved by combining the Transect number with a letter of the alphabet (e.g. a, b, c, d…). For example, the 3rd STP excavated in Transect 5 was labelled STP5c. Within each transect, STPs were spaced 10 m apart (e.g. Figure 15). Due to requests in AFG #2, STPs were laid out in checkerboard pattern – meaning that STPs were excavated at alternating sides of the transect baseline.

Through discussions with sub-surface testing participants and from AFG #2, it was decided that wherever 5 or more artefacts were discovered in an STP, further STPs radiating out from the STP with 5 or more artefacts would be excavated to better determine the nature and extent of any further deposit. Several field participants mentioned that they thought 10 artefacts per STP should have been the threshold to require excavation of additional radiating STPs. Radiating (or radial) STPs were excavated in the four cardinal directions at distances of 5m from the original find. Radial STPs were labelled with the STP that they were radiating from, then numbered using roman numerals (e.g. STP7Ji, STP7Jii, STP7Jiii and STP7Jiv). Although the agreed threshold of 5 artefacts hadn't been reached (4 artefacts were recovered), radial STPs were excavated around STP1B as 4 artefacts was considered to be close enough to the arbitrary threshold to warrant further testing.

A total of 21 STPs were excavated in PAD 1, with prior disturbance breaking up the testing into 6 transects and limiting the amount of testing necessary there – this total includes 3 radial STPs. In PAD 2, a total of 33 STPs were excavated in 2 long transects aligned approximately perpendicular to Sawyers Creek – this total includes 10 radial STPs in PAD 2.

6.4.3. Cultural test-pits (CTPs)

In recognition of the Aboriginal cultural sensitivity of the study area to the registered stakeholders, and to Aboriginal people in general, a total of 29 CTPs were excavated throughout the study area (all but one were outside areas of PAD). As the registered stakeholders expressed particular concern that pending geotechnical testing might harm Aboriginal cultural heritage, these CTPs were excavated in all locations of proposed geotechnical testing (e.g. Figure 16).

All CTPs were excavated by shovel in 10 cm spits, using trowel, brush and dust-pans where required. Numbering of CTPs was purely sequential, starting at CTP1, ending at CTP29. Radial testing was proposed as per the STP methodology, though not required.

6.4.4. HSTPs

In conjunction with this Aboriginal Cultural Heritage Assessment, a Baseline Heritage Assessment was being undertaken that involved sub-surface excavation. Although not necessary for this assessment, to take advantage of the opportunity to increase the sample size of this study, all shovel test-pits excavated for the Baseline Heritage Assessment (called HSTPs in this report) were also recorded with the same scrutiny as for Aboriginal cultural heritage. Consequently, the results from these HSTPs have been included in this assessment.

All HSTPs were excavated by shovel in 10 cm spits. Each transect was spaced approximately 20 m apart, and HSTPs were spaced 20 m apart, forming a 20 m grid over the test area, just north of PAD 2. Numbering of HSTPs was sequential for each transect, e.g. Transect 1, HSTP1, 2, 3, etc., Transect 2, HSTP1, 2, 3, etc. Where finds (historic or Aboriginal) were encountered, further HSTPs were excavated radiating out in the four cardinal directions at half the distance from the find as the previous HSTP interval. Numbering of radial HSTPs followed the convention of a, b, c, d for first order radial HSTPs, and N, S, E, W, for second order radial HSTPs. For example, historic material was located in Transect 1, HSTP3, consequently, HSTP3a, 3b, 3c, and 3d were excavated at locations 10 m (half of 20 m grid interval) distances north, south, east and west of HSTP3. Further historic artefacts were uncovered in HSTP3b, consequently, HSTP3bN, 3bS, 3bE and 3bW were excavated at locations 5 m (half of 10 m first order radial distance) distances north, south, east and west of HSTP3. This method was used to determine the nature and extent of any deposit – though was only used for historic deposits, as no Aboriginal cultural heritage material was discovered using this method.

6.4.5. Limitations

Several STPs (STP4B, STP5A, STP5B, STP6A, STP6B, STP8C, STP8D, and STP8E) were not excavated due to the presence of significant disturbance and impenetrable materials, such as road base – the decision to cease excavation in these locations was discussed and agreed upon by all participants. The presence of sandstone bed-rock immediately below a thin veneer of topsoil prevented further excavation of several CTPs (CTP10, CTP16, and CTP20). Three proposed geotechnical testing locations could not be tested as they were located in old mine shafts, while two further locations were located in a disused quarry.

Radial STPs were not excavated in all directions in all situations due to physical constraints, or locations occurring outside the proposed impact zone of the Greta Train Support Facility. For example, a radial STP couldn't be excavated to the south of STP7a, as it would have been located in the creek bed. Additionally, a radial STP wasn't excavated to the west of STP7a, as it would have been located outside the construction footprint (impact zone) of the Greta Train Support Facility.

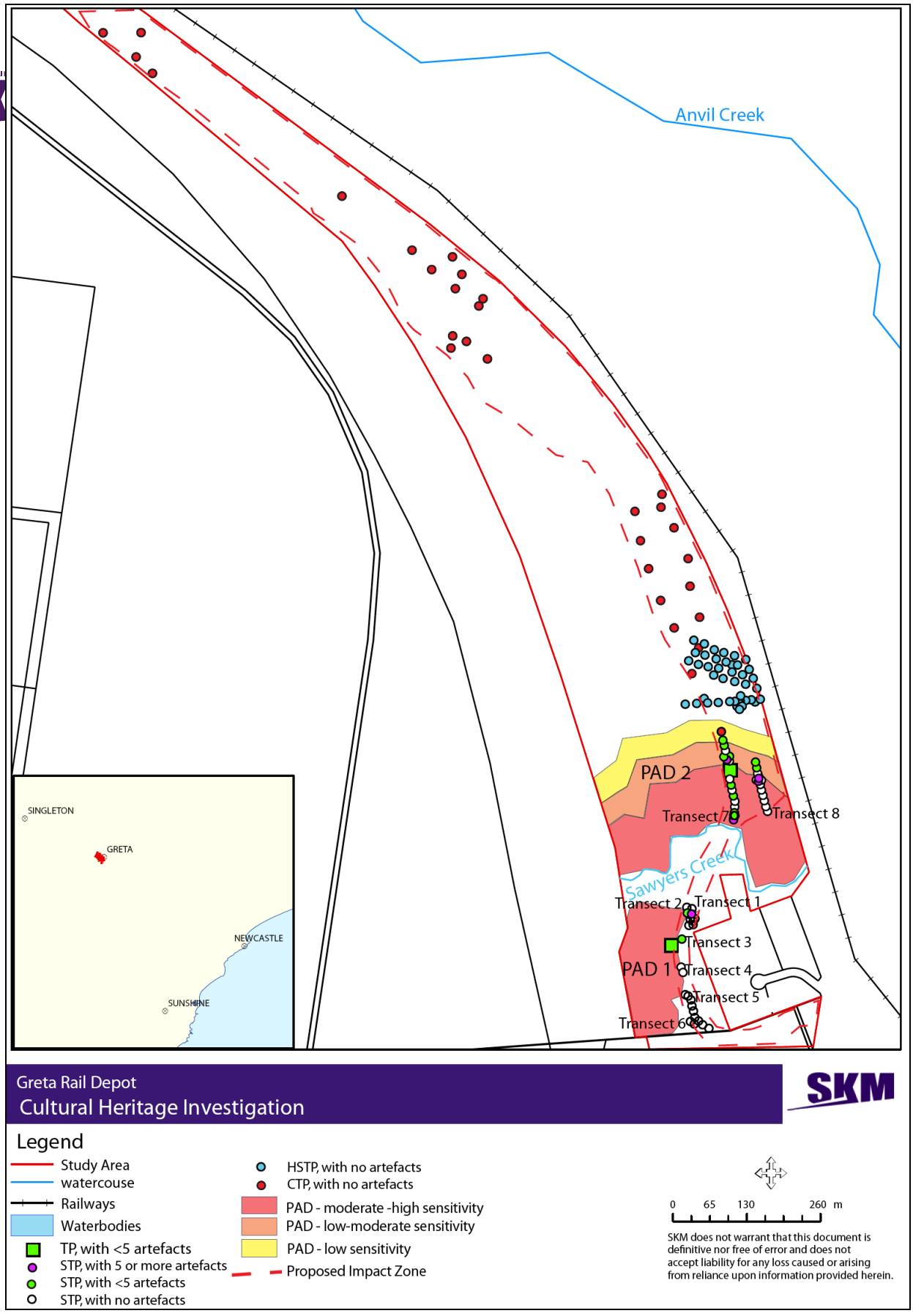
6.5. Results

A total of 125 test-excavations were undertaken as part of this sub-surface testing program (see Figure 17). As a result of the sub-surface testing a total of 90 new artefacts were recorded, 8 within PAD 1, and 82 within PAD 2. These artefacts form, with the results of the field survey, two discrete areas of past Aboriginal activity or archaeological cultural heritage *sites* (Sawyers Creek Artefact Scatter 1 and Sawyers Creek Artefact Scatter 2). These sites are in the vicinities of PAD 1 (Sawyers Creek Artefact Scatter 1 [AHIMS# 37-6-2165]) and PAD 2 (Sawyers Creek Artefact Scatter 2 [AHIMS# 37-6-2164]). The portion of these PADs subject to sub-surface testing are no longer PADs, as their archaeological potential has been determined through test-excavation. However, as much of the PADs weren't subject to testing, as they have been avoided by proposed works associated with the Greta Train Support Facility, these areas remain PADs.

Site Cards were submitted to AHIMS for both Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165) and Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164), including stone artefact and PAD features of each. Details of these sites are included below; significance of these sites and potential impacts to them are discussed in Section 7. Descriptions of artefacts recovered during sub-surface testing are included in Appendix D, while a basic analysis of this data is included in Section 6.5.4.

- **Figure 15 – Example of STPs being excavated along transect line.**

- **Figure 16 – CTP Excavation underway.**



- **Figure 17 – Locations of sub-surface testing and archaeological finds. Note that PAD 2 has been amended from Figure 2 due to updated, more accurate data regarding location of Sawyers Creek; PAD 1 extent has been updated to reflect mapped disturbance area.**

6.5.1. Sawyers Creek Artefact Scatter 1 (AHIMS#37-6-2165)

Site Location - The site is located on the southern side of Sawyers Creek on a flat, raised, alluvial terrace landform, including the sloped sides of the terrace, but not the floodplain below (see Figure 18). The site covers an area of approximately 223 m (N-S) x 100 m (E-W), though its shape is not uniform, additionally, the PAD feature of this site likely continues outside the study area to the west, though this was not able to be verified due to access restrictions.

Site Contents -This site consists of 130 flaked stone artefacts discovered during the field survey (e.g. Figure 3 and Figure 4), and 8 artefacts uncovered during sub-surface testing. The artefacts recorded during field survey lie in eroding eroded, and disturbed areas, consequently it is likely that this site was originally completely sub-surface. No areas of *in situ* deposit were discovered. Potential archaeological deposits to the north west of the area investigated during sub-surface testing are likely to be much more intact and have potential to contain large quantities of stone artefact material; this PAD is likely to extend further west (outside of the study area) along Sawyers Creek (see Figure 18 for estimated extent of PAD).

Artefact Density - The area of the site that currently has the densest recording of artefacts is along the previously excavated trench, where artefacts were found in densities up to 25 artefacts per m^2. However, this density may not be reflective of the true density as artefacts may have been washed into natural traps into concentrations, or may have been similarly dispersed. Within the area subject to sub-surface testing, the highest artefact density encountered was 4 artefacts in 0.25 m^2, which extrapolates to 16/m^2. It is likely that within this site, artefact concentrations occur in discrete locations and a sparse background scatter of artefacts occurs between concentrations.

Artefact Descriptions - The stone artefacts within this site are all flaked, and have been fashioned almost entirely from mudstone and silcrete, with 1 crystal quartz flake. Currently, no detailed description or analysis of the artefacts has taken place, except for those recovered during sub-surface testing (see Appendix D). Artefacts identified during survey were too numerous to analyse in the field, and were not collected, as not all were within the proposed impact zone, and at that stage, the design was still being finalised in order to minimise disturbance to any cultural material. Currently, there is not a sufficient sample size to undertake any analysis of these stone artefacts beyond pure description.

Previous Disturbance - The proposed impact zone is highly disturbed due to previous land-use activities, including a large graded area, mine subsidence from underground coal mining, excavation of trench, movement of heavy vehicles and dumping and picking up of fill materials. The area investigated through sub-surface testing showed many signs of prior disturbance on and below the ground surface. Figure 18 shows the boundaries of the area estimated to have been significantly disturbed. The majority of this area is likely to have had all *in situ* deposits destroyed,

though the fringes of the disturbed area are likely only disturbed to a shallower depth (~10 cm – 20 cm).

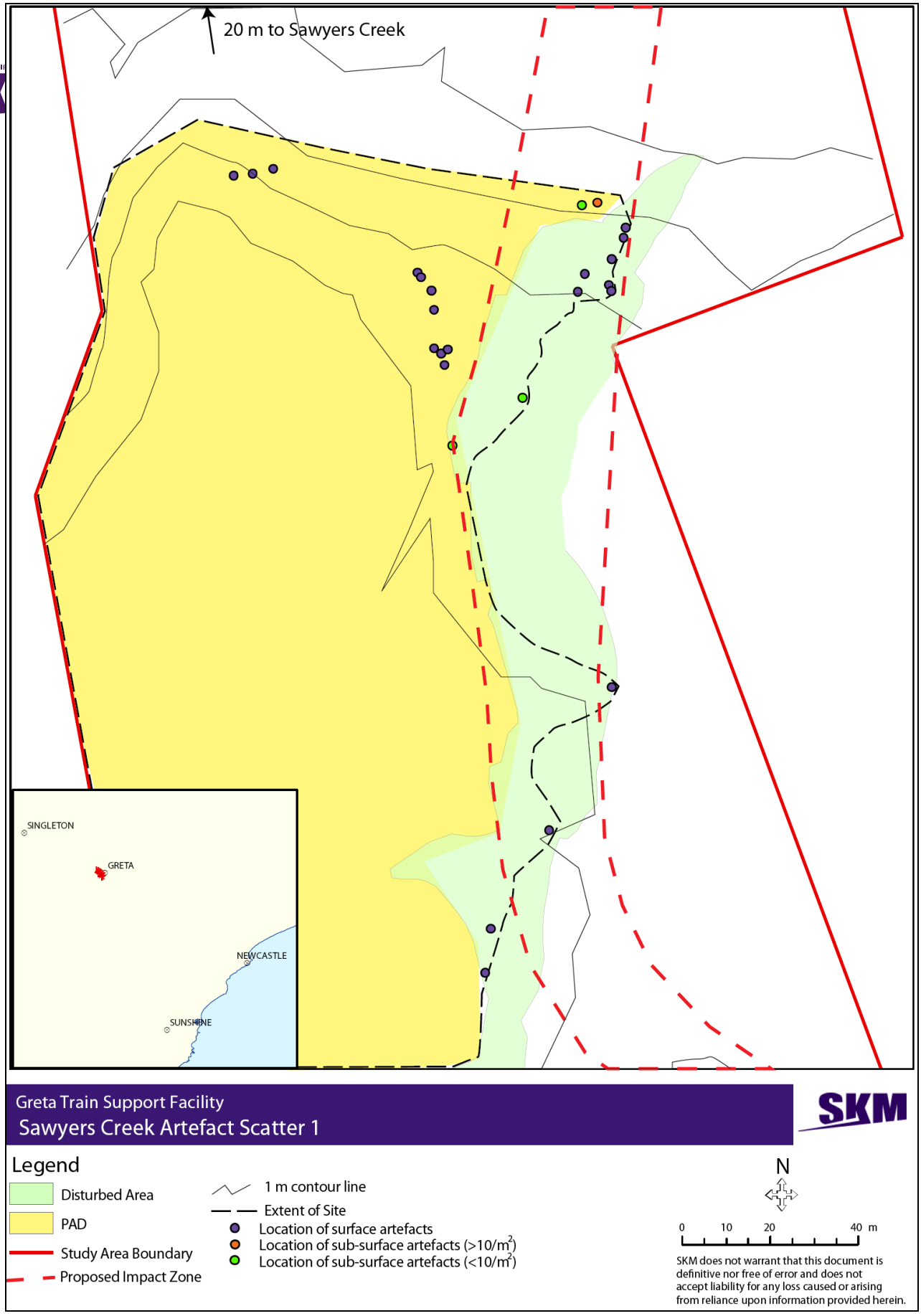


Figure 18 – Plan of Sawyers Creek Artefact Scatter 1, showing locations of artefacts and PAD.

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6.5.2. Sawyers Creek Artefact Scatter 2 (AHIMS#37-6-216)

Site Location - The site is located on the northern side of Sawyers Creek on the high bank and lower and middle slopes of the rolling hill/undulating plain landform that extends north of Sawyers Creek (see Figure 19). The site covers an area of approximately 312 m (E-W) x 150 m (N-S, perpendicular to Sawyers Creek). The site follows Sawyers Creek, with the PAD features extending to 150 m from the creek. Additionally, the PAD feature of this site likely continues outside the study area to the west and possibly to the east (on the other [eastern] side of the railway line), though this was not able to be verified due to access restrictions.

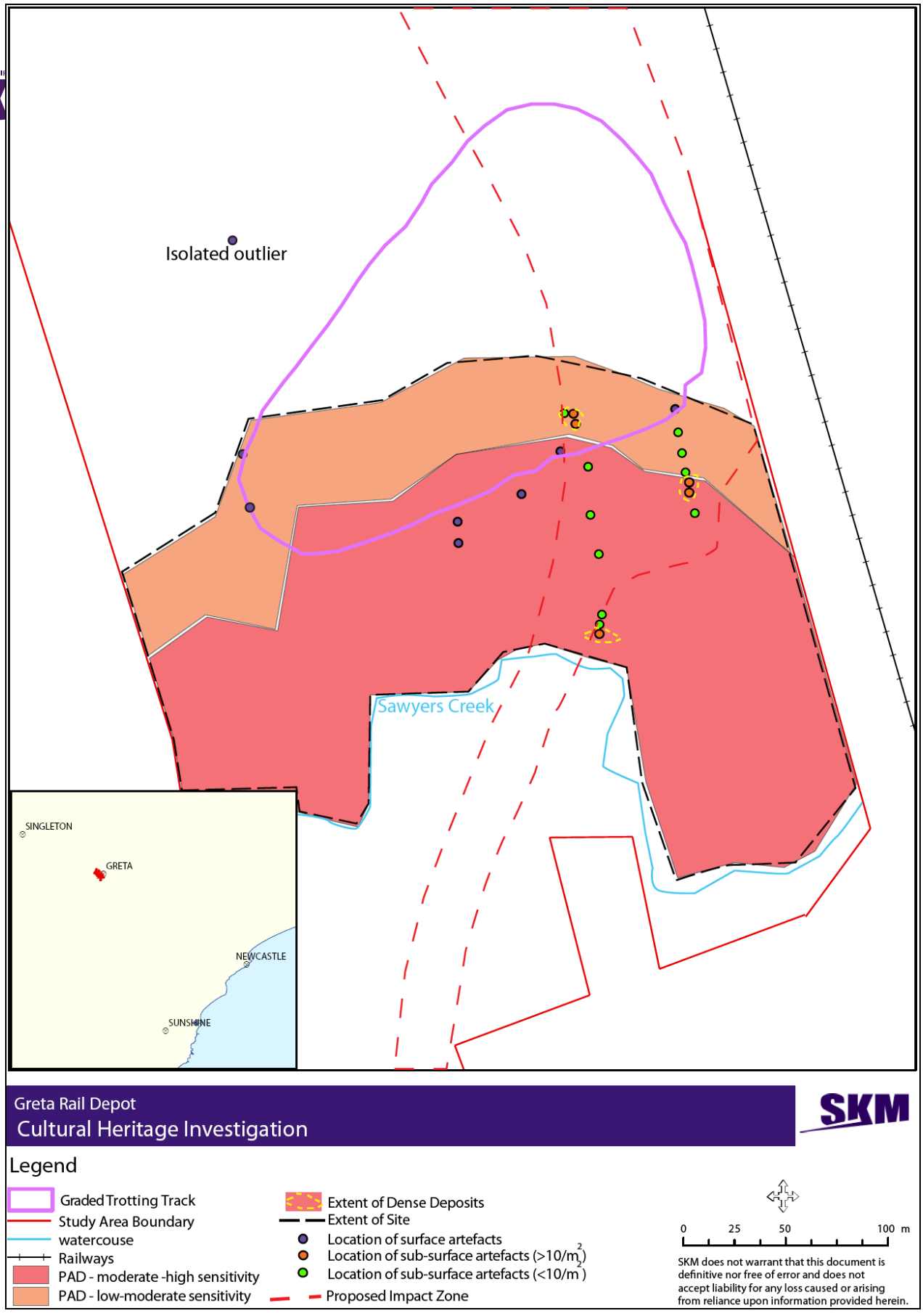
Site Contents - This site consists of 20 flaked stone artefacts discovered during the field survey (e.g. Figure 6), and 82 artefacts uncovered during sub-surface testing. The artefacts recorded during field survey were discovered in disturbed areas (e.g. graded trotting track, eroding dam walls), consequently it is likely that this site was originally completely sub-surface. One area where deposit appears to be mostly *in situ* occurs on the banks of Sawyers Creek, within a cluster of trees up to ~7 m from the creek bank. One isolated outlier (Figure 5) was located on the edge of an eroding dam. Potential archaeological deposits exist outside the area subject to sub-surface testing, to the east and west, which will not be disturbed by Greta Train Support Facility, and are likely to retain similar deposits to those encountered during sub-surface testing. If intact deposits exist on the eastern side of the railway, between the railway and Anvil Creek, they are likely to be of much higher significance and density.

Artefact Density - This site has several discrete concentrations with sparse (<1/m^2) background scatter of artefacts in between. The densest artefact concentrations were discovered in two locations, both yielding 26 artefacts from 0.25 m^2, which extrapolates to 104 artefacts/m^2.

Artefact Descriptions - The stone artefacts within this site are all flaked, and have been fashioned predominantly from silcrete (76% of assemblage), with a quarter (24%) of the assemblage of mudstone and one flake of an unidentified medium to coarse-grained volcanic material identified during the survey. Currently, only detailed description and analysis has been undertaken of the artefacts recovered during sub-surface testing (see Appendix D). Further detail on this portion of the stone artefact assemblage is given in Section 6.5.4. Artefacts identified during survey were too numerous to analyse in the field, and were not collected, as not all were within the proposed impact zone, and at that stage, the design was still being finalised in order to minimise disturbance to any cultural material.

Previous Disturbance - The whole of the site is moderately disturbed except for a concentration on the bank of Sawyers Creek which lies within a cluster of trees up to ~7 m from the creek bank. A graded trotting track cuts through the north of the site, and one dam and an eroding dirt track lie in

the south. Slope wash is eroding parts of the site surrounding more significant disturbance, such as fill introduction, excavation, tracks, etc, due to the lack of vegetation.



- **Figure 19 - Plan of Sawyers Creek Artefact Scatter 2, showing locations of artefacts and PAD.**

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6.5.3. Stratigraphy

The soil profiles recorded during excavation neatly fit in with the soil descriptions provided for the Branxton and Rothbury land systems in Section 4.3.3. Based on the findings of the sub-surface testing, the stratigraphy of the study area can be broadly described by the following:

- Within the raised landform classified as PAD1 where Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165) is located, the stratigraphy conformed to that recorded in TP1 (see Figure 20), which was generally light greyish brown, grey or brown silt, often with orange sand scattered throughout or in discrete inclusions, grading to drier, sandier deposit, with no distinct change in sediment before a clear change to mottled yellowy orange/brown sterile clay at approximately 30 cm to 50 cm. Clay was sometimes immediately preceded by increasing ferrugenised ironstone regolith gravels, which usually continued into the clay layer. Clay was encountered at shallower depths on the slopes of the terrace, and at the interface with the Sawyers Creek floodplain, clay was encountered at around 20 cm.
  - Exceptions to this soil profile were noted in areas of high disturbance, where introduced material was encountered mixed with local materials and historic artefacts.

- Within the slopes above the northern side of Sawyers Creek classified as PAD2 where Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164) is located, the stratigraphy generally conforms to that recorded in TP2. This was which was generally brown to light brown loamy silt, before a clear change to mottled yellowy orange/brown sterile clay at approximately 20 cm - 30 cm. The depth of sediment was generally shallower than in PAD1. Depth of sediment generally increased with proximity to Sawyers Creek, with sediments as deep as 57 cm on the banks of Sawyers Creek more reflecting the soil profile of PAD 1, while more than 20 m from Sawyers Creek, sediment depth was more uniform at around 15 cm – 20 cm. Further than 20 m from the creek bank, all sediments showed signs of disturbance ranging from light, shallow disturbance to discrete areas of deeper, more extensive excavation or grading.
  - Exceptions to this soil profile were noted in areas of high disturbance, where introduced material was encountered mixed with local materials and historic artefacts. Interestingly in STP7J, although impenetrable clay was encountered almost immediately (between 4 cm and 10 cm) due to previous excavation for what appeared to be a drainage channel, this STP still yielded 26 stone artefacts. This suggests that although prior disturbance may have compromised stratigraphic integrity in much of the study area, particularly PAD2, stone artefacts still remain in discrete areas of concentration, which may not be dislocated much from their original context.

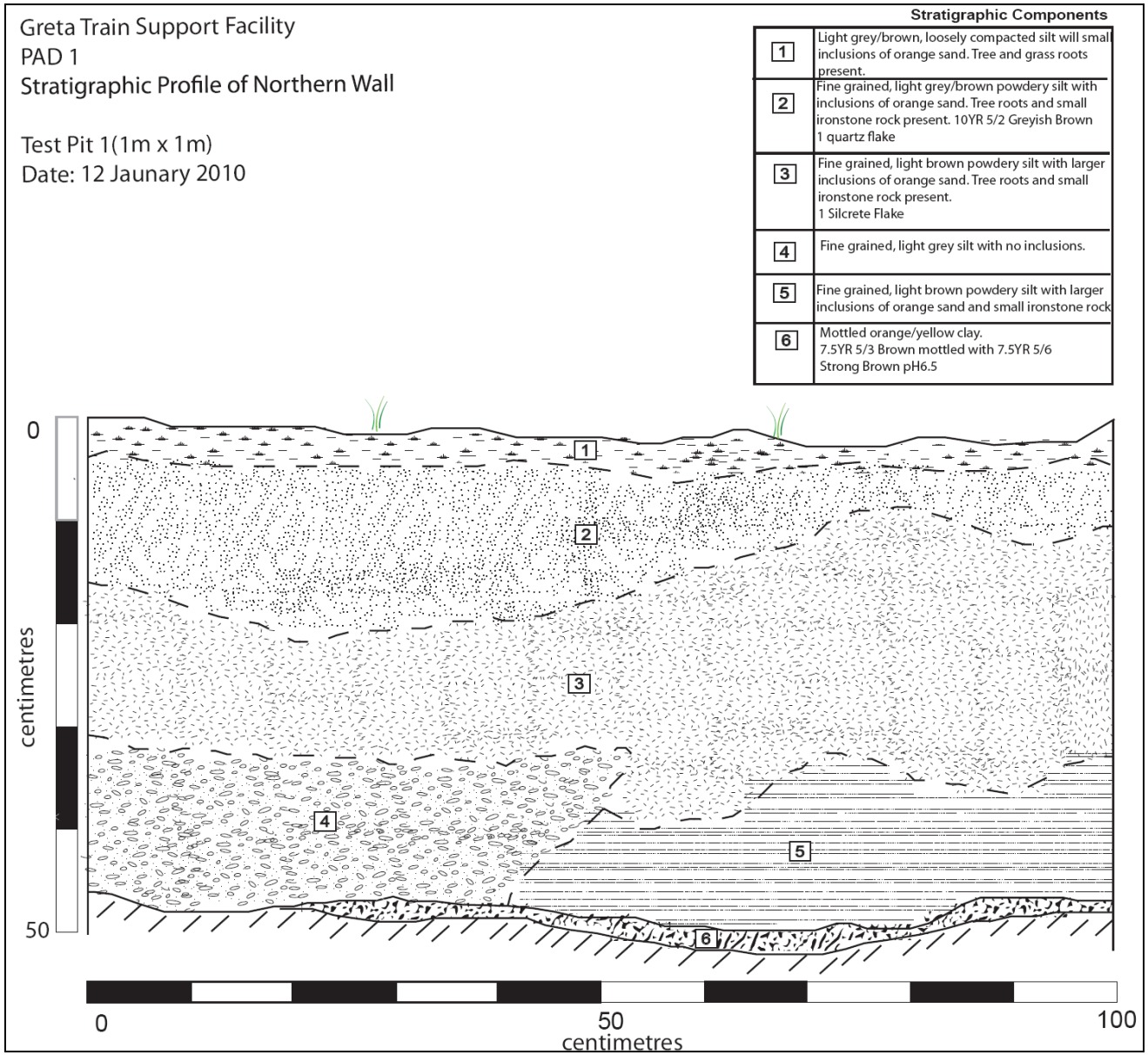

Figure 20 – Stratigraphic section drawing of TP1, northern wall.

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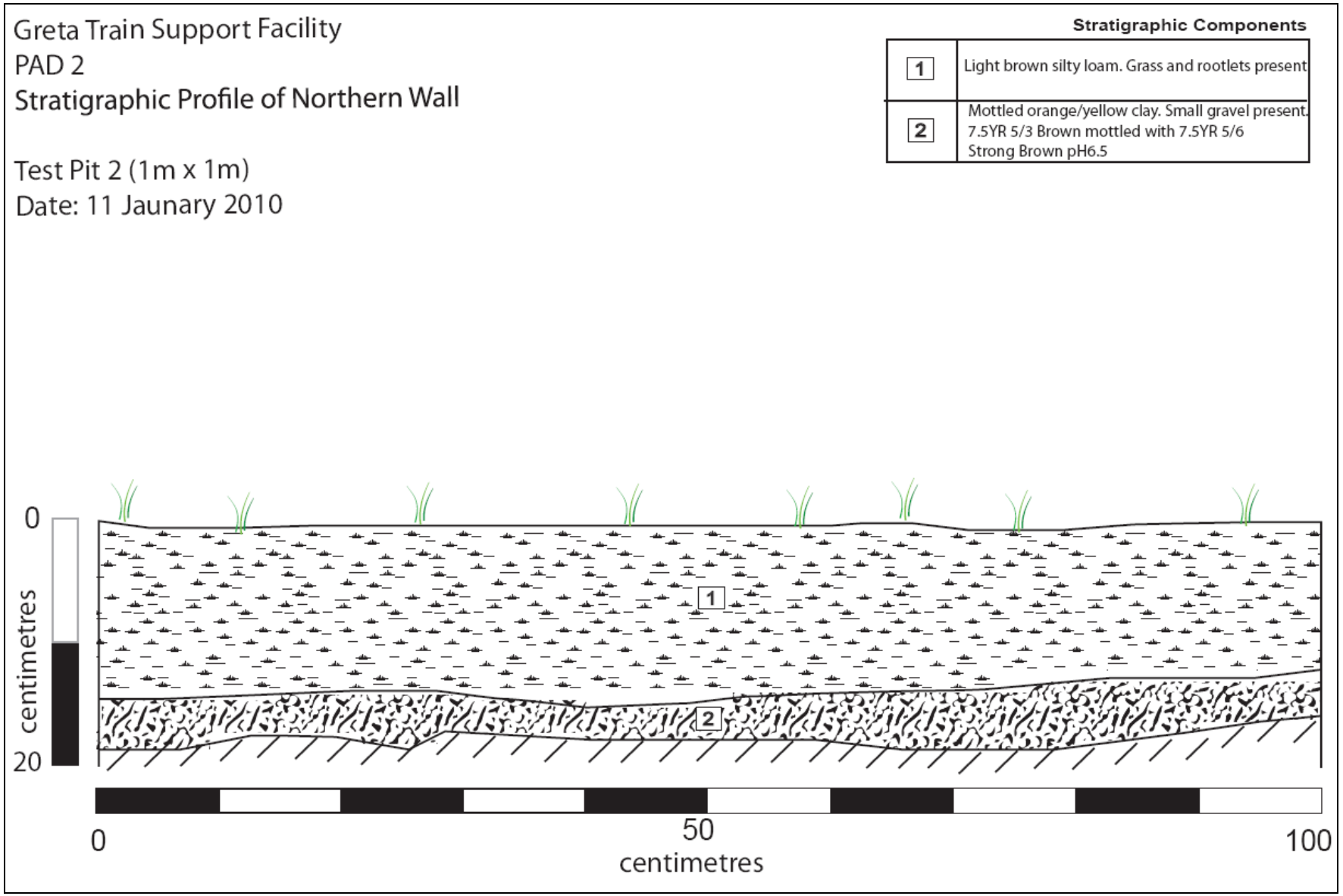


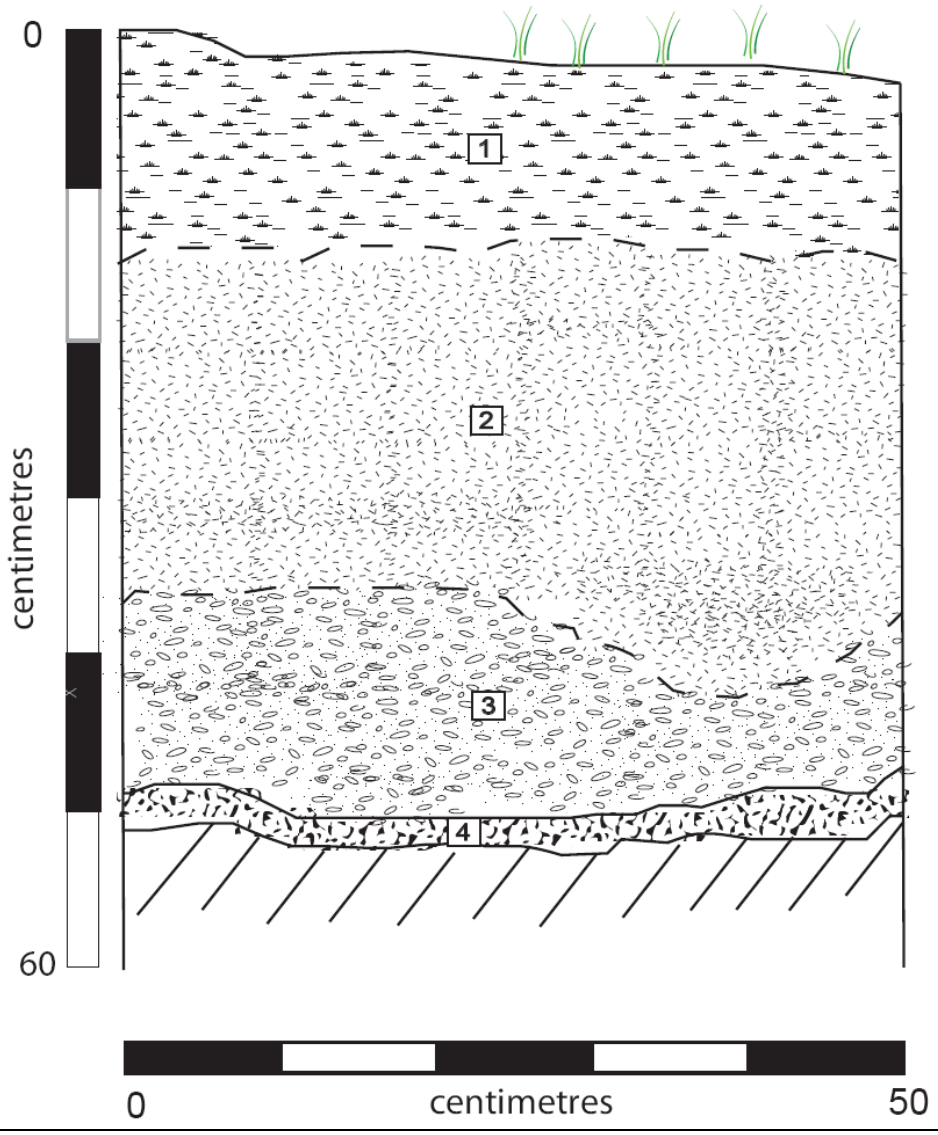
- **Figure 21 - Stratigraphic section drawing of TP2, northern wall.**

Greta Train Support Facility
PAD 1 - Transect 1
Stratigraphic Profile of Northern Wall

STP1B (50cm x 50cm)
Date: 13 Jaunary 2010

Stratigraphic Components

1	Light grey/brown, loosely compacted silt will small inclusions of orange sand. Grass roots present.
2	Brown, moist, loosely compacted silt with small sand inclusions. Grass rootlets present. 7.5YR 4/4 Brown pH6 1 Silcrete artefact.
3	Light yellow/brown silty sand. 2 Silcrete artefacts
4	Mottled orange/yellow clay. 7.5YR 5/3 Brown mottled with 7.5YR 5/6 Strong Brown pH6.5



- **Figure 22 - Stratigraphic section drawing of STP1b, northern wall.**

6.5.4. Stone Artefact Analysis

This section briefly examines the stone artefacts recovered during sub-surface testing; the data on which this analysis is based are in Appendix D. Currently, there is not a sufficient sample size of stone artefacts to undertake any analysis of the artefacts from Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165), beyond pure description. Additionally, only artefacts recovered during sub-surface testing were described, as surface artefacts were not collected during the field survey. As a result, only artefacts recovered from Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164) during sub-surface testing are included in this analysis.

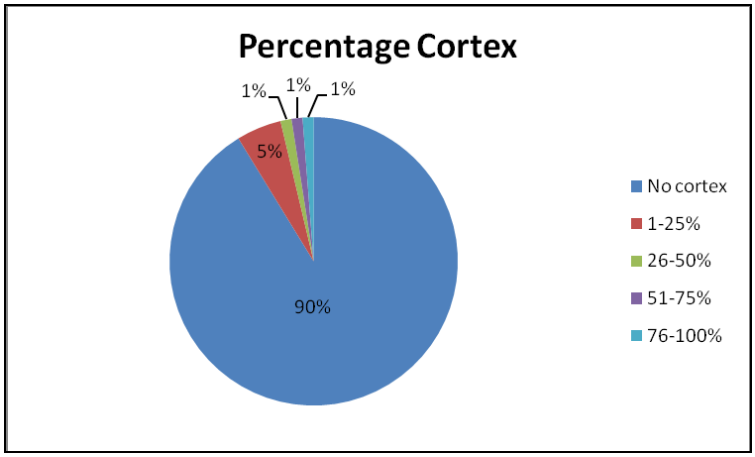
The following summary analysis is based upon a relatively small sample size (n=82). Consequently, only broad inferences are made here.

The average maximum dimension of artefacts was 18.9 mm, and the average weight was 1.5 g, which suggests that the assemblage is made up of generally small, light artefacts. The vast majority (90%) of artefacts displayed no original cortex, with only 3% retaining more than 25% cortex (Figure 23); this implies that the assemblage contains few primary reduction flakes. Over 90% of artefacts showing dorsal features retained 1, 2 or 3 negative scars from prior flake removal (Figure 24). On the surface this would suggest a less reduced assemblage; however, considering the small size of artefacts, this result is not particularly significant.

The assemblage is highly fragmented (Figure 25), with only 30% of flakes being complete. This is likely to represent post-depositional processes, as the excavated deposit was often mixed with recent historical material, and showed signs of other recent disturbance (e.g. STP7J).

A total of 10 artefacts (12%) showed signs of secondary retouch or use, with 5 (6%) identified as formal tools – 3 backed microliths, 1 with a concave scraper edge, and another with a standard scraper edge. Presence of tools can suggest particular activities and also later reduction stage activities taking place within a site. Recent findings inland of Sydney (Robertson *et al.* 2009) suggest multiple uses for backed microliths, scrapers were also used on multiple materials, so it is difficult to infer any specific activities from the presence of these tools without microscopic residue and wear analysis.

Most artefacts were recovered from relatively shallow deposits. Just less than 40% of artefacts were recovered from between 0cm and 10 cm, just over 40% between 10 cm and 20cm, and the remainder (approximately 22%) were recovered at depths of 20 cm to 30 cm. No artefacts were found below 30 cm in Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164).



- **Figure 23 - Percentage Cortex in artefacts from Sawyers Creek Artefact Scatter 2; n=82.**

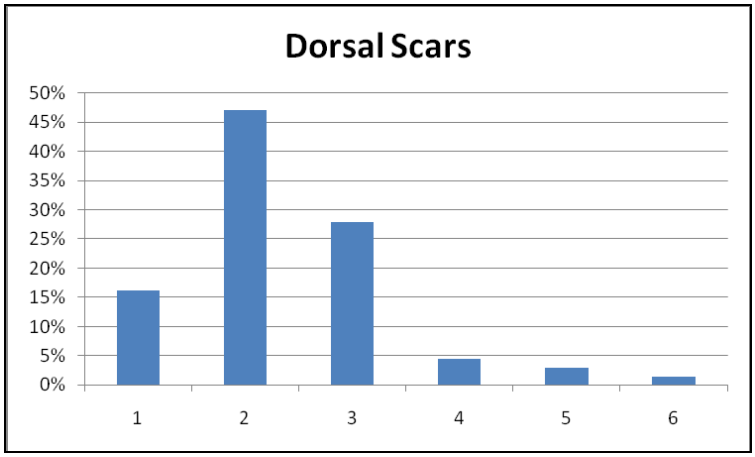
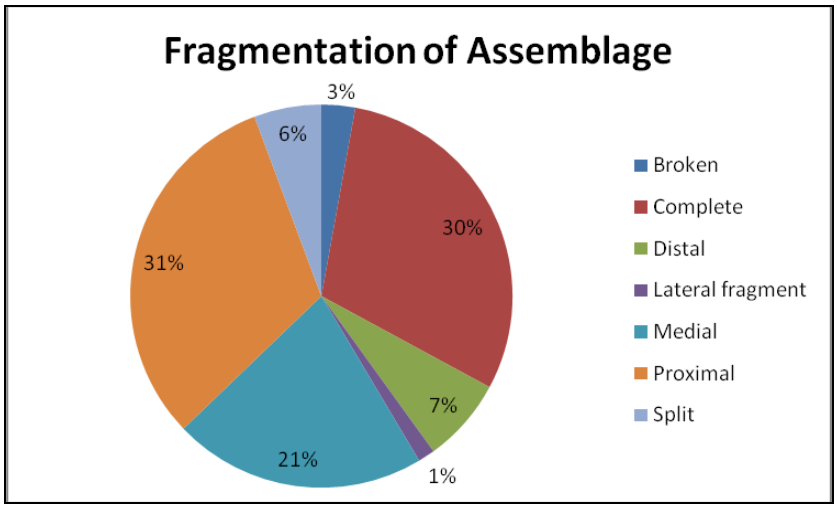


Figure 24 – Percentage breakdown of artefacts displaying negative scars on the dorsal surface; n=68.



- **Figure 25 - Percentage Fragmentation of Assemblage.**

6.5.4.1. Analysis Summary

In summary, it appears that the artefact assemblage recovered from Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164) during sub-surface testing reflects later reduction stage flaking activities, and potentially some raw material rationing due to the small size of artefacts in the assemblage and amount of reduction. Possible explanations for the relatively large proportion of formal tools and utilised artefacts could include the following:

- There is a high discard rate of worked stone artefacts, possibly indicating activities such as resource exploitation occurring in this area.
- Raw materials were not rationed and were readily and locally available.
- Tool manufacture and/or maintenance were occurring on-site.

Further analysis should be undertaken once a larger sample is acquired, such as following any future salvage or collection of material within Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164). Investigation into the locations of raw material acquisition areas (e.g. quarries) could yield interesting results in regards to raw material rationing, risk minimisation and also into how populations moved across and used the landscape.

6.6. Discussion

Two Aboriginal sites were recorded from the combined results of the field survey and the sub-surface testing, Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165), and Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164). The desktop assessment predictions that open, stone artefact scatters, including sub-surface deposits, would be located on raised ground adjacent to creeks was borne out in the results of the field survey and sub-surface investigations. Both sites are located in close proximity to Sawyers Creek and clearly reflect use of this riverine resource area. Waterways were and remain important locations for Aboriginal people, not purely for food and water resources, but also as areas of leisure, as well as spiritually significant parts of the landscape.

No cultural material was located near the ephemeral drainage lines in the north of the study area; the reasons for this may be twofold. Firstly, the study area is quite thin in the north, so there is less chance cultural material will occur here. Secondly, it may reflect concentration on reliable, permanent water sources, such as Sawyers Creek.

7. Significance assessment

The Significance Assessment for Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165) and Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164) is shown in Table 5. Details of the significance criteria and significance assessment process are shown in below in Sections 7.1 and 7.2.

7.1. Scientific significance assessment

Aboriginal site significance assessments need to consider both the scientific and social or cultural values of a site. Research potential or scientific significance of an indigenous archaeological site can be assessed by utilising the criteria set out below. Social or cultural values of a site can only be established through Aboriginal consultation.

Categories used for assessing scientific significance for Aboriginal archaeological sites are described below. Ratings are low, moderate or high.

- **Site integrity –** The integrity of a site refers to its state of preservation, or condition. A site can be disturbed through a number of factors among which are; natural erosional processes, destructive land use practices or repeated use of a site in the past by both humans and animals.
- **Site structure –** Structure refers to a site's physical dimensions, that is, size and stratification, or sub-surface deposits. A large site or a site with stratified deposits has more research potential than small sites and/or surface scatters. Sometimes however, specific research questions may be aimed at smaller sites in which case they would be rated at a higher significance than normal. Site structure cannot be assessed for scarred trees or isolated artefacts.
- **Site contents –** This category refers to the range and type of occupation debris found in a site. Generally, complex art sites, extensive quarries with associated debris and surface sites that contain a large and varied amount of organic and non organic materials are considered to have greater research potential than those sites with small, uniform artefacts, single motif art sites and small quarries with little or no debris. With scarred trees contents may refer to the size and type of scar or how many there are on the one tree.
- **Representativeness –** Representativeness refers to how often a particular site type occurs in an area and requires some knowledge of the background archaeology of the area or region in which a study is being undertaken. Generally, if a site is rare or unique in some way then it is highly significant, although in one sense all archaeological sites are unique features in the landscape and should be preserved. In areas where little archaeological research has been undertaken or where widespread disturbance of the landscape has occurred any new site is likely to be considered significant.

7.2. Aboriginal significance assessment

The significance of a site does not relate only to its scientific or research value. Aboriginal people's views on the significance of archaeological sites are usually related to traditional, cultural and educational values, although most Aboriginal people also value any scientific information a site may be able to provide.

Aboriginal significance was assessed from consultation with the registered stakeholders in AFG meetings, by phone or in writing, and from consultation with stakeholder representatives during field assessment. It should be noted that Aboriginal significance may not reflect the views of every single member of the community.

Discussions with Aboriginal stakeholders has revealed a strong attachment to the area and identified that nearly all archaeological sites are highly significant as reminders of the Aboriginal presence and connection to the land. Scott Franks (Yarrawalk Aboriginal Corporation) stated that he considered the sites to be of high sensitivity to Aboriginal people in general and specifically to the Wonnarua people. Franks stated that he was concerned that the site was part of the little Wonnarua land left in the Hunter Valley that was relatively undisturbed/developed. Rhonda Ward (Ungooroo Cultural and Community Services) and Margaret Matthews (Aboriginal Native Title Services) stated that both sites discovered were very important and of high significance to Wonnarua people. Despite several efforts made by the author to obtain further information from the other Aboriginal stakeholders regarding cultural significance following completion of the assessment, no further inputs were received. Responses were hindered by illness and absence of key representatives of the remaining stakeholders, i.e. MLALC and Lower Hunter Wonnarua Council Incorporated.

- **Table 5 – Significance Assessment for Sites and Places recorded as part of this investigation**

Site Name (AHIMS Site No)	Site Type	Integrity	Structure	Contents	Representation	Overall Scientific significance	Aboriginal Significance
Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165)	Archaeological Site – Isolated Artefact	**Moderate** – Site has been significantly disturbed in parts by previous land-use – e.g. grading, etc., as well as natural erosion exacerbated by vegetation clearing; though does retain significant areas where deposits are likely to be mostly intact	**Moderate** – Site has potential to contain intact stratified deposits up to ~ 60 cm in depth, though more disturbed	**Low-Moderate** – Artefact density not high and raw materials and artefact types are common within the region, however, has the potential to contain sub-surface features, such as hearths in more intact PAD deposits	**Low** – Artefact scatters of this size are common to the local area and region, and PAD occurs elsewhere along Sawyers Creek, Anvil Creek, and other waterways in the local area	**Low-Moderate**	**High**
Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164)	Archaeological site –Sub-surface archaeological deposit and potential archaeological deposit	**Low-moderate** – Site shows signs of disturbance throughout, e.g. mixed deposits and erosion, except for small area within 7m of Sawyers Creek under stand of trees – this area has some research potential to explore the nature of occupation in this generally poorly investigated region; western edge of this PAD may also be more intact	**Low-Moderate** – Site extent is not particularly small, but depth of deposit is quite shallow, except close to Sawyers Creek	**Moderate** – Raw materials and artefact types are common within the region, however, has some potential to contain sub-surface features, such as hearths close to bank of Sawyers Creek with denser deposits	**Low** - Artefact scatters of this size are common to the local area and region, and PAD occurs elsewhere along Sawyers Creek, Anvil Creek, and other waterways in the local area	**Low-Moderate**	**High**

8. Impact Assessment

Based on the results of the Significance Assessment above, this Impact Assessment aims to examine the nature of any impact that the Greta Train Support Facility will have on the identified Aboriginal Cultural Heritage sites.

Construction of the Greta Train Support Facility will result in impact within the study area in the following ways:

- Access road;
- Rail tracks;
- Maintenance facility structures;
- Administration buildings;
- Sealed storage areas; and,
- Provisioning shed.

8.1. Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165)

Only the access road to the Greta Train Support Facility will impact upon Sawyers Creek Artefact Scatter 1 (see impact zone in Figure 18, and design drawings in Appendix A). This road was previously aligned along the western boundary of the study area, hence traversing predominantly previously undisturbed areas of this site. Additionally, several buildings were initially proposed to be located on the north-eastern edge of Sawyers Creek Artefact Scatter 1. However, Pacific National was able to realign this road to avoid much of the undisturbed areas of the site and relocate the buildings into the north of the study area away from Aboriginal cultural heritage sites. The road will now be aligned within the previously disturbed graded area, highlighted in Figure 18, and parts of which are shown in Figure 8.

The majority of this site will not be disturbed by the Greta Train Support Facility, and the areas that will be impacted have suffered degradation from prior land use and erosion. The more intact parts of this site have been avoided by Pacific National's realignment of their access track. Although this site has been given a low-moderate overall scientific significance, the areas that will be impacted by the construction of the Train Support Facility have been previously disturbed and have low archaeological (scientific) significance and have lower cultural significance to the Aboriginal stakeholders.

8.2. Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164)

The main disturbance proposed in the area of Sawyers Creek Artefact Scatter 2 will result from construction of the access road, and rail track (see impact zone in Figure 19, and design drawings

in Appendix A). The road has been realigned to avoid some of the less disturbed PAD part of this site in the west of the study area.

Proportions of this site have avoided being impacted by the Greta Train Support Facility, due to design changes, such as moving buildings and realignments of infrastructure. However, one small area of intact, moderately dense deposit and two other areas of disturbed, moderately dense deposit will be impacted by the access road and one section of rail track. Although this site has been given a low-moderate overall scientific significance, the several areas of denser archaeological deposit that will be impacted by the construction of the Train Support Facility are of moderate archaeological (scientific) significance and have some research potential. Consequently, salvage of these locations has been recommended.

- **Table 6 – Summary of sites within the study area and impacts to them. Note, only summary management is listed here for detailed management measures, see Section 9.**

AHIMS Site Number	Site Name	Site Type	Scientific Significance	Aboriginal Significance	Impacted by Proposal	Management
37-6-2165	Sawyers Creek Artefact Scatter 1	Artefact Scatter and PAD	Low-Moderate	High	Part impact	Collection and protection
37-6-2164	Sawyers Creek Artefact Scatter 2	Artefact Scatter and PAD	Low-Moderate	High	Part impact	Salvage, collection and protection

9. Management Recommendations

9.1. Strategies to mitigate impact

Recommendations for impact mitigation strategies for the places and sites identified are presented in this section. These strategies have been formulated utilising the results of this Cultural Heritage Assessment, including the Significance Assessment and Impact Assessment sections, including consultation with and the support of registered Aboriginal stakeholders. This consultation included discussions of different management options with registered stakeholder representatives during fieldwork activities, AFG meetings and telephone and email conversations. All comments following provision of draft recommendations and this report were in support of the recommendations included below.

There are several principles to the following management recommendations

- First and foremost, impact avoidance should be attempted. Where avoidance is not possible, impact mitigation strategies are required.
- Salvage excavation, collection or other mitigation that involves impact to cultural and archaeological sites should not be undertaken until the design has been finalised. This would ensure that sites are not unnecessarily disturbed, and that mitigation is appropriate.
- Salvage excavation should take place prior to ground disturbing activities taking place in those locations.
- Salvage excavation should be reported upon, so that results are readily available.

It should be noted that Pacific National is committed to the protection of and preservation of heritage items and sites on land which it owns (see Heritage Management Standard in Pacific National's Integrated Safety Management System). It should be noted that Pacific National would be responsible for any costs arising from undertaking the management recommendations contained below.

9.2. Specific Site Management

Recommendations for the management of specific Aboriginal cultural heritage sites have been drafted bearing in mind the cultural significance of the sites to Aboriginal people, the scientific significance of the sites, and the specific impacts to the sites from the development.

9.2.1. Sawyers Creek Artefact Scatter 1 (AHIMS# 37-6-2165)

The majority of this site will not be disturbed by the Greta Train Support Facility, and the areas that will be impacted have suffered degradation from prior land use and erosion. The more intact parts

of this site have been avoided by Pacific National's realignment of their access track. Consequently, it is recommended that:

1) All artefacts identified to date within the proposed impact zone should be collected. Representatives of the registered stakeholders should be invited to take part in this collection, in recognition of the cultural significance of this site. The archaeologist should facilitate the involvement of the registered Aboriginal stakeholders and in consultation decide the most appropriate course of action for the collected material. This may include reburial of the material in a durable container to an area unlikely to be disturbed. If reburial is undertaken, the location of this should be updated on the AHIMS site card;
2) The remainder of the site (artefacts and PAD) to the west should be protected. Protection should take the form of some sort of robust, permanent, highly visible fencing and be put in place prior to construction work taking place. Pacific National may like to consider a local Indigenous company to undertake this work. Pacific National should ensure that everyone who enters the study area is made aware of this fencing and that it is a 'no-go zone' – the area should be marked on all plans, including the Safety, Health and Environment Plan. No construction activities should take place inside this fenced 'no-go zone', including vehicle movement, laying down of fill materials, etc. Pacific National is committed to the protection of and preservation of heritage items and sites on land which it owns (see Heritage Management Standard in Pacific National's Integrated Safety Management System). In line with this, the protective fencing on this site should be left in place and, if necessary, maintained for the duration of operation of the Train Support Facility.

- Other than the above two points, no further investigation is recommended.

9.2.2. Sawyers Creek Artefact Scatter 2 (AHIMS# 37-6-2164)

Significant proportions of this site have avoided being impacted by the Greta Train Support Facility, due to design changes, such as moving buildings and realignments of infrastructure. However, one area of intact, dense deposit and two other areas of disturbed, dense deposit will be impacted by the access road and one section of rail track. Consequently, it is recommended that:

3) All artefacts identified to date within the proposed impact zone should be collected;
4) In the area of intact dense deposit on the banks of Sawyers Creek (see Figure 19), controlled manual salvage excavation should be undertaken. This should take the form of a series of 4-6 interconnected 1 m x 1 m excavation squares to open up the location of and explore the nature of the deposit, including attempting to identify any stratified features and deposit. If concentrations greater than 150 artefacts per square metre are encountered and/or *in situ* features such as knapping floors or hearths, then a further two 1 m x 1 m excavation squares should be excavated around the location. If possible, appropriate samples should be collected

for radiocarbon dating. The location of transects/trenches should be decided upon in the field by the archaeologist. All excavated sediment should be sieved. The process should be recorded in detail;

5) In the other two areas of disturbed dense deposit (see Figure 19), controlled mechanical salvage excavation should be undertaken. Excavation should be undertaken by machine excavator equipped with a ~90 cm wide mud bucket. Excavation should be undertaken in a series of 2-3 adjacent 5 m long trenches in each location, each excavated in 5 cm spits to sterile basal clay/gravel deposits (usually 20 cm – 30 cm). The location of transects/trenches should be decided upon in the field by the archaeologist. If concentrations greater than 150 artefacts per square metre are encountered and/or *in situ* features such as knapping floors or hearths, then a further two 1 m x 1 m excavation squares should be excavated around the location. Excavation should be fully documented and recorded. All excavated deposit should be sieved using a mechanical sieve fitted with ~ 4 mm gauge punched metal plate or mesh;
6) Representatives of the registered stakeholders should be invited to take part in the above collection and salvage, in recognition of the cultural significance of this site and the educational opportunities it presents;
7) Detailed analysis of all material and any dates recovered from the site should be undertaken, the results of which should form, with the results already displayed here, part of a detailed technical report;
8) The archaeologist should facilitate the involvement of the registered Aboriginal stakeholders and in consultation decide the most appropriate course of action for the salvaged/collected material. This may include reburial of the material in a durable container to an area unlikely to be disturbed. If reburial is undertaken, the location of this should be recorded on the AHIMS site card;
9) The AHIMS site card for this site should be updated within 6 weeks of the completion of salvage excavation; and,
10) The remainder of the site (artefacts and PAD) to the west, which is not affected by construction, should be protected. Protection should take the form of some sort of robust, permanent, highly visible fencing and be put in place prior to construction work taking place. Pacific National may like to consider a local Indigenous company to undertake this work. Pacific National should ensure that everyone who enters the study area is made aware of this fencing and that it is a 'no-go zone' – the area should be marked on all plans, including the Safety, Health and Environment Plan. No construction activities should take place inside this fenced 'no-go zone', including vehicle movement, etc. Pacific National is committed to the protection of and preservation of heritage items and sites on land which it owns (see Heritage Management Standard in Pacific National's Integrated Safety Management System). In line with this, the protective fencing on this site should be left in place and, if necessary,

maintained for the duration of operation of the Train Support Facility. Additionally, to aid in protecting this area, fill material may be spread across the area and revegetated.

9.3. General Recommendations

Pacific National should include Aboriginal cultural heritage material in their induction for this project for all personnel and contractors involved in construction and operation of the Greta Train Support Facility. The registered Aboriginal stakeholders may useful in preparing this and could be engaged to assist in this.

All collected and salvaged material should be analysed and added to the existing data set (Appendix D), with a report produced on the salvage process, and analysis and discussion of the artefact data. It is recommended that Pacific National consider the possibility of formalising in some way the protected portions of the Sawyers Creek Artefact Scatter 1 and 2 (AHIMS# 37-6-2165 and #37-6-2164). Pacific National should also consider including these sites on their Heritage Register.

9.4. Contingencies for design/works changes

9.4.1. Reduced impact

If, as a result of alterations to the design and/or proposed nature of works, a previously identified impact to an Aboriginal place, site or PAD is reduced then no further consultation or assessment is required for this change.

9.4.2. Increased impact

Where, as a result of alterations to the design and/or proposed nature of works, an impact on Aboriginal heritage or PAD as a result of a proposed change is considered to be greater than identified from the Approved Project, further consultation with registered stakeholders should be undertaken to identify any potential further assessment and/or other actions required prior to the works associated with this change occurring.

If any part of the project (such as ancillary facilities) is to be located outside the study area, additional consultation, survey and assessment should be undertaken before that part of the project proceeds.

9.5. Contingency for the discovery of Aboriginal cultural heritage material during works

At any time during construction, if Aboriginal cultural heritage material, features and/or deposits are found, all construction that could potentially harm the cultural heritage must cease (including

stopping all construction within at least but not limited to 10 m). Only construction that is required to comply with occupational and environmental health and safety standards and/or to protect the cultural heritage should occur. Construction may recommence when the archaeologist has deemed that appropriate mitigation or salvage has occurred.

a) Where Aboriginal cultural heritage material and/or deposits are discovered in the activity area, the sponsor must engage an archaeologist to record in detail the location and context of the material and decide if the material forms a new site or is part of a previously recorded site. The archaeologist must complete and submit relevant AHIMS recording forms to DECCW. The archaeologist should facilitate the involvement of the registered Aboriginal stakeholders and in consultation decide the most appropriate course of action for the material. This may include reburial of the material in a durable container to an area unlikely to be disturbed. If reburial is undertaken, the location of this should be recorded and all documentation provided with an updated AHIMS site card.

b) If the cultural heritage material and/or deposits found are deemed to be *in situ* and of moderate or higher significance, it is preferable to avoid impact if possible. If avoidance is not possible, a suitably qualified and experienced archaeologist must be engaged to conduct salvage excavation. The archaeologist must facilitate the involvement of the registered Aboriginal stakeholders and develop a suitable methodology for salvage excavation in consultation with them. This may include, but not be limited to, a 1m x 1m manually excavated trench (or more trenches of differing dimensions where appropriate and necessary) surrounding and encompassing the material/deposit, proceeding stratigraphically where possible and if not, in 5cm spits. This should also include, where possible and appropriate, collection of samples suitable for radiometric dating.

The archaeologist and the registered Aboriginal stakeholders should then agree on the most appropriate course of action for the salvaged material and appropriate custodianship.

9.6. Procedures for handling human remains

Note that Project Approval does not include the destruction of Aboriginal skeletal remains.

This section outlines the procedure for handling human skeletal remains taking into account the following documents:

- Manual for the Identification of Aboriginal Remains (DECCW 2005).
- Skeletal Remains – Guidelines for the management of human skeletal remains under the *Heritage Act* 1977 (NSW Heritage Office 1998).
- The Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997).

In the event that construction activity reveals possible human skeletal material (remains) along the alignment, the following procedure is to be followed:

1) As soon as remains are exposed, all work is to halt at that location immediately and the Project Manager is to be immediately notified to allow assessment and management.
2) The Project Manager is to Contact police and DECCW's Environment line on 131 555 and the Heritage Branch of the Department of Planning (DoP) on (02) 9873 8500.
3) A physical or forensic anthropologist should inspect the remains in situ (**organised by the police unless otherwise directed by the police**), and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic).
    a) If the remains are identified as forensic the area is deemed as crime scene; or
    b) If the remains are identified as Aboriginal, the site is to be secured and DECCW and all Aboriginal stakeholders are to be notified in writing; or
    c) If the remains are identified as non-Aboriginal (historical) remains, the site is to be secured and the Heritage Branch of DoP is to be contacted.

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

i. If the remains are identified as a forensic matter, liaise with the police.
ii. If the remains are identified as Aboriginal, liaise with DECCW and registered Aboriginal stakeholders.
iii. If the remains are identified as non-Aboriginal (historical) liaise with the Heritage Branch of DoP.
iv. If the remains are identified as not being human then work can recommence once the appropriate clearances have been given.

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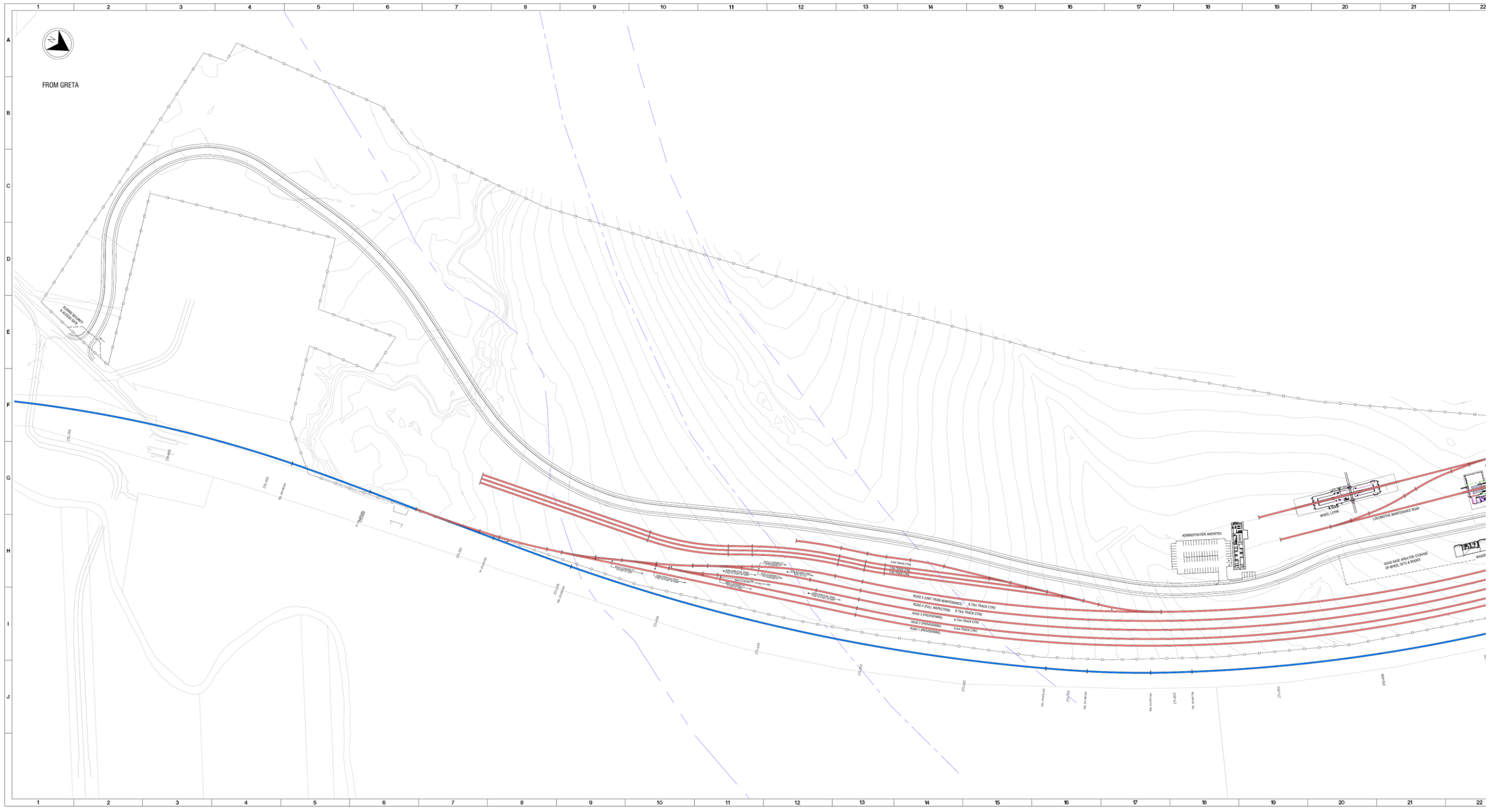
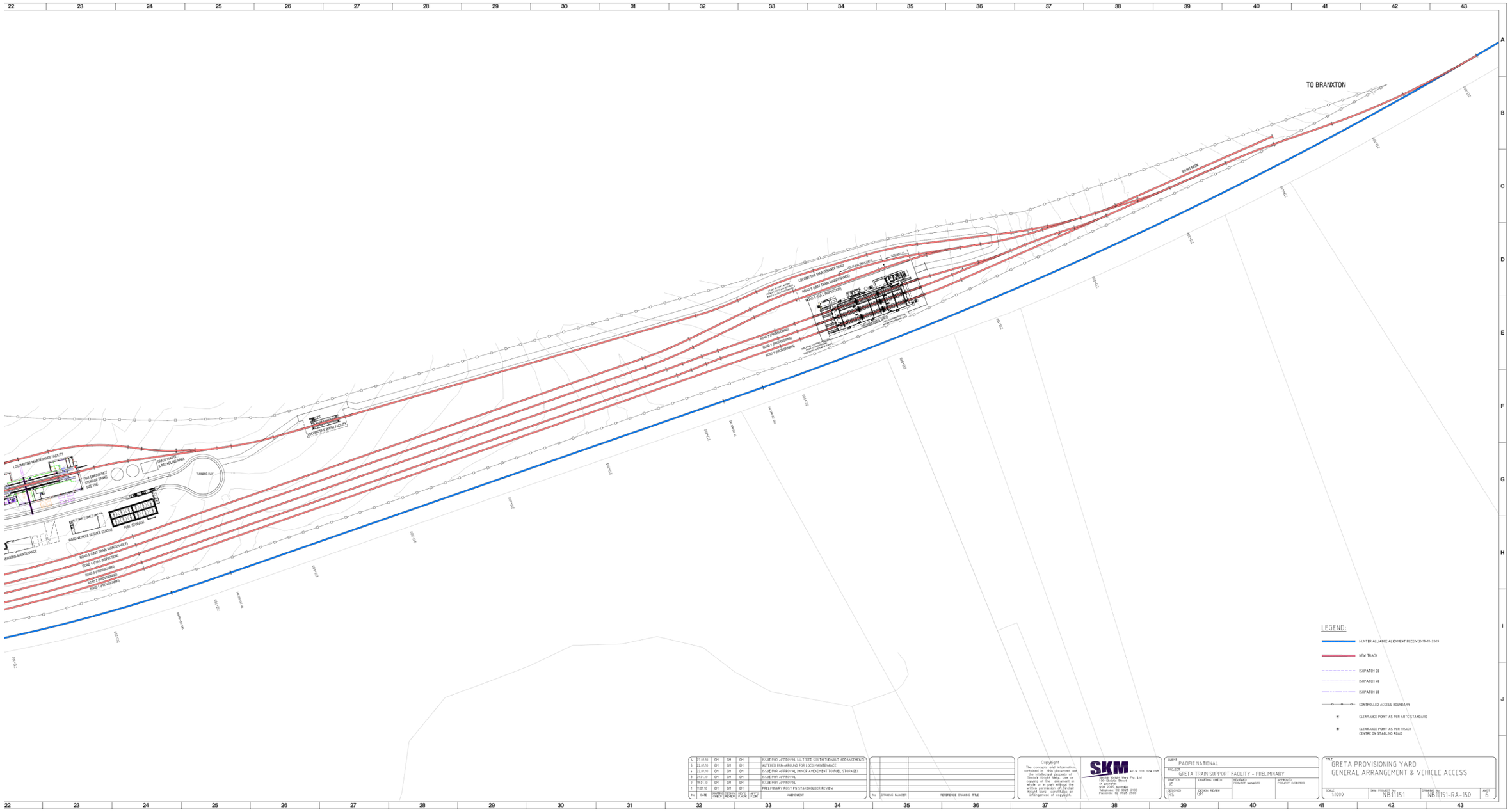
Appendix A Design Drawing


FROM GRETA
ADMINISTRATION AMENITIES
LOCOMOTIVE MAINTENANCE ROAD
WHEEL LATHE
ROAD BASE AREA FOR STORAGE OF WHEEL SETS & BOGIES
ROAD 5 (UNIT TRAIN MAINTENANCE) 4.75m TRACK CTRS
ROAD 4 (FULL INSPECTION) 4.75m TRACK CTRS
ROAD 3 (PROVISIONING) 4.75m TRACK CTRS
ROAD 2 (PROVISIONING) 4.5m TRACK CTRS
ROAD 1 (PROVISIONING)



SINCLAIR KNIGHT MERZ

Appendix B Advertisement

Aboriginal Stakeholders

SKM is looking to identify and register Aboriginal Stakeholders who wish to be consulted in relation to an Aboriginal Cultural Heritage Assessment on land near Greta Railway Station, adjoining the western side of the railway line, extending approximately 2.4 km north of Greta Station.

Interested stakeholders are requested to register their interest in writing to:

Vanessa Edmonds,
SKM, PO Box 2500,
MALVERN Vic 3144

Expressions of interest should include current contact details; registration does not guarantee employment.

Enquiries to: 03 9248 3544
OR 03 9248 3348
vedmond@skm.com.au
OR jbrooke@skm.com.au

Appendix C Correspondence with Stakeholders

Sinclair Knight Merz
590 Orrong Road, Armadale 3143
PO Box 2500
Malvern VIC 3144 Australia

Tel: +61 3 9248 3100
Fax: +61 3 9500 1180
Web: www.skmconsulting.com

Native Title Service
NTSCORP
PO Box 2105
Strawberry Hills
NSW 2012

20 January 2010

Greta Rail Depot - Notification of Stakeholders(NTSCORP).docx

To whom it may concern,

Notification of Stakeholders for Aboriginal Cultural Heritage Assessment

Sinclair Knight Merz (SKM) is planning to undertake an Aboriginal Cultural Heritage Assessment of land near Greta Railway Station, adjoining the western side of the railway line, extending approximately 2.4 km north of Greta Station.

The assessment is being undertaken on behalf of Pacific National, who plans to construct a Rail Depot in the parcel of land. I've attached a map showing (in green) the approximate location of the study area.

I'm looking to identify and register Stakeholders who wish to be consulted in relation to the Aboriginal Cultural Heritage Assessment, and am writing to you for this reason. Interested stakeholders are requested to register their interest by the 29th of September in writing to:

Vanessa Edmonds, SKM
PO Box 2500
MALVERN Vic 3144
or email to vedmonds@skm.com.au

Your expressions of interest should include current contact details, as we're planning on holding an Aboriginal Focus Group meeting following the registration period to discuss project details and assessment methodology.

If you have any inquiries, please don't hesitate to contact Vanessa on: 03 9248 3544, or myself, Joseph, on 03 9248 3348. Alternatively, you can email us at vedmonds@skm.com.au, or jbrooke@skm.com.au.

Kind Regards,

Joseph Brooke
Project Archaeologist
Phone: (03) 9248 3348
Fax: (03) 9248 3400
E-mail: jbrooke@skm.com.au

From: rick griffiths [mailto:r_griffiths12@bigpond.com]
Sent: Friday, 18 September 2009 10:46 AM
To: Brooke, Joseph (SKM)
Subject: RE: Notification of Stakeholders

Joseph

Mindaribba LALC declare an intrest and wish to be consulted in paid capacity on this project, will send further information enxt week.

Regards

Rick Griffiths

CEO

MLALC

OFFICE OF THE REGISTRAR
ABORIGINAL LAND RIGHTS ACT 1983 (NSW)

11-13 Mansfield Street
Glebe NSW 2037
PO Box 112, Glebe NSW 2037
P. 02 9562 6327 F. 02 9562 6350

Vanessa Edmonds, SKM
PO Box 2500
Malvern Vic 3144

25 September 2009

Dear Vanessa

Re: Request - Search for Registered Aboriginal Owners

I refer to your letter dated 16 September 2009 regarding an Aboriginal Cultural Heritage Assessment in the Greta area.

I have searched the Register of Aboriginal Owners and the subject land does not appear to have Registered Aboriginal Owners pursuant to Division 3 of the *Aboriginal Land Rights Act* 1983 (NSW).

I trust that you are in contact with the Mindaribba Local Aboriginal Land Council. The land council may be able to assist you with information and contact details for other interested groups.

Yours Sincerely

Courtney Field
Assistant Research Officer
Office of the Registrar, *Aboriginal Land Rights Act 1983*

YARRAWALK

ABN 48 530 921 447
Scott Franks
c/- Barry McTaggart
Wollombi Road
BROKE NSW 2330
yarrawalk@tpg.com.au

22 September 2009

Vanessa Edmonds,
SKM
Po Box 2500
MALVERN Vic
3144

Registration of Interest:
ABORIGINAL CULTURAL HERITAGE ASSESSMENT
Proposed Construction of rail depot near Greta Railway Station

Dear Vanessa,

As per your letter to NSW Native Title Service, please be advised that Yarrawalk is seeking to be involved in all consultation meetings and field work.

This organisation is a registered body under the Aboriginal association act 1976. Yarrawalk represents traditional owners from Wonnarua people of the Hunter Valley and retains local and oral history on behalf of its membership. Please see attached for a copy of our certificate of Incorporation and a letter from NSW Native Title identifying our members as the recorded apex line in the Hunter Valley. We would also like to state that we do not accept or support any person or organisation that comments regarding the said area.

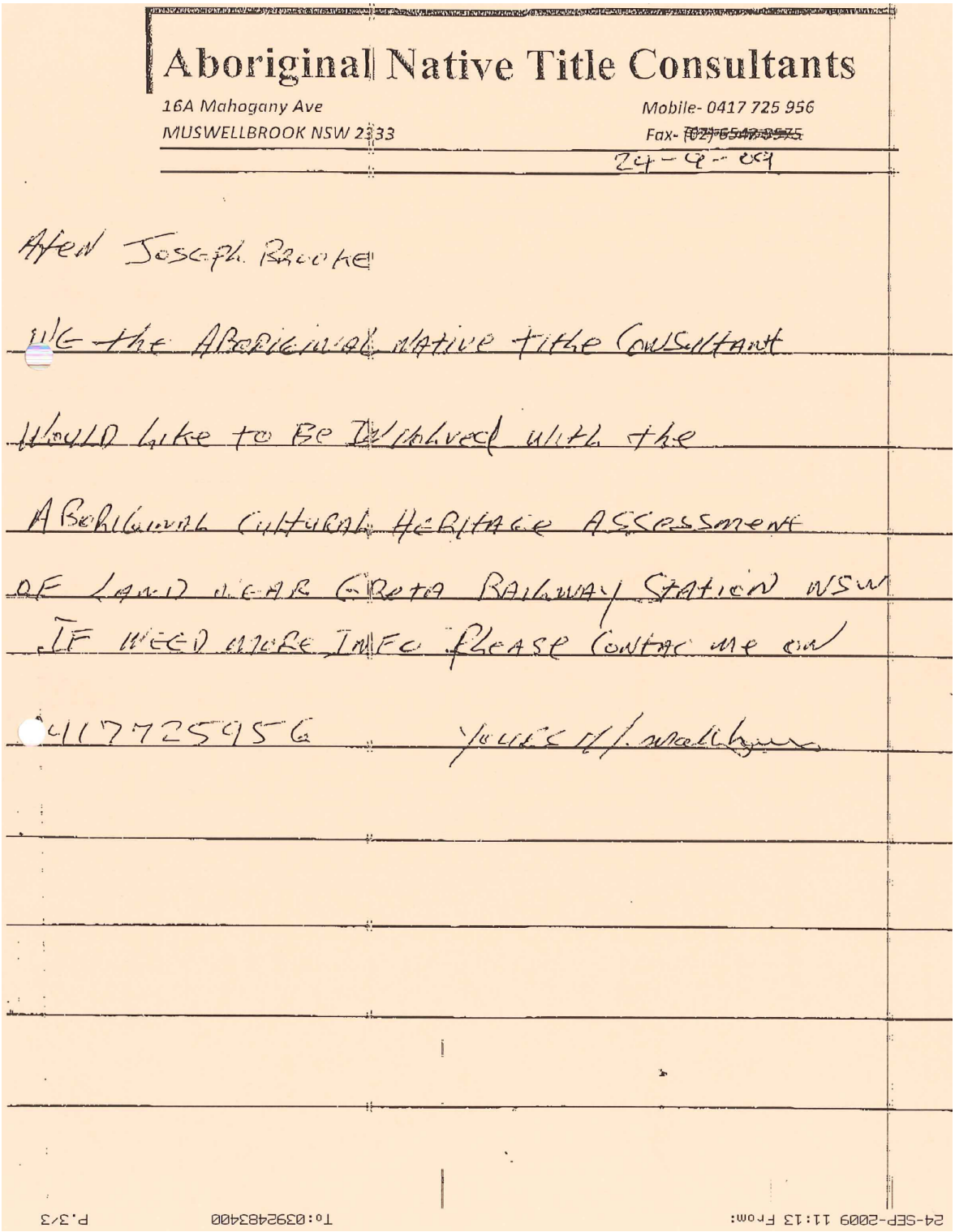
Please also be advised that this Aboriginal organisation does not do volunteer work or attend unpaid meetings.

All correspondence should be emailed to the following yarrawalk@tpg.com.au or to the above postal address.

Yours faithfully

Scott Franks
CEO
Yarrawalk Aboriginal Corporation

SINCLAIR KNIGHT MERZ



Aboriginal Native Title Consultants

16A Mahogany Ave
MUSWELLBROOK NSW 2333

Mobile- 0417 725 956
Fax- [redacted]

24-9-09

Attn Joseph Brooke

We the Aboriginal native title Consultant

Would like to be involved with the

Aboriginal cultural Heritage Assessment

of land near Greta Railway Station NSW

If need more Info please Contact me on

0417725956 yours N. Smith

24-SEP-2009 11:13 From: To:0392483400 P.3/3

Sinclair Knight Merz
590 Orrong Road, Armadale 3143
PO Box 2500
Malvern VIC 3144 Australia

Tel: +61 3 9248 3100
Fax: +61 3 9500 1180
Web: www.skmconsulting.com

Greta Rail Depot
Aboriginal Focus Group

13 October 2009

Info Pack and 1st AFG invite - Greta.docx
VW04784

Pacific National Greta Rail Depot - Aboriginal Cultural Heritage Assessment

Project Information Pack and Invitation to Aboriginal Focus Group meeting

Thank you for registering your interest in this project, I look forward to working with you in undertaking this assessment. The purpose of this letter is to provide a brief background to the project, as well as to introduce the methodology proposed for undertaking the Cultural Heritage Assessment.

My name is Joseph Brooke and I am the Project Archaeologist for the Cultural Heritage Assessment for the Greta Rail Depot. I work for a company called Sinclair Knight Merz (commonly known as SKM).

Any comments, suggestions or input you have to the methodology would be much appreciated. Comments can be made over the phone, by email or in writing (details below), otherwise you can pass them on in person at the Aboriginal Focus Group (AFG) meeting. I am hoping to finalise the methodology at the AFG meeting, so if you could please pass on any comments by the 27th of October, that would be much appreciated.

An Aboriginal Focus Group meeting will be held between 9am and 11am on the 20th of October, 2009, at 3 Water Street, Greta (old courthouse - corner of Water Street and New England Highway, next to Sports Hall). Vanessa Edmonds (the Senior Archaeologist at SKM) will be attending this meeting on my behalf, as will several representatives from Pacific National.

1. Background to the Greta Rail Depot

- The export of coal from the Port of Newcastle is expected to double by 2015
- Pacific National currently haul approximately 85% of all Hunter Valley coal
- Pacific National need to expand their operations to ensure that they meet this expected increase in demand – the Greta Rail Depot (or Train Support Facility) is part of this expansion

2. Location

- The site is located at Mansfield Street, Greta, near Greta Railway Station to the south-west of Greta township
- The site is bounded to the east by the main northern rail line, to the west by the proposed Hunter Expressway (proposed extension of the F3 Freeway) and to the south by residential properties, Mansfield Street and Greta Railway Station.
- Aboriginal flaked stone artefacts have been identified in the Greta Rail Depot site during an inspection.

3. Assessment Methodology

We are preparing a Cultural Heritage Assessment for the Greta Rail Depot. This Cultural Heritage Assessment will be made up of two parts:

- An Archaeological Assessment; and,
- An Aboriginal Cultural Assessment.

The aims of the Archaeological Assessment will be to identify any Aboriginal archaeological sites, while the Aboriginal Cultural Assessment will aim to identify any specific Aboriginal cultural issues or places relating to the Rail Depot land. This project is being assessed under Part 3A of the *Environmental Planning and Assessment Act* 1979, which basically means that although permits are not required for things such as sub-surface test-excavations or salvage excavation, the same general process will be followed.

The methodology for the Aboriginal Cultural Assessment that we are proposing to use is as follows:

- Registration of interested Stakeholders (already done).
- Meeting of Aboriginal Focus Group (AFG), which will include representatives from registered Aboriginal community organisations, Cessnock City Council, Pacific National and the archaeologists (SKM). The meeting will aim to discuss assessment methodology, identify specific Aboriginal cultural values associated with the site and surrounds, and to identify knowledge holders who have specific knowledge of the cultural values of the site.
- If necessary, conduct any interviews to gather further information regarding Aboriginal cultural values of the site.
- Field survey of Rail Depot site to identify any archaeological and/or cultural values of the site.
- Prepare Draft Aboriginal Cultural Assessment.

- Review Draft Aboriginal Cultural Assessment and develop Aboriginal cultural significance ratings and recommendations for any Aboriginal cultural sites within the Rail Depot site. This will be done following completion of archaeological fieldwork in the form of another AFG meeting.

The methodology for the Archaeological Assessment that we are proposing to use is as follows:

- Following the AFG, undertake a field survey of the Rail Depot site with suitably qualified and experienced people. This will be to identify any Aboriginal archaeological sites, or areas of Potential Archaeological Deposit (PAD), where significant buried Aboriginal archaeological artefacts may be.
- If necessary, prepare methodology for sub-surface testing, with input/comments from registered stakeholders.
- Undertake sub-surface testing in areas of PAD that have low-moderate or higher potential archaeological sensitivity.
- Prepare Archaeological Assessment, including recommendations for any archaeological sites found.

The Archaeological and Cultural Assessments will then be combined in one report, which will be called the Cultural Heritage Assessment.

Vanessa and I look forward to working with you on this project and meeting you at the AFG meeting in Greta, or during field work in the coming weeks. If you have any comments or issues you would like to raise regarding the methodology, please either pass comments on to me or Vanessa by mail, email or by phone, or raise them at the AFG meeting.

Regards

Joseph Brooke
Project Archaeologist
Phone: (03) 9248 3348 or 0439 772 275 – Jo;
(03) 9248 3544 or 0429 114 118 – Vanessa
Fax: (03) 9248 3400
E-mail: jbrooke@skm.com.au or vedmonds@skm.com.au

Minutes

Purpose of Meeting	**Aboriginal Focus Group Meeting #1**		
Project	Greta Train Support Facility	**Project No**	VW04784
Prepared By	Joseph Brooke and Vanessa Edmonds	**Phone No**	(03) 9248 3348
Place of Meeting	Greta, Old Court House, Cnr Water St and New England Hwy	**Date**	20th October 2009 9am-11am
Present	Rick Griffiths (Mindaribba LALC)	Peter Hands (Pacific National)	
	Thomas Miller (Lower Wonnarua Council Incorporated)	Rodney Deane (Project Manager, Pacific National)	
	Rhonda Ward (Ungooroo Cultural and Community Services)	Vanessa Edmonds (Senior Archaeologist, SKM)	
	Stephen Barr (Planner and Surveyor, Monteath and Powys)	Bo Moshage (Cessnock City Council)	
Apologies	Margaret Matthews (Aboriginal Native Title Consultants)		
Distribution	Registered Stakeholders	Pacific National	
	Monteath and Powys	SKM	

Item	Action By/Date
1) Introductions	
2) PH/SB gave presentation on background to Greta Train Support Facility project.	
3) VE began presentation on proposed assessment methodology, RG expressed concern that reconnaissance site inspection had been undertaken without Aboriginal community representation. RG also expressed concern that design of development was set in stone and not able to be altered pending findings of assessment. PH said that it was only concept design and that alterations were possible and requested any input to the alterations.	
4) RW mentioned that the site may have already been surveyed by South East Archaeology for Third Track development – RD mentioned that this was a separate project to the Third Track.	
5) VE enquired about peoples availabilities for a day of survey sometime between 3rd and 6th November.	

Statement of Findings, Recommendations Section

3. Recommendations

As part of Pacific National's desire to avoid and minimise impact to Aboriginal cultural heritage, the team designing the Greta Rail Depot has been provided with the locations of Aboriginal sites and PADs for the purpose of avoiding these wherever possible. Consequently, it is likely that only a small amount of impact to the PADs will be unavoidable.

3.1 Sub-surface testing

To finish the assessment of these PADs, including better determining the extent of the sites, and refining the predictions regarding the archaeological sensitivity of the PADs, it is proposed that archaeological sub-surface test excavation be undertaken within the PADs. Only areas within the PADs that are not able to be avoided by the Greta Rail Depot will be test-excavated. This is to ensure that areas that will not be impacted by construction of the Greta Rail Depot are not unnecessarily disturbed.

- It is proposed that the sub-surface testing program would sample the PADs, through a combination of two 1m x 1m test-pits (one in PAD 1 and one in PAD 2), and numerous transects of shovel test-pits. Following this, recommendations would be made for the management of the sites to minimise, and mitigate impact – this may involve actions such as protective fencing, collection, and/or salvage excavations.

3.2 Geotechnical Investigations

Prior to construction of the Rail Depot, geotechnical testing is required to determine the properties of the land, which will be used to help determine the most appropriate construction methods. This testing will take the form of machine augured bore-holes, and backhoe excavated test-pits. This testing needs to be undertaken in the coming weeks in order for Pacific National to adequately plan for construction of the Rail Depot. Where geotechnical testing is proposed within areas of PAD, we propose to mitigate the impact of the geotechnical testing. Where geotechnical testing is proposed outside of PADs, we recommend that this is allowed to occur with no further assessment. It is proposed that this mitigation would take the form of:

- Archaeological sub-surface test excavation in the form of shovel test-pits undertaken, until sufficient testing has been undertaken to allow the geotechnical testing to later proceed. For example, if a borehole is proposed in a PAD, we propose to undertake a shovel test-pit in the exact location of the bore-hole to ensure that if any artefacts are there, they would be discovered and could be relocated prior to geotechnical testing taking place.

This could take place at the same time as sub-surface test excavation that is needed to finish assessment of the PADs.

We are hoping to get input from you on this methodology with a view to obtaining your approval, so that we can keep moving with the investigation. If you have any comments, please don't hesitate to contact Vanessa Edmonds, vedmonds@skm.com.au, or myself. We are planning to hold an Aboriginal Focus Group meeting to gain approval on both the sub-surface testing methodology and the procedure in regards to geotechnical testing.

Regards,

Joseph Brooke
Project Archaeologist
Phone: (03) 9248 3348
Fax: (03) 9248 3400
E-mail: jbrooke@skm.com.au

To	Rhonda Ward	**Date**	20 January 2010
	Margaret Matthews		
From	Joseph Brooke	**Project No**	VW04784
Copy			
Subject	**Greta Rail Depot – 2nd Aboriginal Focus Group meeting**		

Hi All,

I'm proposing an Aboriginal Focus Group meeting for the Greta Rail Depot Project to discuss the cultural heritage assessment to date, including the survey and proposed recommendations for further assessment, and I'd like to invite you to attend. I've previously mailed the Statement of Findings from the survey for your review before the AFG meeting. The proposed details for the AFG are:

Time: 2pm – 4pm
Day: Tuesday 22nd December
Location: Greta Hall, 3 Water Street, Greta

I hope to see you there!

Regards,
Joseph

Joseph Brooke | Project Archaeologist
BAr(Hons) MACAAI
Tel: (03) 9248 3348 | Fax: (03) 9248 3400 | Mobile: 0439 772 275
email: jbrooke@skm.com.au

Sinclair Knight Merz
590 Orrong Road, Armadale, Vic. 3143

To	Rhonda Ward	**Date**	20 January 2010
	Margaret Matthews		
From	Joseph Brooke	**Project No**	VW04784
Copy			
Subject	**Greta Rail Depot, 2nd AFG minutes and Upcoming Sub-surface testing**		

Hi All,

Please find attached Draft Minutes of the 2nd Aboriginal Focus Group Meeting for the Greta Rail Depot.

Also, archaeological sub-surface testing as per the methodology discussed in the AFG will take place on Monday, January 11th, until Wednesday, January 13th. We'll be meeting at Greta Railway Station at between 9.50am and 10am – please ask your representative to be on time, as after this time we'll be on site, so will be difficult to meet up with them.
If you are planning on sending a suitable (fit, experienced, etc.) representative, if you could notify please notify me, that'd be great.

Thanks and have a great Christmas and New Years!
Jo

Joseph Brooke | Project Archaeologist
BAr(Hons) MACAAI
Tel: (03) 9248 3348 | Fax: (03) 9248 3400 | Mobile: 0439 772 275
email: jbrooke@skm.com.au

Sinclair Knight Merz
590 Orrong Road, Armadale, Vic. 3143

Minutes

Purpose of Meeting	**Aboriginal Focus Group meeting #2**		
Project	Greta Train Support FacilityFacility	**Project No**	VW04784
Prepared By	Joseph Brooke	**Phone No**	(03) 9248 3348
Place of Meeting	Old Greta Court House, Greta, NSW	**Date**	22 December 2009
Present	Stephen Barr (Monteath and Powys) Phil Duvollet (Pacific National) Joseph Brooke (SKM – Archaeologist) Teagan Harris (Monteath and Powys)	Brett Peterkin (Pacific National) Ricky-Jo Griffiths(?) (Mindaribba Local Aboriginal Land Council) Tom Miller (Lower Wonnarua Council Incorporated)	
Apologies	Bo Moshage (Cessnock City Council)		
Distribution	Scott Franks (Yarrawalk Aboriginal Corporation) Rhonda Ward (Ungooroo Cultural and Community Services) Bo Moshage (Cessnock City Council)	Margaret Matthews (Aboriginal Native Title Consultants) Rick Griffiths (Mindaribba LALC) Brett Nudd (DECCW)	

Item	Action By/Date
1) Introductions	
2) Joseph provided overview of process to date: registration of stakeholders, desktop assessment and predictive model, archaeological survey, plus update from additional site visit that resulted in new finds of 44 artefacts. ▪ This now adds up to 123 artefacts discovered on the southern side of Sawyers Creek, PAD 1 extent will be updated to reflect new finds. ▪ Also total of 33 artefacts now discovered on northern side of Sawyers Creek. The extent of PAD 2 remains unchanged. This does not change the archaeological significance of the site. ▪ Joseph asked if there were any issues with the process to date.	
3) Joseph discussed, with input from Phil, that the only disturbance within the PADs will be the access road, which will probably have a construction footprint of approximately 10 m wide, and some rail siding tracks within PAD 2. Joseph outlined that the data collected during the field survey was sent to the team designing the Rail Facility. An outcome of this process was that the proposed access road was able to be realigned to avoid most of PAD 1 – impact is similar in PAD 2.	[Date due]

Aboriginal Focus Group meeting #2
23 December 2009

Another benefit of the realignment is that much of it covers the same alignment of an existing graded track, uses the same disturbed creek crossing and also traverses other areas that have been cleared, graded and disturbed in other ways. This means that construction works for the new road will not disturb areas where little or no past disturbance has occurred.

- Tom raised concern about actual construction footprint, as opposed to design – Phil noted this and will review this in the constructability review
- One admin building and a vehicle service shed,, which were located just outside PAD 1 have a construction footprint which may have impinged on PAD 1. These buildings have now been moved away from both PADs in an effort to reduce interference to PADs 1 & 2.
- Ricky was keen that the admin buildings be moved - Phil said that he was very confident that this would occur
- 4) Tom raised that he thought culturally the archaeological sites are significant

Joseph presented the proposed sub-surface testing methodology as per the statement of findings.

- Only areas within the PADs that are not able to be avoided by the Greta Rail Facility will be test-excavated. This is to ensure that areas that will not be impacted by construction of the Greta Rail Facility are not unnecessarily disturbed. The sub-surface testing program would sample the PADs, through a combination of two 1m x 1m test-pits (one in PAD 1 and one in PAD 2), and numerous transects of shovel test-pits

a) Tom requested that the transects be implemented in a checkerboard pattern, and that shovel test-pits be 50 cm x 50 cm, also that where artefacts are found further testing be undertaken to determine the extent of the site and where dense deposits are encountered, that further excavation occur to better explore the nature of the deposits – Joseph confirmed that this would be fine, though that this is a testing program, not salvage, and would thus sample the area.

b) Tom and Ricky requested that the artefacts recovered during testing be placed in the care and control of Mindaribba LALC, and suggested that analysis take place there.

- Joseph and Phil talked about the proposed geotechnical testing, and proposed methodology as per the statement of findings to archaeologically test-excavate in locations of proposed geotech works in PADs

c) Tom and Ricky requested that this take place for all geotech sites, not just those located in PADs

- Joseph said sub-surface testing would take approximately 3 days
- Phil stated that sub-surface testing would need to take place from Monday 11th Jan to ensure it is undertaken prior to geotech works and not delay the works program.

From: rick griffiths [r_griffiths12@bigpond.com]
Sent: Wednesday, 23 December 2009 3:00 PM
To: Brooke, Joseph (SKM)
Subject: RE: Proposed Sub-surface testing methodology

Joseph,
When focus group met did they visit site to inspect where testing was going to take place, and did you give update on new sit findings at meeting.
When we spoke on phone today you stated that Pacific National were going to reduce road or move it so to lessen impact, however will still run along the edge of site.
Should this be case I cant support that.
In fact I would request site meeting to mark out those areas set aside or identified as PAD areas by you.
Reason for that is we believe other areas should also be included as areas that will require further work.
Your ratings we don't agree with.
The artefacts located are significant in my view.
Regards
Rick Griffiths

TELEPHONE MESSAGE

JOB VW04784 - Greta Train Support Facility FILE

PHONE CALL TO/FROM Scott Franks TIME 9.45AM

OF Yarrawalk PHONE 0404171544 DATE 9/2/2010

- Very happy with detail of the report and assessment.

DETAILS OF MESSAGE: Scott wanted to discuss some issues he had with the assessment and development.

- Scott was concerned about the impact of the development to the cultural landscape, not just the archaeological sites
- concerned about the disturbance of Wonnarua land
- expressed that with in the context of its cultural landscape, the study area and sites had high sensitivity
- wanted to work something out in regards to offset for loss of cultural heritage for Yarrawalk. ~~suggestions he made~~
- Examples he gave included:
  - contracts for Yarrawalk people - fencing - track grinding firefighting - minimal earthworks
  - job opportunities for Yarrawalk people
  - scholarships " "
  - financial offsets for Yarrawalk
- Expressed that Yarrawalk members had had their true Wonnarua lineage proven (Native Title)
- Said he would like to have a meeting with PN to discuss - rather not be in meeting with other stakeholders.
- Also said fencing of sites should be with something sturdier than webbing - incl signing of fence "Archaeological Site" or similar.
- Also artefacts reburied in non-biodegradable container

BY:

CIRCULATION & ACTION

NAME	ACTION REQUIRED	INIT'	DATE

Appendix D Artefact Descriptions

Only artefacts recovered during sub-surface testing have been analysed and presented here.

Test Pit #	Depth	Raw Material	Weight	Max Dimension (mm)	Retouch?	Broken?	Technological Type	Tool Type	Percussion Length (mm)	Width at midpoint (mm)	Thickness at midpoint (mm)	Platform Type	Termination Type	# Dorsal Scars	% Cortex	Comments
TP1	0-5cm	Crystal Quartz	1.7	25.1	No	Proximal	Flake	N/A	N/A	N/A	N/A	Cortical	N/A	5	5%	Semi opaque - cloudy, but very flaw-free
TP1	15-20cm	Silcrete	1.2	29.2	No	Complete	Flake	N/A	28.6	9.9	4.7	Crushed	Feather	2	0%	Pinkish - medium grained
STP1B	20-30cm	Silcrete	3	31.1	No	Complete	Flake	N/A	16.5	25.6	5.1	Flaked	Hinge	3	0%	Pinkish - medium grained
STP1B	40-50cm	Silcrete	0.1	6.4	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	Pinkish - medium grained
STP1B	40-50cm	Silcrete	0.4	14.8	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	10%	Pinkish - medium grained
STP1B	40-50cm	Mudstone	1.3	26.9	No	Complete	Flake	N/A	24.8	10.5	4	Cortical	Step	1	20%	Yellow, with red/brown weathering
STP1Bii	49cm	Silcrete	0.4	12.5	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10%	Pink/grey- medium grained
STP3A	30-38cm	Mudstone	1.3	19.1	No	Proximal	Flake	N/A	N/A	N/A	N/A	Crushed	N/A	3	5%	Yellow
TP2	16cm	Silcrete	14.1	38.1	No	Complete	Flake	N/A	37	27.5	11.5	Cortical	Feather	1	75%	Red fine-medium grained
STP7A	0-10cm	Silcrete	0.1	9.7	No	Proximal	Flake	N/A	N/A	N/A	N/A	Crushed	N/A	2	0%	Yellowy grey
STP7A	10-20cm	Mudstone	1	23.2	No	Complete	Flake	N/A	22.9	9.2	6.4	Crushed	Hinge	2	0%	Yellow, with red/brown weathering
STP7A	10-20cm	Mudstone	0.5	13.7	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Yellow with brown weathering
STP7A	10-20cm	Mudstone	0.6	18.2	No	Complete	Flake	N/A	10.8	14	2.3	Flaked	Hinge	2	0%	Yellow with brown weathering
STP7A	10-20cm	Mudstone	0.1	10.9	No	Complete	Flake	N/A	10.5	5.4	1.7	Flaked	Feather	2	0%	Yellow with brown weathering
STP7A	10-20cm	Mudstone	0.3	5.2	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	
STP7A	10-20cm	Mudstone	0.1	10	No	Split	Flake	N/A	10	N/A	3.4	Flaked	Feather	1	0%	Yellow with brown weathering

STP7A	10-20cm	Silcrete	0.1	10.3	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Pink/grey- medium grained
STP7A	20-30cm	Mudstone	0.1	8.9	No	Complete	Flake	N/A	8.8	3.1	1.7	Flaked	Feather	2	0%	Yellow with brown weathering
STP7A	20-30cm	Silcrete	0.1	9.2	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Yellowish pink
STP7A	20-30cm	Silcrete	0.1	7.8	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	1	0%	Yellowish pink
STP7A	20-30cm	Silcrete	0.1	9.7	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Yellowish pink
STP7A	20-30cm	Silcrete	0.1	11.8	No	Complete	Flake	N/A	11.8	5.7	0.7	Flaked	Feather	2	0%	Yellow and pink
STP7A	20-30cm	Silcrete	0.1	10.6	No	Lateral fragment	Flake	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	Pinkish red
STP7A	20-30cm	Silcrete	0.2	11.1	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	3	0%	Yellow
STP7A	20-30cm	Silcrete	0.2	11.3	Backing	Broken	Tool	Backed Microlith	N/A	N/A	N/A	N/A	N/A	1	0%	pinkish orange
STP7A	20-30cm	Silcrete	0.3	14.6	No	Complete	Flake	N/A	11.9	7.7	3	Flaked	Hinge	2	0%	Pink
STP7A	20-30cm	Silcrete	0.1	15.4	No	Complete	Flake	N/A	14.9	6.3	1.7	Flaked	Feather	3	0%	Red
STP7A	20-30cm	Silcrete	0.5	15.8	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	Yellow
STP7A	20-30cm	Silcrete	0.3	14.9	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Yellow and pink
STP7A	20-30cm	Silcrete	1.5	24	No	Complete	Flake	N/A	16.1	17.7	3.9	Flaked	Feather	2	0%	Yellow
STP7A	20-30cm	Silcrete	3.6	36.6	Use	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	3	0%	Pinkish grey
STP7A	20-30cm	Silcrete	6.9	32.2	No	Complete	Flake	N/A	20.4	28.1	9.5	Flaked	Feather	5	0%	Yellowish grey - platform rejuvination flake
STP7Ai	15-25cm	Mudstone	0.1	9.7	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	orangey yellow
STP7Ai	15-25cm	Mudstone	0.2	9.3	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	orangey yellow
STP7B	25-30cm	Silcrete	4.3	33.5	Use	Complete	Flake	N/A	23.1	28.9	6	Flaked	Feather	4	0%	pink
STP7E	10-20cm	Silcrete	0.3	11.3	No	Complete	Flake	N/A	6.9	7.8	3.1	Flaked	Feather	3	0%	Pink - Bending fracture
STP7E	20-30cm	Mudstone	0.9	14	No	Proximal	Flake	N/A	N/A	N/A	N/A	Crushed	N/A	2	5%	Yellow
STP7E	20-30cm	Mudstone	6.3	33.3	No	Proximal	Flake	N/A	N/A	N/A	N/A	Crushed	N/A	3	0%	Pink and yellow
STP7G	10-23cm	Mudstone	0.4	17.5	No	Split	Flake	N/A	15.6	N/A	2.8	Cortical	Hinge	1	20%	yellow
STP7G	10-23cm	Silcrete	0.3	15	Backing	Medial	Tool	Backed Microlith	N/A	N/A	N/A	N/A	N/A	2	0%	red

STP7J	0-10cm	Mudstone	0.3	14.4	No	Proximal	Flake	N/A	N/A	N/A	N/A	Crushed	N/A	2	0%	yellowy orange
STP7J	0-10cm	Silcrete	0.2	10.1	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	red
STP7J	0-10cm	Silcrete	0.4	13.4	No	Distal	Flake	N/A	N/A	N/A	N/A	N/A	Hinge	3	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.3	13	Backing	Distal	Tool	Backed Microlith	N/A	N/A	N/A	N/A	Feather	3	0%	Yellow with brown weathering
STP7J	0-10cm	Silcrete	0.5	11.5	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	3	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.5	15.7	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.6	13.3	No	Broken	Core Fragment	N/A	N/A	N/A	N/A	Flaked	N/A	N/A	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.5	17.3	No	Complete	Flake	N/A	17.3	9.6	2.9	Flaked	Feather	3	0%	Pink
STP7J	0-10cm	Mudstone	0.6	12.2	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	Yellow with brown weathering
STP7J	0-10cm	Silcrete	0.6	17.1	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	3	0%	pink
STP7J	0-10cm	Silcrete	0.7	20.8	No	Split	Flake	N/A	20.6	N/A	4.3	Crushed	Feather	2	0%	Light pink, fine-grained
STP7J	0-10cm	Silcrete	0.6	17.2	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.6	15.3	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	pink
STP7J	0-10cm	Silcrete	0.8	19.3	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	reddish pink
STP7J	0-10cm	Silcrete	1	19.3	Use	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	Pinkish red
STP7J	0-10cm	Silcrete	0.8	17.6	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	1	0%	reddish pink
STP7J	0-10cm	Silcrete	1.3	17.5	Use	Proximal	Tool	Scraper	N/A	N/A	N/A	Flaked	N/A	2	0%	Light pink
STP7J	0-10cm	Silcrete	1.3	19.3	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	3	0%	pinkish grey, plunging termination
STP7J	0-10cm	Silcrete	1.9	22.4	Use	Complete	Tool	Concave scraper	22.2	16.4	4	Flaked	Feather	2	0%	Light pink, fine-grained
STP7J	0-10cm	Silcrete	2.6	24.3	No	Split	Flake	N/A	24.1	N/A	7.4	Flaked	Feather	3	0%	reddish pink
STP7J	0-10cm	Silcrete	1.5	26.8	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	Grey, overhang removal
STP7J	0-10cm	Silcrete	3.1	30.5	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	reddish pink
STP7J	0-10cm	Silcrete	2.8	30	No	Distal	Flake	N/A	N/A	N/A	N/A	N/A	Feather	3	0%	reddish pink

STP7J	0-10cm	Silcrete	4.9	34.4	No	Distal	Flake	N/A	N/A	N/A	N/A	N/A	Feather	2	0%	Light pink, split
STP7J	0-10cm	Silcrete	6.8	36	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	reddish pink
STP7J	0-10cm	Silcrete	8.6	34	No	Complete	Core	N/A	N/A	N/A	N/A	Flaked	Feather	5	0%	Light greyish pink, Uni-directional core
STP7Jii	10-19cm	Silcrete	0.6	18.2	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	pinkish red
STP7Jii	10-19cm	Silcrete	1.1	21	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	1	0%	pink
STP7Jii	10-19cm	Silcrete	3.9	41.5	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	pinkish grey
STP7Jiv	0-10cm	Silcrete	3	22.8	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	Light yellow, fine-grained
STP8F	10-20cm	Silcrete	1.6	27.4	Use	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	2	0%	Light reddish pink
STP8F	10-20cm	Silcrete	1.6	17.8	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	3	0%	grey
STP8G	10-20cm	Silcrete	0.1	10.9	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	pinkish red
STP8G	10-20cm	Silcrete	3.1	37.6	Use	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	3	0%	light pink
STP8G	10-20cm	Silcrete	4.4	26.6	No	Complete	Core	N/A	N/A	N/A	N/A	Flaked	Plunging	6	0%	light pink, uni-directional microblade core
STP8G	10-20cm	Mudstone	0.6	22.6	No	Complete	Flake	N/A	21.8	9.2	2.9	Flaked	Feather	3	0%	orangey yellow
STP8G	10-20cm	Mudstone	1	24	No	Complete	Flake	N/A	19.1	15.2	2.9	Flaked	Hinge	4	0%	orangey yellow
STP8G	10-20cm	Mudstone	5.7	34.2	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	3	35%	orange cortex, pale yellowy white
STP8Gii	10-20cm	Mudstone	0.1	10.9	No	Complete	Flake	N/A	10.8	5.3	0.9	Cortical	Feather	1	5%	yellow
STP8Gii	10-20cm	Mudstone	0.2	8.6	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	yellow
STP8Gii	10-20cm	Silcrete	0.3	14.3	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	2	0%	pale pink
STP8Gii	10-20cm	Silcrete	0.4	14.4	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	1	60%	pale pink
STP8Gii	10-20cm	Silcrete	0.4	16.1	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	pale pinkish yellow

STP8Gii	10-20cm	Silcrete	0.5	17.1	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	1	0%	pale yellow
STP8Gii	10-20cm	Silcrete	0.8	19.3	No	Complete	Flake	N/A	18.3	12	3.5	Flaked	Feather	3	5%	pale yellow
STP8Gii	10-20cm	Silcrete	1.1	14.8	No	N/A	Angular Fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	pink
STP8Gii	10-20cm	Silcrete	3.3	28.2	No	Proximal	Flake	N/A	N/A	N/A	N/A	Flaked	N/A	4	0%	pale yellow
STP8I	12-24cm	Mudstone	0.2	13.3	No	Distal	Flake	N/A	N/A	N/A	N/A	N/A	Feather	2	0%	pinkish yellow
STP8I	12-24cm	Silcrete	0.7	18.1	No	Complete	Flake	N/A	14.5	16	1.5	Flaked	Feather	1	5%	pink
STP8J	10-20cm	Silcrete	2.4	30.1	No	Medial	Flake	N/A	N/A	N/A	N/A	N/A	N/A	3	0%	pink