AN ABORIGINAL CULTURAL HERITAGE DUE DILIGENCE ASSESSMENT

LOT 2 DP 1008294, EMMAVILLE, GLEN INNES SEVERN LGA, NEW SOUTH WALES

A Report To: AusTin Mining Pty Limited
Date: 27 November 2016
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EXECUTIVE SUMMARY

AusTin Mining proposes to develop a trial open pit tin mine (Stage 1 of the Taronga Tin Project) and pilot processing plant on Lot 2 DP 1008294, 7.5km northwest of Emmaville on the New England Tablelands. Lot 2 is located on a ridge top spur at the southern end of the Grampian Ridge, between Carr’s Gully to the west and an un-named tributary of Vegetable Creek to the east, a landscape identified by the Office of Environment and Heritage as one that possesses the potential for the existence of Aboriginal items and/or places. Therefore, AusTin have requested an archaeological due diligence assessment (DDA) to be carried out prior to commencement of the Stage 1 development program and Remnant Archaeology has completed this DDA using the specifications set out in the Office of Environment and Heritage (OEH) document Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010).

A visual inspection of the Stage 1 study area was carried out on 18 June 2015 and no artefacts were found, no indicators of the presence of Aboriginal places were found either. Individual Kurrajong (B. populneus) trees, a source of fibre for the making of hunting nets and bags, were noted. The impact zone within the Stage 1 area shows evidence of disturbance in the form of dam construction (or the expansion of a natural pond using earth moving equipment), vegetation clearance and evidence of mining activity from the past. The ridge top at this location and the northern slope in particular conform closely with the OEH definition of disturbed land (2010: 18), that is land is disturbed if it has been undergone changes to the and surface as a result of human activity and that these changes remain clear and observable. An AHIMS search was generated for the purposes of this DDA and no sites of any kind are listed within a five-kilometre radius of Lot 2 DP 1008294. No Aboriginal items and/or places are listed in the Glen Innes Severn Local Environmental Plan 2012. The results of the AHIMS and LEP searches together with the visual inspection indicate there are no identified Aboriginal objects or declared Aboriginal places in the Stage 1 area. The likelihood, therefore, of any potential archaeological material to be at risk of harm has been assessed as low to zero and, therefore, an Aboriginal Heritage Impact Permit is not required for proposed activities within the Stage 1 area. Given the landscape context and land use history of the area the potential for objects or places to (still) exist is low. There would appear to be, therefore, no constraints on Aboriginal cultural heritage grounds to the Stage 1 mining development of Lot 2 DP 1008294.

The Stage 1 works of the proposed Taronga Tin Mine Project within Lot 2 DP 1008294 via Emmaville are considered unlikely to harm Aboriginal items and/or places. As such it is recommended here that there is no requirement for further archaeological investigation prior to the commencement of the proposed works but that the following recommendations are adopted during ground disturbance activities:

- Despite the low probability of Aboriginal objects and/or places still existing within the identified area of impact (Fig. 7), a cautionary approach must be adopted during all earthworks ensuring machinery does not move outside the boundaries of the impact zone shown. Clear demarcation of those boundaries must be erected prior to preliminary earthworks.
- In the event Aboriginal items are identified during ground disturbance earthworks, work is to cease in the immediate area and a 5-10m buffer established around the find using high visibility plastic barrier fencing. A qualified archaeologist must be consulted in order to verify the find.
- If the find is verified as an Aboriginal item, the Office of Environment and Heritage must be notified and an AHIP application must be submitted in order to mitigate the find. The appropriate Local Aboriginal Land Council must also be notified and a plan of management put in place to mitigate the find and to mitigate against the potential for further discoveries. The management plan must be developed in consultation with the relevant Aboriginal stakeholders.

In the event that skeletal remains are uncovered, work must cease immediately in that area and the area cordoned off. The NSW Police Department is to be contacted and no further action taken until written advice is received from the Police allowing work to recommence. If the remains are determined to be of Aboriginal origin, the Office of Environment and Heritage must be notified along with the appropriate Local Aboriginal Land Council. A plan of management must be put in place prior to works recommencing and it must be developed in consultation with the relevant Aboriginal stakeholders.
**TERMINOLOGY**

**Amorphous piece**
A stone that displays attributes that identifies it as an artefact but it is not a flake or a core; also known by other names such as ‘blocky’ fragment and ‘angular’ fragment.

**Artefact**
Any item that has been created or modified by humans.

**Artefact scatter**
A concentration or ‘scatter’ of artefacts found on the ground surface indicating prehistoric human activity at that location. Also known as ‘open’ sites, surface scatter, general artefact scatter and when found in association with hearths can be called a ‘campsite’.

**Assemblage**
Any collection of items from an archaeological site or deposit. The term can describe a group of similar items: the lithic assemblage or the faunal assemblage, for example. Or it can be used to describe all items, the archaeological assemblage from Test Pit 10, for example.

**Axe blank**
A lithic artefact, usually an igneous raw material (but not always) that has been ‘shaped’ using direct percussion, to a particular shape suitable for use as an axe. The edge has not yet been ground onto it. Also called ‘bifaces’.

**Backed artefact**
Uni- or bi-directional retouch along one lateral margin of an artefact, often a flake but not always. Tends to occur on the opposite margin to the intended working edge.

**Background scatter**
Defined by Hiscock (1988) as a continuous scatter of stone artefacts the density of which varies in response to the nature and amount of prehistoric activity. Also called ‘off-site archaeological material’.

**Bi-facial flaking**
When, during the knapping process, flakes are removed from both the dorsal and ventral surfaces of a flake. The resulting artefact is often called a ‘biface’, which can be a ‘blank’ that is in the process of being made into something else (an axe for example), or it can be a source of raw material - a core.

**Bi-facial point**
Any point that has been struck after initial removal, where the scars occur on both surfaces, ventral and dorsal (initiated from either lateral margin).

**Blade**
A flake that measures greater in the longitudinal plane than it does in the transverse plane, usually greater than twice the width. This term does not indicate function without further clarification. For example use wear along the margins.

**Bulb of percussion**
The ‘lump’ directly below the point of force application at the proximal end of the ventral surface of a flake. The bulb represents the point at which force applied through the PFA has removed the greatest mass. As the force passes through the flake it is reduced and so less mass is removed. The bulb is the primary diagnostic feature used when identifying flaked artefacts. Conversely, the negative bulb appears on the surface of the core from which the flake was removed.

**Chert**
This is a cryptocrystalline sedimentary rock with high silica content that fractures conchoidally and is preferred as a raw material from which to make stone artefacts. Jasper and agate are forms of chert.

**Context**
This is a term used in association with ground integrity (GI) and ground surface visibility (GSV). When assessing an archaeological site the archaeologist takes into consideration the GSV, the GI, all landmarks within the site including vegetation types, lithic raw materials present and also the surrounding environment. All aspects of the on-site and off-site landscape are taken into consideration when assessing the context within which an archaeological site exists.

**Cortex**
The outer, weathered surface of a rock and is often the first thing to be removed in the initial stages of the knapping process.

**Core**
The core is one of the three basic items in the knapping process. It is the raw material resource that is struck with a hammer in order to produce a flake. The negative flake scars on their surfaces are what is used to identify cores.

**Core: m-plat**
A multiple platform core is a core that has been ‘rotated’ so that flakes have been removed in more than one direction from more than one platform.

**Core: s-plat**
A single platform core is a core that has not been ‘rotated’ so that flakes have been removed in only one direction, from only one platform.

**Debitage**
The broken and fragmentary material resulting from the knapping process. The ‘waste’ produced when removing flakes from a core, usually small but not always.

**Direct percussion**
The primary knapping technique where one stone is used to strike a flake off another stone using direct impact. See also ‘pressure flaking’ as another knapping technique.
TERMINOLOGY

Distal
A term used when defining flake attributes. The distal end is the end of a flake that displays the termination. The distal end is the bottom end of a flake. See also ‘proximal’, ‘lateral margin’, ‘ventral surface’ and ‘dorsal surface’.

Dorsal surface
This is the ‘outside’ surface of a flake: the surface that was exposed to the environment when the flake was still attached to the core. The dorsal surface often (but not always) displays the negative flake scars of flake removals taken from the core prior to the removal of the flake in question. See also ‘ventral surface’.

Edge-ground axe
An axe the (sharp) edge of which has been created through the grinding process.

Excavation spits
Soil removed in layers of arbitrary depth from an archaeological excavation.

Excavation units
Soil removed in layers according to the soil profile and soil type, rather than in measured (arbitrary) spits.

Flake
The direct result of the knapping process a flake can be either the product used directly from the core or reduced further at some later time to create an implement, or, the flake can be a by-product, removed and discarded.

Flaked piece
A stone that displays attributes that identifies it as a flaked artefact but that cannot be identified with any more detail than as a ‘flake fragment’. For example, an artefact that does not display clearly attributes such as a bulb, proximal end or distal termination, platform, dorsal or ventral surfaces, can be called a flaked piece.

Ground Integrity
The degree to which the ground surface has been disturbed by whatever means. Ground integrity is important in assessing the archaeological value of a place and/or items found within a place. It is closely associated with ground surface visibility (GSV).

Grinding grooves
The location in close proximity to permanent water and a source of soft and/or sandy rock, where linear ruts or grooves have been ground into the base rock whilst creating edge-ground axes.

Grindstone
A stone that has been subjected to grinding pressure by another stone to grind up various materials; grass seeds, ochre. Grindstones were also used for putting the edge onto axes or for sharpening spear tips. Large flat grindstones are called bottom-stones or base plates, whilst the smaller stone used to do the grinding is the ‘muller’ or toptone.

Ground-edge artefacts
Artefacts that have had an edge placed on them through the grinding process, rather than through knapping (percussion). This grinding process may be deliberate as with axes, or it might be a by-product of another process as with grindstones.

GSV
This means ground surface visibility: the degree to which the ground surface is visible.

Hammerstone
One of the two essential implements used in the knapping process to create flakes. See also ‘core’.

Implement/tool
Any artefact that can be shown to have had a specific purpose. For example an axe, grindstone (base plate), muller (top stone) or tula (adze). All tools/implements are artefacts, not all artefacts are tools.

Isolated artefact
Also called an ‘isolate’. Single artefact found in isolation - by itself.

Knapping
The mechanical process of striking one stone, the core with another stone, the hammer to produce another stone, the flake. These three stones are the foundation of the knapping process.

Knapping floor
A specialised type of artefact scatter where artefacts of the same raw material type are found in close proximity to one another, generally within 1m². These artefacts can often be put back together, reconstructing the original core they were struck from.

Lateral margin
There are two, the left and right lateral margins (sides). Which is which is determined by how the flake is viewed. Looking at the ventral surface with the platform at the top, the ‘right’ lateral margin is on the right; the ‘left’ lateral margin is on the left.

Mudstone
A fine-grained sedimentary rock similar to chert but without the silica content that characterises cherts.

Negative scars
This is the depression left on the core after a flake is removed; the place from which the flake has been fractured and known as the negative flake scar. These are most common on cores but are also identifiable on the dorsal surface of flakes. Flake scars on the ventral surface of flakes indicate retouch.
**TERMINOLOGY**

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<th>Definition</th>
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<td><strong>PFA</strong></td>
<td>Point of force application is the point at which force enters the core, the impact point. Depending upon the angle and amount of force applied a flake removal is the desired result of this application of force.</td>
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<tr>
<td><strong>Platform</strong></td>
<td>The surface of a core that is struck by the ‘hammer’ to remove a flake.</td>
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<td><strong>Point</strong></td>
<td>Any artefact that has the shape of a point. This term does not indicate function.</td>
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<td><strong>Pressure flaking</strong></td>
<td>One of the two main knapping techniques. When a pointed object (that focuses pressure at one place) is placed against a core and pressure applied to the margin of the core in order to 'squeeze' flakes off. Commonly used to reduce the thickness of a flake rather than its size. See also ‘direct percussion’.</td>
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<td><strong>Proximal</strong></td>
<td>A term used when defining flake attributes. The proximal end is the end of a flake that displays the platform and the PFA. See also ‘distal’, ‘lateral margin’, ‘ventral surface’ and ‘dorsal surface’.</td>
</tr>
<tr>
<td><strong>Retouched flake</strong></td>
<td>Any artefact that has been struck after the initial impact that removed it from the core. This may be one strike; it may be more than one. The term does not indicate implement status, or function.</td>
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<td><strong>Ring crack</strong></td>
<td>Another term for point of force application (PFA).</td>
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<tr>
<td><strong>Silcrete</strong></td>
<td>A descriptive term identifying a rock type of original, fine-, medium- or coarse-grained sedimentary material cemented together with silica in cryptocrystalline form. Grains are visible to the naked eye. Silcrete is a common source material in areas where sedimentary rocks have been subjected to low-grade contact with metamorphic processes.</td>
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<tr>
<td><strong>Soil horizon</strong></td>
<td>A soil horizon is a layer of soil most often parallel to the land surface, with properties that differ from the layers above and/or below it. In an archaeological deposit it is most often the A Horizon that contains the cultural deposit archaeologists are interested in - but not always.</td>
</tr>
<tr>
<td><strong>Test Pit</strong></td>
<td>Any location chosen for subsurface exploration using 50cm² pits to test the archaeological potential at that place.</td>
</tr>
<tr>
<td><strong>Test Pit Grid</strong></td>
<td>A 2m² grid subdivided into 50cm² squares superimposed over the test pit location. Designed to maximise the area opened yet constrained to remain within the requirements of the OEH Code of Practice. Used where depth of deposit is, or is perceived to be a constraint.</td>
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<tr>
<td><strong>Termination</strong></td>
<td>The termination of a flake is the point at which the force applied exits the core. There are a number of different 'terminations' and each indicates different things including lithic raw material quality and also the skill or otherwise of the knapper.</td>
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<tr>
<td><strong>Tree - carved</strong></td>
<td>A tree that has been altered in recognisable patterns/designs, the actual meaning of which may be known or unknown. Carved trees are most often associated with particular or special places, or can be directional markers.</td>
</tr>
<tr>
<td><strong>Tree - scarred</strong></td>
<td>A tree that has been altered through the removal of bark and/or heartwood for (most commonly) utilitarian purposes. Scarring in this fashion is the result of bark removed for coolamons, shields and canoes.</td>
</tr>
<tr>
<td><strong>Unifacial point</strong></td>
<td>Any point that has been struck again, after initial removal, where the scars occur on one surface only, ventral or dorsal (initiated from either lateral margin).</td>
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<td><strong>Ventral surface</strong></td>
<td>This is the 'inside' surface of a flake; the surface that is not exposed to the environment that is created at the time the flake detaches from the core during the knapping process. Any flake scars on this surface indicate the flake in question has been retouched. See also ‘dorsal surface’.</td>
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<tr>
<td><strong>Waisted axe</strong></td>
<td>An edge-ground axe that has a groove around it in the transverse plane, used for attaching a haft (handle). Also known as a ‘hafted axe’ even if the handle is no longer present. The groove is usually applied using direct percussion and the ‘pecking’ - force applied to an object that is placed upon the axe at the time of impact.</td>
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ABBREVIATIONS

ACH  Aboriginal cultural heritage
ACHIA  Aboriginal cultural heritage impact assessment
AHIMS  Aboriginal Heritage Information Management System
AHIP  Aboriginal Heritage Impact Permit
CAH  Cultural and archaeological heritage
CHA  Cultural heritage assessment
CM  (lowercase) Centimetres
DDA  Due diligence assessment
DECCW  (NSW) Dept. of Environment Climate Change and Water (now the Office of Environment and Heritage)
DEP  (NSW) Dept. of Environment and Planning
EAR  Environmental Assessment Request
EPRG  Environmental Protection and Regulation Group
GI  Ground integrity
GPS  Global positioning system
GSV  Ground surface visibility
KYA  Thousand years ago
LALC  Local Aboriginal Land Council
LGA  Local government area
MM  (lowercase) Millimetres
MYA  Million years ago
NNTT  National Native Title Tribunal
NTS  Native Title Services Corporation
NT  Native Title
OEH  NSW Office of Environment and Heritage (formerly the Dept. of Environment Climate Change and Water)
RAP(s)  Registered Aboriginal Party (ies)
RA  Remnant Archaeology
TC(s)  Traditional Custodian(s)
TO(s)  Traditional Owners(s)
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INTRODUCTION

1.1 The Project Area and Overview

AusTin Mining (the Proponent) proposes to develop a trial open pit tin mine (Stage 1 of the Taronga Tin Project) and pilot processing plant on Lot 2 DP 1008294, 7.5km northwest of Emmaville on the New England Tablelands in New South Wales. Lot 2 is located on a ridge top spur at the southern end of the Grampian Ridge, between Carr’s Gully to the west and an un-named tributary of Vegetable Creek to the east (Fig. 1). Stage 1 is proposed in order to evaluate various technical characteristics of the Project overall and includes: resource reconciliation, metallurgical recovery and the collation of operating and environmental baseline data for inclusion in future studies; the demonstration of the economics of the Project; the adoption of works such that at the cessation of operations the Project is rehabilitated to a sustainable level.

Stage 1 of the project encompasses approximately 10ha (Fig. 2) within Lot 2 (120ha) that will be assessed as part of the current due diligence process; however, the actual zone of impact is smaller still. See Figure 2. During the course of the project the Proponent plans to mine approximately 400,000 tonnes of ore and waste and produce approximately 1500 tonnes of concentrate.

The main Project components will be as follows:

- Improvements to existing site access via the Grampians Road.
- Establishment of an open pit, ore and waste dumps, internal haulage roads, pads for processing plant and equipment, amenities and workshop.
- Extraction of weathered and fresh ore and waste within an extraction area covering approximately 1.4ha and surrounded by a safety bund and channel as necessary.
- On-site crushing and processing to produce a tin concentrate for export overseas.
- Transportation of tin concentrate utilising road trucks via the site access road and approved transport route.
- A series of water management structures.
- Final rehabilitation and landform creation.

1.2 The Cultural Heritage Brief and Cultural Heritage Scope of Works

AusTin require an archaeological due diligence assessment (DDA) to be carried out prior to commencement of the Stage 1 development program, this DDA was completed using the specifications set out in the Office of Environment and Heritage (OEH) document Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (2010). This archaeological DDA of the Stage 1 works will be included in the Company’s environmental impact statement (EIS), to be submitted to Glen Innes Severn Council as one component of the development application process. To satisfy the requirements of the Due Diligence Code of Practice the scope of this DDA will include:

- Searches of Aboriginal heritage databases to identify/verify the presence and location of any registered Aboriginal sites within the study area or within proximity of it, including the:
  - OEH Aboriginal Heritage Information Management System (AHIMS) database.
  - Glen Innes Severn Council local environmental plan.
- Consideration of the landscape context and land use history.
- Assessment of the significance of any identified Aboriginal items and/or places.
- Management recommendations to avoid/mitigate against any potential harm that may impact Aboriginal items and/or places.
1.3 The Objective of This Due Diligence Assessment

The aim of this DDA is to provide information in the EIS sufficient to satisfy the requirements of the Glen Innes Severn Council in its consideration of the AusTin development proposal. Specifically that a due diligence assessment be carried out to assess the potential for the subject land (Lot 2 DP 1008294) to retain archaeological resources given that the land contains landscape features that indicate the likely existence of Aboriginal objects (DECCW 2010: 12) namely, being located on a ridge top/ridgeline.
Figure 2 - The location of Lot 2 and the Stage 1 land portion within it. Image source: Google Earth Pro 2015.
2 THE LEGISLATIVE CONTEXT

2.1 The NSW National Parks and Wildlife Act (NPW) 1974

The **NSW National Parks and Wildlife Act 1974** (the ‘NPW Act’) is the primary piece of legislation for the protection of Aboriginal cultural heritage in New South Wales. The Office of Environment and Heritage (OEH) administer the NPW Act. The NPW Act provides statutory protection for Aboriginal objects by making it illegal to harm Aboriginal objects and Aboriginal places, and by providing two tiers of offence against which individuals or corporations who harm Aboriginal objects or Aboriginal places can be prosecuted. The NPW Act defines Aboriginal objects and Aboriginal places:

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

- **Aboriginal place means any place declared to be an Aboriginal place under section 84.**

The highest tier offences are reserved for knowledgeable harm of Aboriginal objects or knowledgeable desecration of Aboriginal places. Second tier offences are strict liability offences—that is, offences regardless of whether or not the offender knows they are harming an Aboriginal object or desecrating an Aboriginal place—against which defences may be established under the **NSW National Parks and Wildlife Regulation 2009**.

Section 87 of the Act establishes defences against prosecution under s.86 (1), (2) or (4). The defences are:

- An Aboriginal Heritage Impact Permit (AHIP) authorising the harm (s.87 [1]).
- Exercising due diligence to establish Aboriginal objects will not be harmed (s.87 [2]) due diligence may be achieved by compliance with requirements set out in the **NSW National Parks and Wildlife Regulation 2009** or a code of practice adopted or prescribed by the NPW Regulation (s.87 [3]).

This due diligence assessment report follows the Due Diligence Code and aims to establish whether Aboriginal objects would be harmed by the proposed wastewater route in accordance with s.87 (2) of the NWP Regulation.

2.2 NSW National Parks and Wildlife Regulation 2009

The NPW Regulation 2009 (cl.80A) assigns the **Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW** (DECCW 2010) as one of the codes of practice that can be complied with pursuant to s.87 of the NPW Act.

Disturbed land is defined by cl.80B (4) as “…disturbed if it has been the subject of a human activity that has changed the land’s surface, being changes that remain clear and observable”. Examples given in the notes to cl.80B (4) include “construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, storm water drainage and other similar infrastructure).”

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

The Environment Planning and Assessment Act (EP&A Act) is the act that regulates land use planning and development in New South Wales and through it consideration must be given to the environment as part of the land use planning process. The EP&A Act accommodates documents such as the review of environmental factors (REF), statement of environmental effects (SEE), the environmental impact statement (EIS), and the environmental impact assessment (EIA). These documents are used as part of land use planning to assess the environmental impact of a development and in this context the environment includes both Aboriginal and non-Aboriginal (historic) heritage items and places. These assessments also take into consideration natural resource use and intangible aspects such as spiritual landmarks and landscape features linked to traditional stories.

The EP&A Act also accommodates state environment planning policy (SEPPs) that cover areas of state or regional environmental planning significance and local environmental plans (LEPs) which cover areas of local government environmental planning significance. Local environment plans commonly identify and have provisions for the protection of items and places that are of local heritage significance.
2.4 Due Diligence and Codes of Practice

There are advantages to having a due diligence process and the *Due Diligence Code of Practice for the Protection of Aboriginal objects in New South Wales* (DECCW 2010: 4) states that it:

- Assists in avoiding unintended harm to Aboriginal objects.
- Provides certainty to land managers and developers about appropriate measures for them to take.
- Encourages a precautionary approach.
- Provides a defence against prosecution if the process is followed.
- Results in more effective conservation outcomes for Aboriginal cultural heritage.

The *NPW Act 1974* allows for due diligence to be exercised by a number of different codes of practice recognised under the *NPW Regulation 2009* and they include the:

- *Plantations and Reafforestation Code* - appendix to the *Plantations and Reafforestation (Code) Regulation 2001*.
- *Private Native Forestry Code of Practice 2008*.
- *NSW Minerals Industry Due Diligence Code of Practice For the Protection of Aboriginal Objects 2010*.
- *Operational Guidelines for Aboriginal Cultural Heritage Management 2010*. Published by Forests NSW.
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Published by Dept. Environment, Climate Change and Water - DECCW (now Office of Environment and Heritage - OEH).

This due diligence assessment has been written to meet the requirements of the DECCW *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

2.5 The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales 2010* describes the process that must be followed and the actions that must be taken by a proponent, and the site conditions that must be satisfied, to show due diligence in the consideration of potential harm to Aboriginal objects. The Due Diligence Code sets out a basic framework with the following steps followed in order to make an assessment of whether or not proposed activities may impact Aboriginal objects:

1. Will the activity disturb the ground surface?
2. Search the AHIMS database and any other sources of which you are already aware.
3. Activities in areas where landscape features indicate the presence of Aboriginal objects.
4. Can the harm or the activity be avoided?
5. Desktop assessment and visual inspection.
6. Further investigations and impact assessment.

The process set out in the Code involves consideration of harm to Aboriginal objects at increasing levels of detail, with additional information incorporated at each step and used to support the decisions being made. If the proposed activities are not “low impact activities” (a defence for which is provided under the Regulation) the considerations result in a determination of whether or not:

- Further approval (an AHIP) under the *NPW Act* is required.
- The due diligence obligations for the protection of Aboriginal objects are discharged under the Code.
2.6 Glen Innes Severn Local Environment Plan 2012

Consideration of and protection for Aboriginal and non-Aboriginal heritage is provided under Part 5, Clause 5.10 of the Glen Innes Severn Local Environmental Plan 2012, that states consent is required for any impacts upon heritage items (as listed in Schedule 5), Aboriginal objects, Aboriginal place of heritage significance, a building, work, relic or tree within a heritage conservation area. Clause 5 of the LEP states that a heritage management document (aimed at assessing potential impact) may be required before development can be approved on land within which a heritage item is located, on land that is within a heritage conservation area, or on land that is within the vicinity of either of the previous two scenarios.

No items or places of Aboriginal heritage significance are listed in Schedule 5 of the Glen Innes Severn LEP for the Emmaville district.

3 THE ENVIRONMENT

3.1 Topography

The New England Tableland is a plateau of undulating hills and plains varying in height between 600m through the broad valleys to the west and rising to a maximum of 1000-1500m to the east, culminating in spectacular escarpments and gorges along the central and southeast margin of the Tablelands. The Emmaville topography sits at an altitude of 900m and includes undulating to steep hills, saddles and gullies interspersed with stepped exposures and/or outcrops of granite and occasional basalt rocks. Creeks are incised and in the main stony-bottomed with associated pockets of marshland in areas where the creek margins are able to spread and decomposed granitic soils are able to accumulate. The Grampian Ridge upon which the Taronga Project is located sits at 900m (Fig. 1).

3.2 Geology

The geology of the Emmaville area is complex and is dominated by host Permian-Triassic aged sedimentary and volcanic rocks of the New England fold belt, assigned locally to the Grampians Formation. The host rocks were folded and intruded by granites also of Permian-Triassic age and it is these granites that are the source of the tin, copper and silver mineralisation present in the deposit. Some basalt rocks also occur sporadically across the district. Conglomerates make up a component of the sedimentary rocks and where these rocks outcrop they would have been utilised as raw material by Aboriginal people in the past.

Geological mapping carried out by AusTin indicates the Taronga mineralisation occurs in sheeted quartz veins, that tin occurs associated with the quartz veins. Tin mineralisation has been identified and categorised into two large zones, the northern and southern zones. Two veins in the Northern Zone are between 10 and 80 metres wide over lengths of between 600 and 650 metres and have been outlined through exploratory drilling from 1979 to 1982 to a depth of 200 metres. Four separate veins in the Southern Zone are 8 and 10 metres wide over lengths of between 150 and 550 metres, and have been outlined by drilling to a depth of 150 metres. Cassiterite mineralisation also occurs in the Taronga deposit along with copper, silver, tungsten, molybdenum, bismuth and fluorine.

3.3 Vegetation

Open forests and woodlands dominate the landscape and these forests consist of stringybark communities; Silver-topped Stringybark (Eucalyptus laevis) and Youman’s Stringybark (Eucalyptus youmani) for example, box communities including Yellow Box (Eucalyptus melliodora) and other species including Rough-barked Apple (Angophora floribunda), Manna Gum (Eucalyptus viminalis) and Orange Gum (Eucalyptus prava). The presence of sporadic Kurrajong (Brachychiton populneus) trees was noted during the visual inspection. Open forests of Tenterfield Wollybutt (Eucalyptus banksii), Narrow-leaved Ironbark (Eucalyptus crebra), and Blakely’s Red Gum (Eucalyptus blakelyi) also occur in amongst the ridges and rocky outcrops.
4 THE HUMAN LANDSCAPE

4.1 Ethno-historical Context

Sutton (1988) states that information concerning the pre-contact inhabitants of the Tablelands is not common and he suggests the reason was the rapid spread of non-Aboriginal settlement before the coming of anthropologists and that as a result reconstructions of how Aboriginal people lived at the time of contact are sketchy, scattered and left to the passing references of pioneer settlers and squatters, if they were interested in recording anything at all. Graziers in the early 1800s, ever watchful for new pasture, were first to settle the Tablelands (McBryde 1974) arriving from the south via the Hunter Valley and it was calculated by George McDonald, Commissioner of Crown Lands for New England, that in 1842 there would not have been more than 600 people (Bowdler and Coleman 1981). Sutton has suggested this figure could be an underestimate and given other influencing factors (smallpox, for example) that upwards of 1,000 may have been closer (Sutton 1988).

Discussions of the Aboriginal groups that subsisted on the Tablelands revolve around linguistic studies, even so Tablelands languages have been identified and described based on rudimentary word lists, rather than fully documented, spoken languages and as a result comment continues to the present day, especially within the Aboriginal Community, as to which specific group or groups occupied which areas. In the mid-1970s the language spoken in the Glen Innes district was identified as Eneewin, which was thought to be the same language as spoken in the Armidale district until Crowley demonstrated the two languages were in fact different enough to warrant separation (1976).

4.2 Traditional Aboriginal Land Use

The Tablelands were rich in fauna with kangaroos and possums being important to subsistence (Crawford 1939) and their skins being used for rugs sewn together with bone awls and kangaroo tail sinew (McBryde 1974). Waterfowl and crayfish, turtles and eels were available in the swamps and lagoons, emu and bustard in the woodlands (Mundy 1852; Wyndham 1889; 1890). Large and complex nets were commonly used to ensnare kangaroos and other large game (McBryde 1974; Anon 1978) and the bark of the Kurrajong was one source of fibre for the making of these nets (Bowdler and Coleman 1981). As far as implements are concerned McBryde (1974) states that the focus seems to have been upon spears, clubs and boomerangs amongst the wooden items used, with tomahawks and stone knives amongst the stone items (McBryde 1974).

4.3 Manifestations of Traditional Aboriginal Land Use

As the result of research carried out at the University of New England in Armidale during the early 1980's thinking at the time had Aboriginal occupation of the Tablelands as a transitory thing; a place people only came to for specific purposes and did not occupy above 1000m (the same height above sea level as Armidale and higher) for any
extended periods of time, much less permanently (Bowdler 1981). This idea was seemingly supported by the fact that to that time the only site types found were art sites, bora rings, stone arrangements carved trees and intangible sites of importance to Aboriginal people (Appleton 1992).

For example, Williams (1980) excavated a series of rock shelters in the vicinity of, and including, Mount Yarrowyck Art Site to the west of Armidale and found the art site was most likely occupied at least 400 years ago and possibly as far back as 4,000 years ago (Williams 1980: 83) but that the results of her excavations at Mount Yarrowyck and in the surrounding rock shelters suggested none of them were ‘habitation’ sites, rather they were used for maintenance activities and that Mount Yarrowyck art site itself was a ceremonial site (Williams 1980: 85).

Also in the early 1980s Davidson (1982) looked at lagoons at Llangothlin, north of Guyra and found six edge-ground axes in association with Little Llangothlan Lagoon and some others to the west of Llangothlan Lagoon. Four grindstones were also found in the area along with a number of small, low density artefact scatters (Davidson 1982).

By the mid-1980s, however, the hypothesis put forward by Bowdler (1981) was well and truly under review and was challenged when archaeological research in the Walcha district revealed sites of a seemingly more utilitarian purpose and of a nature that suggested longer-term occupation (Godwin 1983) as opposed to the previous idea of transitory visitation. Godwin’s research in the Walcha district demonstrated that Aboriginal people were not visiting the Tablelands for specific, ceremonial purposes but that people occupied and lived in the landscape above 1000m on a more permanent basis. Subsequent consultancy work across the Tablelands since the late 1980s, beginning with Sutton’s (1988) survey and review of Aboriginal sites in Armidale, has provided support for the latter viewpoint concerning Aboriginal occupation of the Tablelands.

4.4 Non-Aboriginal Land Use History

Tin mining has been a major contributor to the economy of Glen Innes and surrounds for over one hundred years. As early as 1849 its existence had been postulated and in 1853 it was first found (Lobsey 1972). In 1872 it was discovered in the Emmaville area at the headwaters of Vegetable Creek (GIMC 1972; Lobsey 1972) to the south east of the current study area (approximately 4km north of Emmaville). Anecdotal evidence suggests the name Vegetable Creek came from the many vegetable gardens along the creek tended by Chinese tin miners (Lobsey 1972), and the name was adopted by the village that sprang up. Lobsey records that considerable resistance from the local residents occurred in 1882 when the government changed the name to Emmaville (1972: 20-21).

Figure 4 - Chinese tin miners at work in the Emmaville district. Image source: Glen Innes Municipal Council (1972: 138).

In 1873 activity had begun to flourish, with at least two hundred tons of tin ore leaving the area every week (Maitland Mercury 13 November 1873, p.2 quoting a story from the Glen Innes Guardian November 6, 1873. Source: Trove - http://trove.nla.gov.au/ndp/del/article/18779027) and the story goes on to describe the workings of at least eleven claims along the creek at that time. On August 30 in 1875 the Glen Innes Examiner states that the whole of Vegetable Creek had been taken up and that a settlement of around 100 people had appeared in the vicinity (Quoted by GIMC 1972: 140). The high point of mining occurred in 1882-83 and it appears the Chinese were the dominant miners in the Vegetable Creek district (Fig. 4) numbering approximately 2000 individuals (McGowan 2005). By 1889 output had fallen and the Chinese became less prominent and by 1897 the value of tin had dropped to 8% of its value in the early 1880s. The turn of the century saw the introduction of
dredging machinery and although this refuelled the prosperity of the tin mining industry, it hastened the end of fossicking (Fig. 5) as creeks became more and more the property of dredging companies (McGowan 2005).

Fluctuating metal prices reduced mining activity toward the end of the 19th century and it was not until the 1920s that hopes of a more stable mining industry returned to Emmaville (GIMC 1972). Up to 1968 extensive alluvial deposits of tin were being identified in the Vegetable Creek district and in 1972 Emmaville celebrated its centenary of tin mining (GIMC 1972; Lobsey 1972). Although mining has not been a major factor in the local economy recently, tin mining remains an important part of the local history.

Figure 5 - Tin miners on Vegetable Creek. No date available. Image source: NSW Department of Resources and Energy Facebook page (https://www.facebook.com/nswre)

4.5 Current Land Use

The Lot 2 (DP 1008294) study area has been modified both through the action of pastoral activity and through the action of mining from as early as the mid-1800’s and mining has continued sporadically since that time (GIMC 1972; Lobsey 1972). Throughout the various mining periods the land has been used for grazing of stock and although up on the ridgelines clearing is not extensive, on the undulating plains extensive portions of land have been subject to tree clearing with some remnants of riparian vegetation existing along Vegetable Creek and the Severn River. Pastoral activity has predominated with sheep grazing historically and cattle becoming more common in recent times.

5 DATABASE AND REGISTER SEARCHES

In 2010 the Glen Innes Severn Council commissioned the Australian Museum (AM) to carry out an Aboriginal heritage study of the entire local government area and a component of that study was a review of the Aboriginal Heritage Information Management System (AHIMS) database to identify what site types have been recorded and where in the LGA and they were recorded. Along with this information the Museum carried out a detailed program of consultation with the Glen Innes Aboriginal Community identifying the areas that were of heritage sensitivity to Aboriginal people within the LGA (Weston 2010). What follows is an outline of the sites that exist within the LGA and areas that maintain Aboriginal heritage significance to the Aboriginal community at present, that are within the vicinity of the present study area at Lot 2 DP 1008294. A description of what the site types represent is provided in the AM report (Weston 2010: 37-39).

5.1 Aboriginal Heritage Information Management System (AHIMS)

The Australia Museum AHIMS search listed 70 sites within the Glen Innes Severn LGA and although there is a wide variety of site types present, over 50% of them were stone artefact scatters. Scarred trees (n=9, 12.0%) and isolated finds (n=8, 11.4%) were the next most highly represented site types. These sites generally occur in the vicinity of watercourses, in elevated areas and/or in areas with geological and/or vegetation resources that would have been exploited by Aboriginal people in the past. Lot 2 is found across an elevated area, along a southern spur of the Grampian Ridge, within one kilometre of semi-permanent water and with Vegetable Creek 1.9km to the south and 3.9km to the west. Permanent water in the form of the Beardy River is 4.5km north, the Severn River 12km to the south. Table 1 lists all site types found.
Areas identified by the AM as having heritage significance to the Aboriginal community (and that are within the vicinity of Lot 2) include; ridgelines above permanent water, Strathbogie Station, the confluence of the Severn River and Wellingrove Creek near Strathbogie, Wellingrove and Emmaville, which was a taboo place restricted because it was a place where people went to die. A place on the Severn River in the Torrington/Emmaville area is noted as a massacre location although the Severn is south of Emmaville and Torrington is to the north. The Beardy River passes between Emmaville and Torrington.

An AHIMS search was generated for the purposes of this due diligence assessment and no sites of any kind are listed within a five-kilometre radius of Lot 2 DP 1008294. Figure 6 shows this area and the terrain involved; there are ridgelines, semi-permanent and permanent waterways within the 5 kilometres. It is also shown that Vegetable Creek moves from south of Lot 2, north of Emmaville, westward and then bends to the north draining into the Beardy River toward the northern boundary of the five-kilometre radius.

5.2 Glen Innes Severn Local Environmental Plan 2012

As noted in Sub-section 2.5 no items or places of Aboriginal heritage significance are listed in Schedule 5 of the Glen Innes Severn LEP for the Emmaville district.

Table 1 - Sites in the AHIMS database from the Glen Innes Severn local government area, as listed in Weston (2010: 37).

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Count</th>
<th>% Of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open camp site/stone artefact scatter</td>
<td>36</td>
<td>51.4</td>
</tr>
<tr>
<td>Scarred tree</td>
<td>9</td>
<td>12.9</td>
</tr>
<tr>
<td>Isolated find</td>
<td>8</td>
<td>11.4</td>
</tr>
<tr>
<td>Stone arrangement¹</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>Stone arrangement and natural mythological</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Bora/ceremonial site</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Burial</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Subtotal</td>
<td>63</td>
<td>90.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site Type</th>
<th>Count</th>
<th>% Of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural mythological</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Natural mythological and open camp site</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Stone arrangement and open camp site</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Axe grinding grooves</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Axe grinding grooves and stone arrangement</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Water hole/well</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Rock engraving</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Subtotal</td>
<td>7</td>
<td>9.8</td>
</tr>
</tbody>
</table>

TOTAL 70 100
Figure 6 - The five-kilometre radius around Lot 2. Vegetable Creek encloses the study area on three sides, the headwaters being to the southeast, flowing west and then bearing northward into the Beardy River to the northwest of the study area. Image source: Google Earth Pro 2015.

6 VISUAL INSPECTION

Stage 1 of the Taronga Project encompasses approximately 10ha within Lot 2, and a visual inspection of the development impact zone (Fig. 7) within the Stage 1 area was completed on 18 June 2015 to determine whether or not development works within that zone might harm items and/or areas of archaeological potential. The visual inspection was also carried out to assess the degree to which historical landscape modification, in the form of previous mining activity, had altered the land surface and the degree to which that modification might have already impacted the archaeological potential of the ridgeline.

No artefacts were found during the visual inspection, no indicators of the presence of Aboriginal places were found. Individual Kurrajong (B. populneus) trees, a source of fibre for the making of hunting nets and bags, were noted across the area.
Figure 7 - The location of the proposed impact zones (red shade) within Stage 1 for this due diligence assessment. The red dashed lines are proposed pipeline routes and the black dashed line is a proposed service road. Image source: Google Earth Pro 2015.
7 IMPACT ASSESSMENT

The impact zone within the Taronga Project Stage 1 area (Fig. 7) shows evidence of disturbance in the form of dam construction or at least the expansion of a natural pond using earth moving equipment, vegetation clearance, but also and of more importance evidence of mining activity from the historical past. The ridge top at this location and the northern slope in particular conform closely with the Office of Environment and Heritage definition of disturbed land (2010: 18).

Land is disturbed if it has been the subject of a human activity that has changed the lands surface, being changes that remain clear and observable.

The ridgeline that passes through the Stage 1 impact zone and the slopes to the north and south were inspected and no evidence of Aboriginal cultural heritage objects, places, or modified trees was identified. The disturbance of the project area through past mining activity and its distance from larger, more permanent water sources such as the Severn and Beardy Rivers, suggest the potential for Aboriginal cultural heritage objects or places to be present within the impact zone is low to zero.

The results of the AHIMS and LEP searches together with the visual inspection indicate there are no identified Aboriginal objects or declared Aboriginal places in the Stage 1 area. The likelihood, therefore, of any potential archaeological material to be at risk of harm has been assessed as low to zero and, therefore, an Aboriginal Heritage Impact Permit is not required for proposed activities within the Stage 1 area.

8 DUE DILIGENCE ASSESSMENT

Will the activity disturb the ground surface?

Yes. The activity will involve improvements to existing site access and the establishment of an open pit, ore and waste dumps, pads for processing plant and equipment, amenities and workshop.

Search relevant Aboriginal sites databases (for example AHIMS) and any other sources that may provide information on Aboriginal items or places that have the potential to be impacted upon.

No Aboriginal sites have been recorded on the AHIMS database within a radius of five kilometres Lot 2 DP1008294 on the southern margin of Grampian Ridge. One site is recorded in the AHIMS database and in the Glen Innes Severn Council local environment plan, located at 110 Blacks Road, Glen Innes (Lot 197 DP 753282).

Is the activity in an area where landscape features indicate the potential for Aboriginal items?

Yes. The activity is aligned with a ridge top bearing east-west, the southern portion of what is identified on the 1:50,000 topographical map as Grampian Ridge. Semi-permanent water is located at the base of this ridge in the form of Vegetable Creek, the source of which is to the southeast between Grampian Ridge and Emmaville, while the course of the creek passes westward to the south of the ridge and flows north to a confluence with the Beardy River to the north of Grampian Ridge (see Fig. 6). The site of the Stage 1 impact zone is located within a landscape form described by OEH as having archaeological potential, that being a ridge top or ridgeline. However, as described in Sub-section 4.4, since the commencement of mining activity in the 1870s the district surrounding Vegetable Creek has been subject to intensive if not constant modification. The visual inspection carried out on 18 June 2015 revealed no surface artefacts and no evidence of any other indicators of Aboriginal occupation within the areas to be impacted.

Can the activity or harm be avoided?

No Aboriginal sites occur within the impact zone on Lot 2 DP 1008294 and the potential for Aboriginal items or places to exist is low when land use history is taken into consideration. Consequently there is no requirement for the Proponent to alter the proposed development within the Stage 1 impact zone to avoid potential harm to Aboriginal items and/or places.
Carry out a desktop assessment and if required complete further investigation.

This due diligence assessment reports on the desktop assessment and the visual inspection carried out. The desktop assessment outlines the potential for Aboriginal items and/or places to be present across the subject area given the landforms present and the source of natural resources these landforms would have been for pre-European Aboriginal groups. The desktop assessment also discusses the degree of landscape disturbance that has occurred across the district since non-Aboriginal impact on the landscape began in the 19th century.

Carry out an impact assessment of the proposed activity.

The Stage 1 impact zone and slopes to north and south were inspected and no evidence of Aboriginal cultural heritage objects, places, or modified trees was identified. The disturbance of the project area through past mining activity and its distance from larger, more permanent water sources such as the Severn and Beardy Rivers, suggest the potential for Aboriginal cultural heritage objects or places to be present within the impact zone is low to zero.

The results of the AHIMS and LEP searches together with the visual inspection indicate there are no identified Aboriginal objects or declared Aboriginal places in the Stage 1 area and the likelihood, therefore, of any potential archaeological material being at risk of harm is low to zero. The proposed development of Stage 1 of the Taronga Tin Mine Project on Lot 2 DP 1008294 should proceed with caution and care not to extend in any direction beyond the boundaries of the work area defined as the Stage 1 outlined in Figure 7 above.

9 Conclusions

AusTin’s proposed Taronga Project falls within an area of particular significance with regard to cultural heritage values. Lot 2 DP1008294 has Aboriginal heritage significance because the landscape upon which it occurs (a ridge top or ridgeline) has been identified by OEH as one that holds potential for the existence of Aboriginal items and/or places of heritage significance.

Despite the presence of remnant vegetation (the Brachychiton trees for example), considerable landscape modification has altered the land surface. A survey of the historical literature for the area, as briefly outlined above, alludes to the degree of landscape modification present as early as the 1870s. The modification of the natural land surface reduces and in some cases removes entirely the potential for Aboriginal items and places to exist and the potential for sub-surface archaeological features to survive is also significantly reduced.

No Aboriginal objects or places were located during the visual inspection of Lot 2 DP1008294 and no sites have been recorded within an area of 5km (in any direction) of the lot. Given the landscape context and land use history of the area the potential for objects or places to (still) exist is low. There would appear to be, therefore, no constraints on Aboriginal cultural heritage grounds to the proposed Stage 1 mining development of Lot 2 DP 1008294.
10 RECOMMENDATIONS

The Stage 1 works of the proposed Taronga Tin Mine Project within Lot 2 DP 1008294 via Emmaville on the New England Tablelands of New South Wales are considered unlikely to harm Aboriginal items and/or places. As such it is recommended here that there is no requirement for further archaeological investigation prior to the commencement of the proposed works but that the following recommendations are adopted during ground disturbance activities:

- Despite the low probability of Aboriginal objects and/or places still existing within the identified area of impact (Fig. 7), a cautionary approach must be adopted during all earthworks ensuring machinery does not move outside the boundaries of the impact zone shown. Clear demarcation of those boundaries must be erected prior to preliminary earthworks.

- In the event Aboriginal items are identified during ground disturbance earthworks, work is to cease in the immediate area and a 5-10m buffer established around the find using high visibility plastic barrier fencing. A qualified archaeologist must be consulted in order to verify the find.

- If the find is verified as an Aboriginal item, the Office of Environment and Heritage must be notified and an AHIP application must be submitted in order to mitigate the find. The appropriate Local Aboriginal Land Council must also be notified and a plan of management put in place to mitigate the find and to mitigate against the potential for further discoveries. The management plan must be developed in consultation with the relevant Aboriginal stakeholders.

- In the event that skeletal remains are uncovered, work must cease immediately in that area and the area cordoned off. The NSW Police Department is to be contacted and no further action taken until written advice is received from the Police allowing work to recommence. If the remains are determined to be of Aboriginal origin, the Office of Environment and Heritage must be notified along with the appropriate Local Aboriginal Land Council. A plan of management must be put in place prior to works recommencing and it must be developed in consultation with the relevant Aboriginal stakeholders.
11 REFERENCES

Anon. 1978. "A Lady - My experiences in Australia: being recollections of a visit to the Australian colonies in 1856-


