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Tolson's Mushroom Farm and Substrate Plant Project: Cultural Heritage Assessment

Report for Perram and Partners on behalf of the Tolson Group

April 2009

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- Dave Tolson, Neil Cockerell, and Rob Tolson (Elf Farm Supplies Pty Ltd)
- Steve Randall and Tanya McEwen (Deerubbin Local Aboriginal Land Council)
- Melanie Thomson and Robert Suansri (Biosis Research)

ABBREVIATIONS

AHC	Australian Heritage Council
AHIMS	Aboriginal Heritage Information Management System
ALALC	Armidale Local Aboriginal Land Council
ATSIC	Aboriginal and Torres Strait Islander Commission
CHL	Commonwealth Heritage List
DLALC	Derrubbin Local Aboriginal Land Council
DEH	Department of Environment and Heritage
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change (formerly Department of Environment and Conservation)
EP&A	Environmental Protection and Assessment
EPBC	Environment Protection and Biodiversity Conservation
GSV	Ground surface visibility
ICOMOS	International Council on Monuments and Sites
LEP	Local Environmental Plan
LGA	Local Government Area
MGA	Map Grid of Australia – unless otherwise specified
NHL	National Heritage List
NNTT	National Native Title Tribunal
NPWS	National Parks and Wildlife Service (now part of DECC)
REP	Regional Environment Plan
RNE	Register of the National Estate
SHI	State Heritage Inventory
SHR	State Heritage Register

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EXECUTIVE SUMMARY

Biosis Research Pty. Ltd. was commissioned by Perram & Partners on behalf of the Tolson Group, to undertake an archaeological and cultural heritage assessment of the proposed construction of a new mushroom farm at Londonderry and the proposed expansion of the Mulgrave substrate plant. The aim of the current project is to assess the archaeological and cultural heritage values within the proposed development footprints.

The assessment was walked in transect formation focussing on areas of archaeological potential within the Study Area as well as any exposures and areas of ground surface visibility.

No new Aboriginal archaeological sites were identified as a result of the current field survey.

Recommendations

Recommendation 1 - Stop work provision: Aboriginal sites

All Aboriginal places and objects are protected under the NSW *National Parks and Wildlife Act 1974*. This protection includes Aboriginal places and objects which have not been identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

- NSW Department of Environment and Climate Change
- A qualified archaeologist
- Aboriginal stakeholders from the Deerubbin Local Aboriginal Land Council

Recommendation 2 – Human Remains

In the case of skeletal remains the following process will be implemented.

- The find will be reported to police and state coroner
- The Tolson Group will be notified of the find
- Aboriginal stakeholders will be notified of the find
- NSW DECC will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the *National Parks and Wildlife Act* 1974 (NSW) and the NSW NPWS *Aboriginal Cultural Heritage Standards and Guidelines Kit*
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan

1.0 INTRODUCTION

Cultural heritage legislation protecting Aboriginal and historic heritage places applies in New South Wales. These places are an important part of our heritage. They are evidence of more than 40,000 years of occupation of New South Wales by Aboriginal people, and of the more recent period of post-contact settlement.

Heritage sites and places can provide us with important information about past lifestyles and cultural change. Preserving and enhancing these important and non-renewable resources is encouraged.

It is an offence under sections of legislation to damage or destroy heritage places & objects without a permit or consent from the appropriate body (see Appendix 5 for a discussion of relevant heritage legislation and constraints).

When a project or new development is proposed, it must be established whether any cultural heritage places & objects are in the area and how they might be affected by the project. This cultural heritage may be historical or Aboriginal. Often it is possible to avoid & minimise the impact of development or find an alternative to damaging or destroying a heritage place, site or objects. Therefore, preliminary research and field survey to identify these heritage places and objects is a fundamental part of the background study for most developments.

The first stage of a study incorporates background research to collect information about the land relevant to the proposed development project (the Study Area). A second stage involves a detailed field inspection of this area.

Possibly the most important part of the study involves assessing the cultural heritage and archaeological significance of heritage places in the Study Area. Understanding the significance of a heritage place and objects is essential for formulating management recommendations and making decisions.

The subject matter of this report involves the use of a number of technical words and terms with which the reader may be unfamiliar. An extensive glossary has been included at the end of the report and reference to this may be of assistance.

1.1 Project background

Biosis Research Pty. Ltd. was commissioned by Perram and Partners on behalf of the Tolson Group to undertake a Cultural heritage assessment of the proposed development of a new mushroom farm at Londonderry and expand the capacity of the Mulgrave substrate plant.

Recommendations designed to minimise impacts to Aboriginal cultural heritage places and objects have been formulated in accordance with State and Commonwealth statutory provisions, 'best practice' heritage management, and the concerns of the Aboriginal communities.

1.2 Study Area

The Study Area is located in two areas. The first area is the proposed location of the new Londonderry Mushroom Farm which is located on Lot 138 DP 752037, located on the Northern Road in the Penrith Local Government Area. The property is approximately 22.66 hectares. The second property comprises of Lot 4 DP 610341 and part of Lot 3 DP 771652, these properties are located off Mulgrave Road and at part of the Hawkesbury Local Government Area. The area within the development footprint is 12.4 hectares. The location and extent of the Study Area is shown in **Figure 1** and Figure 2.

1.3 Proposal

The Tolson Group is proposing the development of a new mushroom farm at Londonderry and an extension to their existing substrate Plant at Mulgrave.

The farm is proposed for Lot 138 DP 752037, located on The Northern Road in the Penrith Local Government Area. The most recent use of this property has been for grazing, however, it was also used as a piggery prior to that. There has been evidence that stony surface material has been scraped from parts of the site at some time in the past. Approximately three quarters of the property has been cleared. The remaining vegetation comprises of trees, mainly in the rear of the property with some minor clusters on the southern section. There are also a number of dams located on the property and some minor drainage lines leading to the south west (Perram & Partners 2008, 2.1).

The development of the substrate plant is proposed for all of Lot 4 DP 610341 and part of Lot 3 DP 771652. These properties are located just of Mulgrave Road and are part of the Hawkesbury Local Government Area. The existing substrate plant site has been filled to a level of 16 metres AHD creating a development platform above the once in 100 year flood level (Perram & Partners 2008, 2.3-2.4). A further area of approximately 1.5 Ha will be raised to this level by filling.

1.4 Planning approvals

The Tolson's mushroom farm and substrate Plant project will be considered for approval under Part 3A of the *NSW Environmental Planning and Assessment Act 1979* (EPA Act). Under this part of the Act, the project does not have to comply with requirements under Part 6 of the NPW Act. Instead, conditions outlined by the Director-General on approval of the Development Consent will require commitments regarding cultural heritage, including consideration of DECC and NPW Act guidelines and processes for the purposes of 'best practice' heritage management.

This document presents the results of the preliminary Aboriginal archaeological and cultural heritage assessment as per the DECC's *DRAFT Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DECC, 2005).

1.5 Aims

The following is a summary of the major objectives.

- Conduct heritage register searches to identify any previously recorded Aboriginal cultural heritage sites within the survey area. Searches will include the Aboriginal Heritage Information Management System (AHIMS), State Heritage Register / Inventory, National Heritage List, Commonwealth Heritage List, Register of the National Estate, Local and Regional Environmental Plan (LEPs & REPs) and other relevant statutory and non statutory heritage lists.

- Conduct additional background research involving the review of all relevant literature in order to recognise any identifiable trends in Aboriginal archaeological site distribution and location.

- Undertake an archaeological survey of the Study Area, relocating any previously recorded sites within the Study Area and identifying any new Aboriginal archaeological sites or areas of Aboriginal archaeological potential which may be impacted by the proposed works. The survey methodology will take into account the geomorphology, landforms, previous and current land use within and adjacent to the Study Area.

- Record and assess sites identified during the survey in compliance with the guidelines issues by the NSW DECC.

- Identify impacts to all known Aboriginal archaeological sites based on potential ground disturbances caused by the proposed development.

- Make recommendations to minimise or mitigate impacts to Aboriginal archaeological sites within the Study Area.

1.6 Consultation

Consultation with the Deerubbin Local Aboriginal Land Council was carried out by Biosis Research

A general discussion with the Aboriginal representative concerning the proposed recommendations and cultural significance of the Study Area was undertaken on site.

2.0 HERITAGE STATUS AND PLANNING DOCUMENTS

2.1 Commonwealth Registers

2.1.1 National Heritage Registers

The *Environment Protection and Biodiversity Conservation* Act 1999 (Cth) (EPBC Act) establishes two mechanisms for the protection of heritage places of National or Commonwealth significance. The National Heritage List provides protection to places of cultural significance to the nation of Australia. The Commonwealth Heritage List comprises natural, Aboriginal and historical heritage places owned and controlled by the Commonwealth and therefore mostly includes places associated with defence, communications, customs and other government activities.

Nominations to these two lists are assessed by the Australian Heritage Council (AHC), who also compiles the Register of the National Estate (RNE), a list of places identified as having national estate values. There are no management constraints associated with listing on the RNE unless the listed place is owned by a commonwealth agency..

APPLICATION TO THE STUDY AREA – NATIONAL HERITAGE REGISTERS

A search of the National Heritage List, Commonwealth Heritage List and Register of the National Estate was conducted on 03/03/2009. No Aboriginal items listed on the National Heritage Registers are located within the present Study Area (Appendix 2 provides a copy of this information).

2.1.2 National Native Title Register

The Commonwealth *Native Title Act* 1993 establishes the principles and mechanisms for the preservation of Native Title for Aboriginal people.

The purpose of searching the register is to identify any Traditional Owner groups with current registered claims close to the Study Area that may identify themselves as relevant stakeholders with traditional knowledge or experience.

APPLICATION TO THE STUDY AREA – NATIONAL NATIVE TITLE REGISTER LISTINGS

A search of the National Native Title Register, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements of the Haweksbury and Penrith Local Government Areas was completed for the Study Area on 20/02/09 and no claims are listed within the Study Area. The search results identified two Native Title Claims in the area of the proposed mushroom farm, one lodged by the Gundungurra Tribal Council Aboriginal Corporation #6 (reference NC97/7 – NSD6060/98) and a second lodged by Darug Tribal Aboriginal Corporation (reference NC97/8 - NSD6061/98). There was one Native Title Claims in the area of the substrate plant, it was lodged by Darug Tribal Aboriginal Corporation (reference NC97/8 - NSD6061/98).

Although neither claim includes parcels of land within the current Study Area, both groups will be consulted

regarding their cultural knowledge of the Study Area.

2.2 State Registers

2.2.1 National Parks and Wildlife Act Registers

The Department of Environment and Climate Change (DECC) maintains two registers of heritage sites under the auspices of the NSW *National Parks and Wildlife Act 1974*. All Aboriginal sites in NSW are required to be registered on the Aboriginal Heritage Information Management System (AHIMS) register. Historic heritage places within lands managed by DECC (lands such as National Parks) are listed on the Historic Heritage Information Management System (HHIMS).

AHIMS: A search of the AHIMS register was undertaken at the commencement of the project. The AHIMS database is maintained by the DECC and contains a list of all Aboriginal objects, Aboriginal places and other Aboriginal heritage values in NSW that have been registered as required under the NSW *National Parks and Wildlife Act 1974*.

The area searched on the AHIMS database was larger than the Study Area, as Aboriginal sites recorded within the wider area will provide a regional perspective on the types of sites that maybe expected to be found within the Study Area.

APPLICATION TO THE STUDY AREA – AHIMS DATABASE

Two searches of the AHIMS Database were completed on 18/02/09 identified 10 previously recorded Aboriginal sites within a 6 x 6 km search area around the proposed mushroom farm and 31 previously recorded sites within a 6 x 6 km search area encompassing the substrate plant. Of these there are no sites situated within either Study Areas.

2.2.2 Heritage Act Registers

The NSW Heritage Office, part of the Department of Planning, maintains registers of heritage and archaeological items that are of significance to New South Wales.

State Heritage Register: The State Heritage Register (SHR) contains items that have been assessed as being of State Significance to New South Wales. The State Heritage Inventory (SHI) contains items that are listed on Local Environmental Plans and/or on a State Government Agency's Section 170 registers. Items on the SHI have been identified as having heritage significance, but have not been included on the SHR.

If an item or place does not appear on either the SHR or SHI this may not mean that the item or place does not have heritage or archaeological significance; many items have not been assessed to determine their heritage significance. An assessment is required for items that are 50 years or older.

Items that appear on either the SHR or SHI have a defined level of statutory protection. This is discussed more fully in Appendix 2.

APPLICATION TO THE STUDY AREA – NSW STATE HERITAGE REGISTER LISTINGS

A search of the State Heritage Register and State Heritage Inventory of both Study Areas was undertaken on 03/03/2009. The neither Study Area contains items that are listed on the State Heritage Register and no items listed on the State Heritage Inventory.

The NSW Heritage Act 1977 currently affords automatic statutory protection to 'certain relics' that form part of archaeological deposits. Sections 139–145 of the Act prevent the excavation of a relic, except in accordance with a gazetted exception or an excavation permit issued by the Heritage Council of New South Wales. Consultation and discussion with the NSW Heritage Office should begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

APPLICATION TO THE STUDY AREA – NSW HERITAGE ACT 1977 RELICS PROVISIONS

There are no identified archaeological sites within the Study Area; however, the relics provisions are applicable to relics regardless of heritage listing. Archaeological sites that may be identified in the Study Area during survey will be protected by the relics provisions of the NSW *Heritage Act 1977*.

2.2.3 Environmental Planning and Assessment Act Registers

The *Environmental Planning and Assessment Act 1979* includes provisions for local government authorities to consider environmental impacts in land-use planning and decision making. Such impacts are generally considered in relation to the planning provisions contained in the Local Environment Plan (LEP) or Regional Environment Plan (REP).

Local Environmental Plans: Each Local Government Area (LGA) is required to create and maintain a LEP that includes Aboriginal and historic heritage items. Local Councils identify items that are of significance within their LGA, and these items are listed on heritage schedules in the local LEP and are protected under the *EP&A Act 1979* and *Heritage Act 1977*.

APPLICATION TO THE STUDY AREA – PENRITH LEP 1998 AND HAWKESBURY LEP 1989

A search of the Penrith LEP 1998 and the Hawkesbury LEP 1989 amended was undertaken on 03/03/2009 Both Study Area contain no items listed in the heritage schedule.

2.3 Summary of heritage listings in the Study Area

Of all the heritage registers searched, Aboriginal sites were only recorded on AHIMS. Ten Aboriginal archaeological sites are currently listed by DECC AHIMS database as being within the mushroom farm Study Area corridor (Table 1). There were thirty one registered aboriginal sites by DECC on AHIMS within the substrate plants Study Area corridor.

Table 1: Summary of known heritage items within the vicinity of the proposed Londonderry Mushroom Farm, NSW.

ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 1991	NATIONAL TRUST
45-5-0379 (Open Camp Site)				**Y**				
45-5-0380 (Open Camp Site)				**Y**				
45-5-0384 (Open Camp Site)				**Y**				
45-5-0388 (Open Camp Site)				**Y**				
45-5-0660 (Open Camp Site)				**Y**				
45-5-0662 (Open Camp Site)				**Y**				
45-5-0664 (Open Camp Site)				**Y**				
45-5-2413 (Open Camp Site)				**Y**				
45-5-2850 (Isolated Artefact)				**Y**				

Table 2: Summary of known heritage sites within the vicinity of the Mulgrave Substrate Plant site, NSW.

ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 1991	NATIONAL TRUST
45-2-0355 (Open Camp Site)				**Y**				
45-2-0356 (Open Camp Site)				**Y**				
45-2-0357 (Open Camp Site)				**Y**				
45-2-0358 (Open Camp Site)				**Y**				
45-5-0394 (Open Camp Site)				**Y**				
45-5-0399 (Open Camp Site)				**Y**				
45-5-0400 (Open Camp Site)				**Y**				
45-5-0403 (Open Camp Site)				**Y**				
45-5-0405 (Isolated Artefact)				**Y**				
45-5-0406 (Open Camp Site)				**Y**				

ITEM	RNE	CHL	NHL	AHIMS	SHR	SHI	WLEP 1991	NATIONAL TRUST
45-5-0699 (Open Camp Site)				**Y**				
45-5-0700 (Open Camp Site)				**Y**				
45-5-0701 (Open Camp Site)				**Y**				
45-5-0715 (Open Camp Site)				**Y**				
45-5-0716 (Open Camp Site)				**Y**				
45-5-0717 (Open Camp Site)				**Y**				
45-5-0718 (Open Camp Site)				**Y**				
45-5-0954 (Open Camp Site)				**Y**				
45-5-0955 (Open Camp Site)				**Y**				
45-5-2842 (Isolated Artefact)				**Y**				
45-5-2843 (Isolated Artefact)				**Y**				
45-5-2844 (Open Camp Site)				**Y**				
45-5-2847 (Isolated Artefact)				**Y**				
45-5-2936 (Potential Archaeological Deposit)				**Y**				
45-5-2937 (Potential Archaeological Deposit)				**Y**				
45-5-2938 (Potential Archaeological Deposit)				**Y**				
45-5-2939 (Potential Archaeological Deposit)				**Y**				
45-5-3118 (Potential Archaeological Deposit)				**Y**				
45-5-3303 (Potential Archaeological Deposit)				**Y**				
45-5-3548 (Potential Archaeological Deposit)				**Y**				

3.0 ENVIRONMENTAL CONTEXT

3.1 Geomorphology

3.1.1 Geology, Soils and Landforms

The geology of the region consists of sandstones and shales from the mid-Triassic. The Study Area is located on the Cumberland Plain and is formed on the sediments of the Wianamatta Group shales, in particular the Bringelly Shales. They comprise shale, with occasional calcareous claystone, laminate and coal. More recent Tertiary and Quaternary sediments overlie the shales along river and creek beds, including South and Rickabys creeks and their tributaries. This part of the Cumberland Plain generally comprises gently undulating plains and low rolling hills, rising gradually from the flat, low-lying areas just above sea level in the north, to an altitude of around 300 metres on the hills of the Razorback Range to the south (Hazelton and Tille 1990).

The region comprises different landscapes, with distinct morphological and topological characteristics. This results in each soil landscape having different archaeological potential. Within the present Study Area, there is one distinct type of soil landscape known as fluvial. Fluvial Soil Landscapes are characterised by alluvium that has been transported and then deposited on terraces along creeks floodplains.

The Berkshire Park (bp) soil landscape (fluvial) comprises three depositional phases or alluvial and colluvial soils from the St Marys, Rickabys and Londonderry Clay formations; all of which are derived from sandstone and clay. Depending on erosional factors, all of these formations care exposed at various points across this landscape. The landscape comprises dissected, gently undulation low rises on the Tertiary terraces if the Hawksbury/Nepean River system (Bannerman and Hazleton 1990: 81). Flat terrace tops are now dissected by recent drainage channels and lines. Soils have increasing clay content with depth although erosion and deposition cycles, on occasion, reverse this trend (Bannerman and Hazleton 1990: 83). Despite the erosional cycles across this landscape, it is highly likely that cultural material will be associated with water line corridors, associated terraces and ridge lines. The depositional process will have, to some extent, buried and preserved some of these deposits.

The South Creek (sc) soil landscape (fluvial) also consists of alluvium soils derived from deposits of the Wianamatta Group shale and Hawkesbury sandstone parent materials. The topography is predominantly flat to gently sloping, active floodplain with occasional terraces or levees providing low relief, incised river beds and banks are present; in this case Lowes Creek, which dissects the northern section of the Study Area corridor (Bannerman & Hazelton 1990). Frequent flooding and high creek bank erosion commonly occur. This landscape is an active floodplain presently being reworked by fluvial processes. According to the soil landscape information, soils are deep from the depositional processes of the river, increasing in depth from the riverbank to its outer terraces (up to 2 m on terraces). The dominant soil material is layered plastic clays and loams over rock or residual soils (Bannerman & Hazelton 1990).

3.2 Climate

The climate at Richmond consists of mild summers with an average maximum of 30.5 degrees Celsius and minimum of 17.7 degrees Celsius in July, and cool, wet winters with a maximum rainfall occurring in October with an average maximum of 256.2mm of rain (Bureau of Meteorology 2008, based on records taken between 1971 and 2008). Whilst conditions and temperatures are wide ranging, the conditions in the region of the Study Area can be summarised as being mild and very suitable for year round hunter-gatherer occupation of all parts of the region.

3.3 Flora

Much of the Study Area comprises open pastured paddocks as a result of land clearance for agricultural practices and settlement, and more recently, the development of housing. Some pockets of remnant vegetation do however occur within the Study Area corridor and are indicative of the vegetation communities that were once present across the entire region prior to settlement and non-traditional land use in New South Wales. Within proximity to the Londonderry site, both Castlereagh Scribbly Gum Woodland and Castlereagh Swamp Woodland still occur in small pockets. Adjacent to the Mulgrave substrate property, Riparian Forest occurs along South Creek, while Alluvial Woodland and Shale Plains Woodland occur across the open,, flat plains (NPWS 2002).

Londonderry Site

Castlereagh Swamp Woodland occurs in poorly drained depressions on soils derived from Tertiary Alluvium, or on adjacent shale soils where the influence of Tertiary Alluvium is strong. This vegetation community is dominated by medium to dense stands of *Melaleuca decora* (White Feather Honey Myrtle). *Eucalyptus fibrosa* (Broad-leaf Ironbark), *Angophora subvelutina*(Broad-leaf Apple) and *Melaleuca linariifolia* (Snow in Summer) are present less frequently in both the tree and small tree strata (NPWS 2002: 33). The Ground stratum is such as *Goodenia paniculata* (Swamp Goodenia), *Schoenus apogon* (Common Bog-rush), *Centella asiatica* (Indian Pennywort) and *Juncus usitatus* (Common Rush).

Castlereagh Scribbly Gum Woodland occurs almost exclusively on soils derived from Tertiary Alluvium, Castlereagh Scribbly Gum Woodland is dominated by *Eucalyptus parramattensis subsp. Parramattensis* (Parramatta Red Gum) and *Angophora bakeri* (Narrow-leaved Apple). The ground stratum contains a diverse range of forbs including *Themeda australis* (Kangaroo Grass), *Entolasia stricta* (Wiry Panic), *Cyathochaeta diandra* (Grass-like Sedge), *Dianella revoluta subsp revolute* (Mauve Flax Lily), *Stylidium graminifolium* (Grass Trigger-Plant), *Platysace ericoides* (Heathy Platysace), *Laxmannia gracilis* (Slender Wire Lily) and *Aristida warburgii* (Thin Spear Grass).

Mulgrave Site

Prior to settlement, the dominant tree species of the Shale Plains Woodland included Grey Box *Eucalyptus moluccana* and Forest Red Gum *E. tereticornis*, with Narrow-leaved Ironbark *E. crebra*, Spotted Gum *Corymbia maculata* and Thin-leaved Stringybark *E. eugenioides* occurring less frequently. The shrub layer is dominated by Blackthorn *Bursaria spinosa*, and it is common to

find abundant grasses such as Kangaroo Grass *Themeda australis* and Weeping Meadow Grass *Microlaena stipoides var stipoides* (NSW NPWS 2002).

The Alluvial Woodland comprised *Eucalyptus amplifolia* (Cabbage Gum) and *E. tereticornis* (Forest Red Gum), with *Angophora floribunda* (Rough-barked Apple) occurring slightly less frequently. The lower stratum frequently includes *Acacia parramattensis subsp. Parramattensis* (Parramatta Wattle), and less frequently *Casuarina glauca* (Swamp Oak), and sometimes *Melaleuca linariifolia* (Flax-leaved Paperbark). A shrub stratum is usually evident, but is often sparse and invariably dominated by *Bursaria spinosa* (Boxthorn). Herb species are also common, including *Solanum prinophyllum* (Forest Nightshade), *Pratia purpurascens* (White Root) and *Commelina cyanea* (Native Wandering Jew).

Riparian Forest occurs just outside the Study Area along South Creek on the terraces immediately adjacent to the Hawksbury/Nepean river system. *Eucalyptus botryoides* (Bangalay), *E. elata* (River Peppermint), *Angophora subvelutina* (Broad-leafed Apple) and *A. floribunda* (Rough-barked Apple) dominate this vegetation community (NPWS 2002:47).

3.4 Fauna

Terrestrial mammals would presumably have been an abundant and reliable food source in the woodlands for Aboriginal people. Land mammals such as kangaroos and arboreal mammals such as possums would have been important prey species within these vegetation communities. Birds, reptiles and fish would also have been important resources. As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian items. For example, tail sinews are known to have been used as a fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record. Aquatic vertebrates such as fish and eels may have been present in the larger creeks and waterways such as those within the Study Area.

3.5 Land use history

The mushroom farm Study Area is located within the Londonderry parish which was named by Thomas Kendall who gave his 30 acre land grant in 1831 Londonderry. The Kendall family were early settlers in the Castlereagh area and, it is quite possible, that Thomas was the same Thomas Kendall who worked as a convict labourer under William Cox, in the building of the road over the Blue Mountains in 1814. If this was the case, he was still working for Harriet Purcell at Castlereagh as a conditionally pardoned labourer in 1828. In 1829, this Thomas Kendall received a permit to de-pasture livestock, and shortly after received a land grant (http://www.penrithcity.nsw.gov.au/index.asp?id=440).

Within the road reserve, the construction of The Northern Road will have contributed to varying levels of ground disturbance associated with excavated drains, culverts, creek bridges, power lines, driveways and limited vegetation clearance. While large areas have been disturbed, other sections maintain undisturbed sections of remnant woodland.

The resultant high level of ground surface disturbance from these factors will have affected the survival of many archaeological sites within the Study Area corridor. Impacts to archaeological sites would have occurred through direct processes such as vegetation clearance, ploughing, trenching, road building, building and infrastructure construction.

4.0 ABORIGINAL CONTEXT

4.1 Ethnohistory

Our knowledge of Aboriginal people and their land-use patterns and lifestyles prior to non-Aboriginal contact is mainly reliant on documents written by non-Aboriginal people. The inherent bias of the class and cultures of these authors necessarily affect such documents. They were also often describing a culture that they did not fully understand – a culture that was in a heightened state of disruption given the arrival of settlers and disease. Early written records can, however, be used in conjunction with archaeological information and surviving oral histories from members of the Aboriginal community in order to gain a picture of Aboriginal life in the region.

Despite a proliferation of Aboriginal sites there is considerable ongoing debate about the nature, territory and range of pre-contact Aboriginal language groups in the greater Sydney region. These debates have arisen largely because by the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Aboriginal people in the late 19th Century; pre-European Aboriginal groups had been broken up and reconfigured by European settlement activity. The following information relating to Aboriginal people on the Cumberland Plains is based on such early detailed records.

Despite conflicting views between historical sources of the exact boundaries of tribal groups in the region, the linguistic evidence does identify distinct language groups at the time of European contact. Based on this information it appears that the Study Area was situated close to the boundary of three language groups, the Darug, Dharawal and Gandangara.

The *Darug* language group was first described by pioneer surveyor, anthropologist and linguist R H. Mathews in the early 20th century. He described the *Darug* speaking people as extending along the cost to the Hawkesbury River, and inland to Windsor, Penrith and Campbelltown (Mathews 1901). The *Gandangara* occupied the coastal regions, from the Hawksbury River to Cape Howe, and extending inland to the Blue Mountains (Mathews and Everitt 1900:262). The *Dharawal* speaking language group inhabited the coast from Port Hacking, south to Jervis Bay, and inland for a considerable distance (Mathews 1901:127).

These 'defined' language areas are considered to be indicative only, and would have changed through time, and possibly also changed depending on circumstances. It is more likely that language groups shared enough common dialect that definitive boundaries varied, and are not set along a single defined geological boundary.

The arrival of settlers in the region and new competition for resources began to restrict the freedom of movement of Aboriginal hunter-gatherer inhabitants from the early 1800's. European expansion along the Cumberland Plain was swift and soon there had been considerable loss of traditional lands to agriculture. This led to violence and conflict between Europeans and Aboriginal people as both groups sought to compete for the same resources (Dallas 2003). In the Camden region, it began following the murder of an Aboriginal woman and her children, which resulted in violent

clashes between several Aboriginal men and European settlers between 1814 and 1816 (Liston 1988:50). The violence had escalated by 1816 following the outlaw proclamation by Macquarie, resulting in the massacre of 14 Aboriginal people hiding at Appin (Liston 1988:54). This event is known as the 'Appin Massacre' and is regarded as the destruction of the Aboriginal people of the Campbelltown / Camden region.

During the early settlement years, diseases such as small pox were having a devastating affect on Aboriginal populations. Death, starvation and disease were some of the disrupting factors that lead to a reorganisation of the social practices of Aboriginal communities after European contact. The formation of new social groups and alliances were made as Aboriginal people sought to retain some semblance of their previous lifestyle.

4.2 Regional Context

It is generally accepted that people have inhabited the Australian landmass for at least 50,000 years (Allen and O'Connell 2003). Dates of the earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. Whilst there is some possible evidence for occupation of the region around 40,000 years ago, the earliest undisputed radiocarbon date from the region comes from a rock shelter site north of Penrith on the Nepean, known as Shaws Creek K2, which has been dated to 14,700 +/- 250 Before Present (BP) (Attenbrow 1987, 2002: 20). The assessment of the deposits concurred that the people living in the shelter exploited the food and resources from the nearby creeks and rivers, as well as the surrounding country side. East of Campbelltown, a sandstone rock shelter site (known as Bull Cave) was excavated and yielded a basal date of 1820 $\pm$ 90 BP (Koettig 1985). In general, the majority of both open and rock shelter sites in the Sydney region date to within the last 3,000 to 5,000 years. Dibden (2003) attributes the increase in apparent occupation intensity to sea level stabilisation after the last ice age at around 5,000 years ago. She states that,

> 'Following the stabilisation of seal levels, the development of coastal estuaries, mangrove flats and sand barriers would have increased the resource diversity, predictability, and the potential productivity of coastal environments for Aborigines.' (Dibden 2003:27)

Archaeological evidence of Aboriginal occupation of the Cumberland Plain indicates that the area was intensively occupied from approximately 4,000 years BP (JMCHM 2007). Such 'young' dates are probably more a reflection of conditions of archaeological site preservation and sporadic archaeological excavation, rather than actual evidence of the presence or absence of an Aboriginal hunter-gatherer population prior to this time.

Results of archaeological work completed in the northern, central and southern Cumberland Plain region have clearly identified that the predominant recorded sites on the Cumberland Plain are open camp sites (Kohen 1986; Smith 1989; Haglund 1989; McDonald 1992; JMCHM 2006, 2007a, b & c; Dibden 2003). Towards the peripheries of the plain on Hawkesbury sandstone, shelters with art

and/or deposit and grinding grooves have been recorded. Most recent archaeological studies have been impact driven assessments in response to increasing development activity in the region and changing legislation requirements.

4.3 Local Context

4.3.1 Identified Aboriginal Archaeological Sites – Study Area

A search of the NSW DECC Aboriginal Heritage Information Management System (AHIMS) database was conducted on 17 February 2009. The search results listed 41 previously identified Aboriginal archaeological sites within two 6 x 6 km search areas. (see Figure 2) (see also Appendix 2). Of these, none are located within either the Londonderry mushroom farm or Mulgrave substrate plant Study Area.

It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area. Details of specific site locations are considered sensitive and have not been included in this report.

Stone artefact sites are the only site type identified within the Study Area corridor and are abundant throughout the wider Cumberland Plain region. Within the current Study Area there are no registered burials, shelters with art and / or deposit, middens or carved trees. Further detail of the distribution of known sites and predicative modelling for the likely distribution of sites within the Study Area is discussed below.

4.3.2 Localised Archaeological Record

A limited amount of archaeological work has been undertaken in the area surrounding both the proposed mushroom farm and the substrate station Study Areas. The findings from these studies have contributed to the informed understanding of the Aboriginal cultural heritage in the area surrounding both Study Areas (McDonald 1986, Smith 1988 and McDonald 1997). The studies have been summarised below:

McDonald (1986) completed and initial archaeological assessment for the proposed Schofields regional waste disposal depot in Plumpton, N.S.W. This work comprised of three surface sample areas. In these areas McDonald also compared surface finds to the excavated material which also indicated considerable difference in tool types. The results of the excavation confirm that the excavated cultural material is generally of a smaller size than those located on the surface.

Smith (1988) undertook a detailed survey as part of the first management study of the Aboriginal sites on the Cumberland Plain. As part of the survey fifteen areas on the northern section of the Cumberland Plain were surveyed. A total of seventy nine open camp sites were identified as well as twenty nine isolated artefacts. The preliminary analysis of these sites indicated that the types of

artefacts contained within these sites are of a similar type. These types included debitage and a few utilised pieces as well as cores or implements.

McDonald (1997) was commissioned by Penrith City council to undertake a survey of seventy hectares of land off Londonderry Road which the council proposed to subdivide into 31 rural/ residential lots. During this survey McDonald identified one open camp site and two areas of potential archaeological deposit.

4.4 Discussion

The Study Area would have provided many natural resources for the local Aboriginal inhabitants to exploit. Ethnographic information regarding the Study Area indicates that the region was intensively occupied by up to three separate language groups. Tangible evidence of such occupation will be present across the landscape in the form of scarred trees and the remains of open stone artefact sites.

The current Study Area is characterised by the open, gently undulating plains, typical of the Cumberland Plain. The depths of the soils across the plain are generally favourable for accumulation of archaeological materials; however, disturbance resulting from land use to these soils will have a significant effect on the archaeological sites. The soil deposits along the floodplain terraces are the result of the depositional and erosional forces of the river. Archaeological deposits, such as Aboriginal open camp sites are likely to have been covered during depositional processes, and while it is known that Aboriginal people used these areas in the past, these sites may exist as PADs and as such are less likely to be visible during surface surveys. Archaeological sites are less likely to occur along the inner banks of the creeks within the Study Area as the erosional and scouring processes of the river flow are likely to have removed any cultural remains. Considerable ground disturbance has occurred as a result of European occupation including vegetation clearance, agricultural purposes and urban development, affecting cultural deposits and site preservation.

Previous archaeological work within or close to the Study Area has been development driven and as such they tend to focus primarily on the specific impact footprints of each particular project. However, when assessed together these studies provide a general overview of Aboriginal archaeological site modelling and predictive behaviour within the current Study Area. In general, previous studies indicate that areas of archaeological potential will occur where disturbance has been limited, the most likely site type to be encountered will be open lithic scatter or isolated artefact occurrences, and that the identification of each site type will depend greatly upon permanence of water (stream-order analysis), landscape unit and proximity to lithic sources. However, Aboriginal archaeological material occurs anywhere within the Cumberland Plain landscape.

Due to the highly disturbed nature of the mushroom farm; which has been extensively ploughed and used as a piggery in the past, there is little potential for archaeological deposit to remain in tact (Plate 1).

Plate 1: Location of former piggery, on what is now to be the mushroom farm.

The area of the substrate plant which is to be filled for extension also has little potential for archaeological deposit as the top soils were cut out for similar construction during the 1980's (Plate 2).

Plate 2: Location of cut which will be filled to extend the substrate plant.

4.5 Site Definitions and Predictive Model

The archaeological predictive model has been formulated based on the results of the landform, location and type of Aboriginal sites previously recorded within the regional area, the results of the AHIMS database search and information from previous archaeological work completed throughout the region. This information has been broken down into patterns that have been compared to the character of the Study Area to allow for an understanding of Aboriginal archaeological potential.

Based on this information, the following predictive model for the Study Area has been developed, indicating the site types most likely to occur within the present Study Area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the current Study Area.

Open campsites, artefact scatters, isolated finds and raw material sources/quarries

Open campsites and artefact scatter sites can range from high-density concentrations of artefacts to sparse, low-density 'background' scatters. These represent a diversity of everyday activities, settlement, hunting and gathering and tool manufacture. Isolated stone artefact occurrences can be located anywhere in the landscape. They can represent discard or loss during transitory movement, or an eroded larger subsurface site.

The identification of these sites depends greatly on ground surface visibility, resulting in the boundaries of a site being defined by the visible extent of the artefacts on the surface. Paddock grasses and open woodland vegetation occur within the Study Area and are likely to obscure stone artefact scatters or isolated occurrences. However, the relatively frequent occurrence of these sites across the southern region of the Study Area indicates that where ground exposure does occur, there is a moderate likelihood of finding stone artefacts. Low density artefact scatters and isolated artefact occurrences are likely to be the most commonly occurring site types within the Study Area.

Potential Archaeological Deposits

Potential Archaeological Deposits (PADs) generally comprise stable deposits or landforms that are highly likely to contain intact sub-surface archaeological evidence of use or occupation. PAD areas generally have very minimal impact (natural and historic), comprise a stable landform, consist of predictable occupation locations and contain *in situ* archaeological material.

A number of PAD areas have been previously identified within the region, and are situated adjacent to water courses in depositional soil landscapes or on high points within the region. It is likely that within the Study Area such landforms will occur, particularly close to water courses and on ridgelines where previous disturbance has been minimal.

Scarred and Carved Trees

Scarred trees exhibit scars caused by the removal of bark used in the manufacture of shields, canoes, containers or shelters. These occur on older trees, generally of a size from which a suitable

piece of bark can be removed. A small number of scarred trees are known to exist within close proximity to the Study Area.

Carved trees exhibit intricate geometric designs or figures by cutting the bark itself or by removing an area of bark and then cutting the underling hardwood. Carved trees can be associated with burial places or ceremonial/initiation ground. The existence of carved trees (dendroglyphs) is extremely rare occurrence in Australia and are generally limited to south east Queensland and north eastern New South Wales (Attenbrow 1992:144). Carved trees can be associated with both burial places and initiation grounds. Etheridge (1918) describes those trees associates with burial places as taphoglyphs, and those indicative of initiation grounds as teleglyphs.

Both types of carved trees exhibit intricate geometric designs or figures carved either on the bark or by removing an area of bark and then cutting designs or figures into the hardwood. Some of the earliest reported carved trees were located near Narellan and Picton. The closest carved trees to the Study Area corridor were situated at Greendale Estate, Vermont, near Narellan (Etheridge 1918: 23, Plate XIV). These carved trees exhibit taphoglyphs, representing an initiation site and are now held at the Australian Museum.

Land clearance for early agricultural purposes, including grazing, will have removed most large trees, as have periodic bush fires. Although a number of larger trees survive within the Study Area corridor, the likelihood that any of these trees contain cultural scarring is considered to be low, in view of the factors indicated.

Aboriginal Ceremony and Dreaming Sites

Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants. These types of highly significant sites tend to occur at places where the connections and pathways between the spiritual and physical worlds occur. They are natural features of the landscape such as rock outcrops, waterholes or trees that often exist in marked contrast to their surroundings and bear a special significance because of their role in Aboriginal cosmology. Generally they are located away from habitation sites, although this is likely to require further testing when more of such site types are recorded.

Post-Contact Sites

These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area. Many of these sites can hold special significance for Aboriginal people and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use. This site type is usually known from historical records or knowledge preserved within the local community.

Liston (1988) recounts a period of conflict in the general region, including incidents near Camden and Bringelly. It is however, considered highly unlikely that any additional, unregistered post-contact sites are present within the Study Area. Aboriginal representatives will be consulted regarding their knowledge of such events.

Aboriginal Places

Aboriginal *places* may not contain any "archaeological" indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings. Often these places are significant in the living memory of a community. There are currently no known Aboriginal 'Places' within the Study Area. The likelihood of Aboriginal Places occurring will be identified through a separate Aboriginal Cultural Assessment involving consultation with the local Aboriginal community.

Aboriginal Resource and Gathering Sites

Aboriginal Resource and Gathering Sites are sites where there is ethnographic, oral, or other, evidence that suggest that natural resources have been collected and utilised by Aboriginal people. These natural resources have a cultural significance and connection for the Aboriginal community, such as ochre outcrops that were used for art or ceremonial purposes. These sites are still considered important places today. There are no such known sites within the Study Area however the likelihood of these sites occurring will be further identified through a separate Aboriginal Cultural Assessment involving consultation with the local Aboriginal community.

Site Prediction Summary for Current Study Area

In summary the site types which are likely to be identified during the archaeological field survey include:

- Surface occurrences of stone artefacts, as isolated incidences or low-medium density scatters;
- Areas of Potential Archaeological Deposit where sub-surface cultural material is likely to occur – generally in close proximity to water sources where disturbance has been minimal; and
- Mature trees that exhibit cultural scarring

5.0 SURVEY

5.1 Survey Methods

Although this was a preliminary assessment, it was the aim of this investigation to examine most of the Study Area on foot. The mushroom farm Study Area consists of an almost rectangular Study Area of 22.66 hectares (Figure 3). The substrate plant Study Area consists of 12.4 hectares of previously cut land that is of a roughly triangular shape. The field survey methods have been designed to locate archaeological sites within the Study Area with reference to the following information:

- Areas of archaeological potential, based on the background research predictive model (regional site patterns overlain on the physical environment of the Study Area).

The area of land which is to be developed into a new mushroom farm was surveyed in a transect method with all members of the survey team spreading out and walking across the property. Extra time was taken where visibility was better also around exposures, cattle tracks, tree bases, fence lines and around dams. The length of the grass as well as water seepage in some areas meant that there was zero visibility in some areas.

5.2 Survey Team

The survey was conducted on Wednesday 26th February 2009. The field survey was undertaken by Renée Regal (Biosis Research), Steve Randall (Deerubbin Local Aboriginal Land Council), and Tanya Mc Ewen (who was observing from Deerubbin Local Aboriginal Land Council).

5.2.1 Archaeological Survey Constraints

With any archaeological survey there are several factors that influence the effectiveness or the likelihood of finding sites. The factors that contribute most to how detectable archaeological sites may be are summarised as *visibility* and *exposure*. A brief discussion of these factors is presented below.

Visibility

In most Aboriginal archaeological reports and guidelines, visibility refers to *ground surface visibility*, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (NSW NPWS 1997). The primary factor that affects visibility is vegetation cover; however other things such as introduced fill will also significantly hamper visibility and surface site detection. Grassed paddocks obscure large areas of the ground surface within the current Study Area, and were the major contributing factor that restricted visibility during the detailed archaeological survey for this assessment. Thick weeds, dumped rubbish and other vegetation also obscured most of the road reserve.

Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and factors that may allow for the exposure of (buried) archaeological materials. While also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke and Smith 2004: 79, NSW NPWS 1997).

Factors that affect archaeological exposure include the natural geomorphic process acting on a landscape—whether it is aggrading, stable or eroding—and the level of previous disturbance which will expose or potentially bury archaeological sites. A number of geomorphic processes were observed within the Study Area corridor, including fluvial, erosional and residual components within the general landscape. Residual landscapes are likely to accumulate archaeological material over long periods but are not particularly likely to reveal buried artefacts. Erosional landscapes within the Study Area, particularly areas with shallower soils may expose artefacts as surface expressions. Fluvial areas associated with each of the creek banks will have been affected by various episodes of depositional and erosional processes caused from the varying flow levels of the creeks. These processes are most likely to have washed away any Aboriginal archaeological material associated with these areas.

Exposures occurred most frequently within the erosional and fluvial landscapes, as a result of surface disturbance, while exposures within residual landscapes were limited to intrusive processes, such as ploughing.

Disturbance

Disturbance in the Study Area is associated with natural and human agency. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals such as wombats, foxes, rabbits (see plate 3) and wallabies, and sometimes exposure from slumping or scouring. Disturbance associated with recent human action is prevalent in the Study Area, and covers large sections of the land surface. The agents include farming practices such as the initial vegetation clearance for the creation of paddocks, ploughing and cropping, fencing, pig farming and cattle grazing and stock movement at the proposed mushroom farm. The entire level of top soil at the substrate farm has all been removed during the 1980's for a past extension of the substrate plant.

Plate 3: Rabbit burrows in the south western corner of the Mushroom Farm Study Area.

5.3 Survey Results

During the site survey there were no new aboriginal sites identified.

5.3.1 Existing Conditions

In general, the proposed Londonderry mushroom farm Study Area comprises of open paddocks with limited visibility. The area has been cleared of most tree cover though there is a sparse area of rehabilitated tree cover on the southern side of the property. Surrounding the boundary of the property is open woodland.

The Mulgrave substrate property has been highly disturbed by the development and expansion of the plant over a number of years. As previously mentioned the area of the substrate plant that was surveyed was cut out a number of years ago, this cutting would have removed any remaining archaeological deposit. Currently there are a number of cows grazing in quite long pasture that has grown in this area. As a result of the length of the pasture there is zero visibility.

5.3.2 Effective Survey Coverage

The overall effective survey coverage within the Study Area corridor based on the:

- Visibility – a percentage of the total visible ground surface with the surveyed area
- Exposure – a percentage estimate of the surveyed area that has been exposed through natural or human agency to potentially reveal (buried) archaeological material

Areas of exposure occurred primarily along stock tracks, unsealed tracks, erosion on slopes and creek banks, farm dams, sheet wash and patchy grass cover. Based on this information, the overall effective coverage of the Study Area corridor is considered to be low. This can be attributed to pasture grasses and road reserve vegetation. It should be noted however that this growth is a direct result of high seasonal rainfall. At other times of the year, larger areas of ground surface would be visible.

Aboriginal sites, which were identified during the field survey, were identified in areas of exposure on upper slopes and in close proximity to major creek lines.

5.4 Discussion of Results

Land use practices, particularly ploughing, pig farming, cattle grazing, tilling and cropping, were evident throughout both Study Areas, and have reduced the likelihood of locating intact archaeological cultural deposits within both Study Areas.

In general, the results of the archaeological survey reflect the predictive modelling for the Cumberland Plain; Though when looking at the Aboriginal site types that were identified whilst

searching the DECC AHIMS database that the most likely site type to which may have occurred would have been occur will be open lithic scatters, and isolated occurrences to a lesser extent. In addition, two definite scarred trees were identified. The predominant raw material recorded included silcrete, although a number of other materials were present, including chert, mudstone and quartz. This archaeological evidence indicates Aboriginal settlement and exploitation of major and minor creeks and drainage features, and along the top of small ridges and hill crests within the surrounding landscape.

6.0 SIGNIFICANCE ASSESSMENT

Heritage assessment criteria in NSW fall broadly within the significance values outlined in the Australia ICOMOS Burra Charter (Australia ICOMOS 1999). This approach to heritage has been adopted by cultural heritage managers and government agencies as the set of guidelines for best practice heritage management in Australia. These values include:

- **historical** significance (evolution and association) refers to historic values and encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

- **aesthetic** significance (Scenic/architectural qualities, creative accomplishment) refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with social values and may include consideration of form, scale, colour, texture, and material of the fabric or landscape, and the smell and sounds associated with the place and its use.

- **social** significance (contemporary community esteem) refers to the spiritual, traditional, historical or contemporary associations and attachment that the place or area has for the present-day community. Places of social significance have associations with contemporary community identity. These places can have associations with tragic or warmly remembered experiences, periods or events. Communities can experience a sense of loss should a place of social significance be damaged or destroyed. These aspects of heritage significance can only be determined through consultative processes with local communities.

- **scientific** significance (Archaeological, industrial, educational, research potential and scientific significance values) refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects. Assessment of scientific value is often based on the likely research potential of the area, place or object and will consider the importance of the data involved, its rarity, quality or representativeness, and the degree to which it may contribute further substantial information.

The significance of Aboriginal sites and places will be assessed on the basis of the significance values outlined above. As well as the ICOMOS Burra Charter significance values guidelines, various government agencies have developed formal criteria and guidelines that have application when assessing the significance of heritage places within NSW. Of primary interest are guidelines prepared by the NSW DECC, and the Commonwealth Department of Environment Water Heritage and Arts (DEWHA). The relevant sections of these guidelines are presented below.

6.1 Assessment of Significance

The following Aboriginal significance assessment is based on the NSW National Parks and Wildlife Service *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (1997). These guidelines state that an area may contain evidence and associations which demonstrate one or any combination of the ICOMOS Burra Charter significance values outlined above in reference to Aboriginal heritage. Reference to each of the values will be made when evaluating Aboriginal significance for sites and places.

In addition to the previously outlined heritage values, the *Guidelines* also specify the importance of considering cultural landscapes when determining and assessing Aboriginal heritage values. The principle behind a cultural landscape is that 'the significance of individual features is derived from their inter-relatedness within the cultural landscape'. This means that sites or places cannot be 'assessed in isolation' but must be considered as parts of the wider cultural landscape. Hence the site or place will possibly have values derived from its association with other sites and places. By investigating the associations between sites, places, and natural resources in the cultural landscape the stories behind the features can be told. The context of the cultural landscape can unlock 'better understanding of the cultural meaning and importance' of sites and places.

The two principal values that are likely to be addressed in a consideration of Aboriginal sites and places are the cultural/social significance to Aboriginal people and the archaeological or scientific significance to archaeologists, although other values – such as educational or tourism values – may be considered. The former is discussed in greater depth below, as it is more comprehensively addressed in the DECC *Guidelines for Aboriginal Heritage Impact Assessment* (1997). However, we note here that it is best practice for archaeologists when undertaking significance assessments to keep in mind that scientific assessments are part of a larger picture.

The determinations of Aboriginal significance for sites and places are expressed as *statements of significance* that preface a concise discussion of the contributing factors to Aboriginal cultural heritage significance. Nomination of the level of value—high, moderate, low or not applicable—for each relevant category will also be proposed and presented in a summary table in Section 7.2.

6.1.1 Aboriginal community or cultural values

The NSW DECC recognises that 'Aboriginal community are the primary determinants of the significance of their heritage' (NSW DECC 2004). Biosis Research recognises that our role in the cultural heritage assessment process is to provide specialist skills, particularly in regard to archaeological and heritage management expertise. These specialist skills can be articulated and enhanced through consultation with the Aboriginal community, with the aim of providing a comprehensive assessment of cultural heritage significance.

The heritage assessment criteria outlined above that relate to community or cultural values include social, historic and aesthetic value. Social and aesthetic values are often closely related. Social value refers to the spiritual, traditional, historical or contemporary associations and attachments that the place or area has for the present-day Aboriginal community. Aesthetic values related to

Aboriginal sites and places that may contain particular sensory, scenic, architectural and creative values and meaning to Aboriginal people. Historic value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community. Gaining a sufficient understanding of this aspect of significance will often require the collection of oral histories and archival or documentary research, as well as field documentation. Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage, and the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives.

These aspects of heritage significance can only be determined through consultative processes with one or more Aboriginal communities. In terms of Aboriginal communities, heritage places – including those that are otherwise defined as 'archaeological sites' – will always attract differing values. These may include custodianship obligations, education, family or ancestral links, identity, and symbolic representation. History and traditions are important: this generation has an obligation to future generations to retain certain things as they are currently seen and understood. This includes retaining alternative understandings to those that come through scientific assessments. Heritage places are often more complex than is identified through the scientific determination of value. Cultural and social values can be complex and rich - the past is a vital component of cultural identity. Feelings of belonging and identity are reinforced by knowledge of the existence of a past, and this is further reinforced and maintained in the protection of cultural heritage.

6.1.2 Statement of Cultural (Social) Significance

All Aboriginal cultural heritage sites that are located in the Study Area are considered to be of cultural significance to the Aboriginal stakeholders, and it is important that comment on the area is provided directly by members of this Aboriginal community. All sites are evidence of past Aboriginal occupation and use of the area, and are the main tangible source of information about the Aboriginal past. In addition, any recorded (and unrecorded) post-contact sites are of cultural significance because they are rare or, at least, uncommon site-types. In particular, many sites have been destroyed as a result of land clearance and land-use practices in the historic period.

6.1.3 Archaeological (Scientific) Significance

Archaeological significance (also called scientific significance) refers to the value of archaeological objects or sites as they relate to research questions that are of importance to the archaeological community, including indigenous communities, heritage managers and academic archaeologists. Generally the value of this type of significance will be determined on the basis of the potential for sites and objects to provide information regarding the past life-ways of people (Burke and Smith 2004: 249, DECC NPWS 1997). For this reason, the NSW NPWS in summarising the situation, notes that 'while various criteria for archaeological significance assessment have been advanced over the years, most of them fall under the heading of archaeological research potential' (NPWS 1997: 26). The NPWS criteria for archaeological significance assessment are based largely on the Register of the National Estate Criteria, and under the heading of 'research potential' include the following aspects and definitions (DECC NPWS 1997):

General site considerations, including factors such as:

- *Site intactness or integrity:* This includes the state of preservation of archaeological objects, as well as the stratigraphic integrity of the site, the taphonomic processes acting on the site (ie. the factors that affect a site after its original use), and the impact of past artefact collections made at the site.

- *The connectedness* of the site to other sites – when considered as part of a larger assemblage or landscape the site may have greater research potential than if it was simply considered in isolation.

- *Chronological potential* refers to the potential of a site to provide a dateable framework extending back into the past. The potential antiquity of a site is also an important consideration, as older sites are relatively less common than younger sites. In many cases stratified, dateable artefact bearing deposits are sufficiently rare to be a very valuable resource.

Representativeness

Representativeness refers to the ability of a site or object to serve as a representative example of sites in the same class. This aspect of value is only meaningful when considered in conjunction with a conservation goal, and must be determined against the archaeological record at various scales of consideration - local, regional and continental for example. It takes into account site and object variability, connectedness and a consideration of what is already, and likely to be, conserved. Burke and Smith (2004: 247) define representativeness as 'an assessment of whether or not a place is a good example of its type, illustrating clearly the attributes of its significance.'

Rarity

Rarity is, of course, closely related to representativeness (if a site is rare, it is likely to have high representative value), and will include a consideration of those issues discussed under general site considerations. In many ways, the determination of rarity is a summation of exceptional research potential, or a representative of a small class of sites or objects. Burke and Smith further describe rarity as 'an assessment of whether the place represents a rare, endangered or unusual aspect of our history or cultural environment that has few parallels elsewhere' (2004: 247).

Research Potential

Research potential is essentially a summation of the above values in the general, representativeness and rarity criteria (DECC NPWS 1997). Pearson and Sullivan note that Aboriginal archaeological sites are generally of high research potential because 'they are the major source of information about Aboriginal prehistory' (1995: 149). Indeed, the often great time depth of Aboriginal archaeological sites gives them research value from a global perspective, as they are an important record of humanity's history. Research potential can also refer to specific local circumstances in space and time – a site may have particular characteristics (well preserved samples for absolute dating, or a series of refitting artefacts, for example) that mean it can provide information about

certain aspects of Aboriginal life in the past that other less or alternatively valuable sites may not (Burke and Smith 2004: 247-8). When determining research potential value particular emphasis has been placed on the potential for absolute dating of sites.

In addition to the research potential related value factors, the NSW DECC NPWS (1997: 32) also discuss *Educational Potential* and *Aesthetic Significance*, as items that may be included in scientific significance. The NPWS general advice is that archaeologists should give careful consideration prior to attempting to determine educational and aesthetic values (NPWS 1997: 32). We make no attempt to determine educational potential of sites under scientific assessment, but do consider educational value as a contributing factor that may be included in an assessment of social significance by the Aboriginal community.

Aesthetic values

There is a diverse yet accessible literature regarding identifying aesthetic values and determining aesthetic significance (Burke and Smith 2004: 248-9, Kerr 1996: 15-16, Pearson and Sullivan 1999: 134-8). It is generally agreed that aesthetic values are an important part of cultural heritage significance, however they are dependent on an individual's sensory response, which means determining aesthetic value is fraught with difficulty, and should be applied on a case-by-case basis as it is not always a value applicable to archaeological sites (Burke and Smith 2004: 248). However, when dealing with some types of sites aesthetic values and landscape context are an important consideration. The question 'does the place have a relationship between its parts and the setting which reinforces the quality of both', while originally proposed in an architectural context (Kerr 1996: 15), is relevant also for many sites in a local setting—such as in forests, deserts, coastlines or indeed wetlands—where there is often an important relationship between the cultural site and natural environment, which contribute to the values of a 'sense of place'.

7.0 IMPACT ASSESSMENT

7.1 Proposed Development

There are two areas proposed for development. The first area situated at Londonderry is a proposed development of a mushroom farm. The development of the mushroom farm will occur in stages, with the first stage consisting of more then half of the development. This includes the building of more then twenty growing rooms and ancillary areas such as packing and loading, plant room, administration, workshop, staff amenities, stores and waste water management. The future three stages of development entail the expansion of what will already be the operational farm as the need arises. A child care centre is planned for construction at a later stage.

The extension of the existing substrate plant at Mulgrave will occur in three stages over the next ten years. These stages of development include:

- The fill of an area of 1.5 hectares for the development of a new straw bale storage shed; Pre-wet shed extension
- An extra two Phase 1 tunnels and thirteen phase 2/3 tunnels

7.2 Potential Impacts

As discussed above, the development of the Londonderry mushroom farm will cause some levels of disturbance within the Study Area. With the development of the mushroom growing sheds as well as the common ancillary areas for packing, loading, plant room, workshop. Staff amenities, stores and waste water management. The filling of the Mulgrave site will also result in some disturbance. At neither property will these disturbances have an impacts on archaeological sites or cultural heritage places.

8.0 RECOMMENDATIONS

Recommendation 1 - Stop work provision: Aboriginal sites

All Aboriginal places and objects are protected under the NSW *National Parks and Wildlife Act 1974*. This protection includes Aboriginal places and objects which have not been identified in this report, but which may be identified during construction. Should any previously unidentified Aboriginal objects or places be identified during excavation and construction, all works must cease in the vicinity of the find and the following be notified:

- NSW Department of Environment and Climate Change
- A qualified archaeologist
- Aboriginal stakeholders from the Deerubbin Local Aboriginal Land Council

Recommendation 2 – Human Remains

In the case of skeletal remains the following process will be implemented.

- The find will be reported to police and state coroner
- The Tolson Group will be notified of the find
- Aboriginal stakeholders will be notified of the find
- NSW DECC will be notified of the find
- If the skeletal remains are of Aboriginal ancestral origin an appropriate management strategy will be developed in consultation with the Aboriginal stakeholders
- The find will be recorded in accordance with the National Parks and Wildlife Act 1974 (NSW) and the NSW NPWS Aboriginal Cultural Heritage Standards and Guidelines Kit
- This Aboriginal Heritage Plan will be amended to include the newly discovered Aboriginal ancestral remains in the management regime established by the plan.

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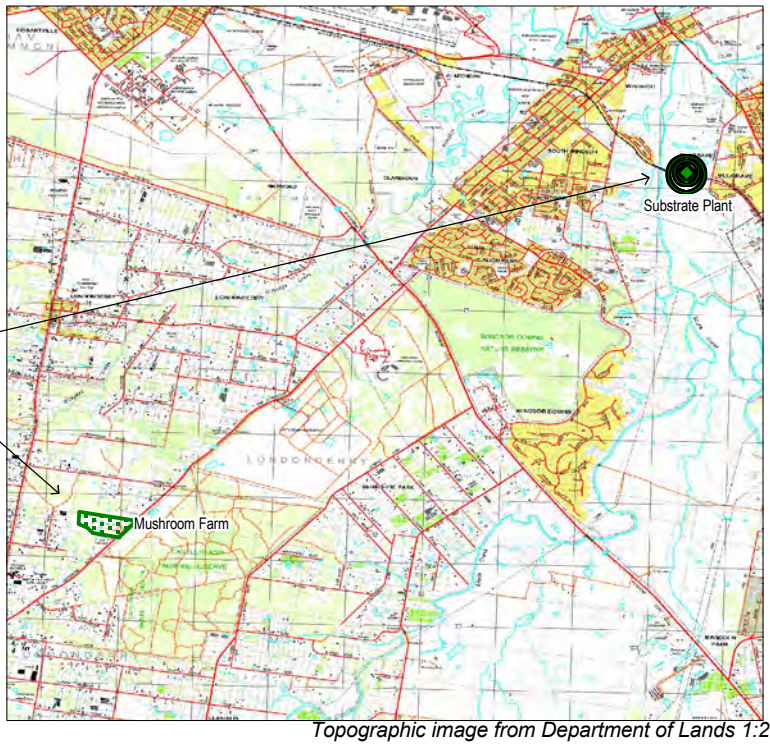
FIGURES



Study areas

Topographic image from Department of Lands 1:25000 topographic map series (2006)
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WOLLONGONG
NEW SOUTH WALES 2500

Figure 1: Location of the Study Area in a regional context.

27 April 2009

Checked by: RBR | File number: S5336

Location: 5000\5300s\5336\Mapping\S5336 F1 Region.WOR

Scale: 0 1 2 3 4 kilometres

N W E S

At the request of the Department of Planning, the following figures have been removed from the Cultural Heritage Assessment report:

Figure 2a: AHIMS Sites within the region of Tolson's Mushroom Farm

Figure 2b: AHIMS Sites within the region of the Substrate Plant.

Legend

Survey Areas

Mushroom Farm

Survey Transects

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Figure 3a : Survey transects completed during field surveys, Mushroom Farm

Date: 19 March 2009

Checked by: RBR | File number: S5336

Location:-..5000\5300s\5336\Mapping\S5336 F3a Survey Transects.WOR

Scale: 0 30 60 90 120 150 metres

N W E S

Figure 3a : Survey transects completed during field surveys, Mushroom Farm

Legend
Survey Areas

Substrate Plant

Survey Transects

Acknowledgements:
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MULGRAVE

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NEW SOUTH WALES 2500

Figure 3b: Survey transects completed during field surveys, Substrate Plant

Date: 19 March 2009

Checked by: RBR | File number: S5336

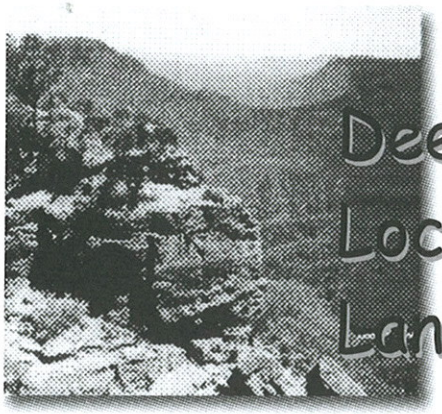
Location:-..5000\5300s\5336\Mapping\S5336 F3b Survey Transects.WOR

Scale: 0 20 40 60 80 100 metres

N W E S

Figure 3b: Survey transects completed during field surveys, Substrate Plant

APPENDICES



Deerubbin Local Aboriginal Land Council

5/271 Beames Avenue
PO Box 3184
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Biosis Research Pty Ltd
Natural & Cultural Heritage Consultants
8 Tate Street
WOOLONGONG NSW 2500

Our Reference: 1989

2 March 2009

SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE
Proposed Mushroom Farm
Lot 138 in DP 752037,
Northern Road, Londonderry.

Attention: Renee Regal

A representative of the Deerubbin Local Aboriginal Land Council (Steve Randall) inspected lot 138 in DP 752037, Northern Road, Londonderry on 26 February 2009. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact the proposed development has on the cultural heritage of the land.

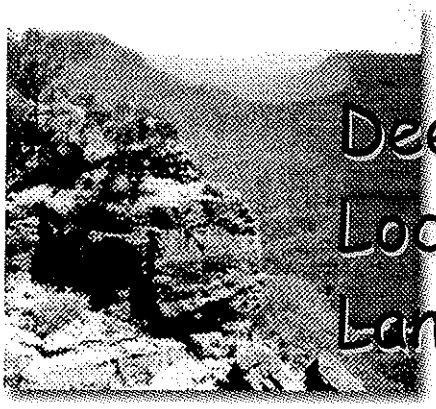
Our representative reports, ground visibility was poor because of the grass cover over the study area and in the few exposures, no Aboriginal cultural heritage material (in the form of stone artefacts, for example) were found

Deerubbin LALC therefore, has no objections to the proposed development on the grounds of Aboriginal cultural heritage, however prior to any construction or activity that may disturb the soil, the proponent shall arrange with Deerubbin LALC for our appropriately qualified representative to be present on-site to monitor such works.

Yours Faithfully,

(Kevin Cavanagh
Chief Executive Officer)

c.c. Laurel Alexander, Aboriginal Heritage & Planning Officer, Dept. of Environment & Climate Change
c.c. General Manager, Penrith City Council



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Our Reference: 1989

2 March 2009

SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE
Proposed extension of the Substrate Plant
Lot 4 in DP 610341, Mulgrave Road, Mulgrave.

Attention: Renee Regal

As you are aware a representative of Deerubbin Local Aboriginal Land Council (Steve Randall) inspected the area for the proposed extension to the Substrate Plant at Lot 4 in DP 610341, Mulgrave Road, Mulgrave on 26 February 2009. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact the proposed development has on the cultural heritage of the land.

Our representative reports that, no Aboriginal cultural heritage material (in the form of stone artefacts, for example)were found.

Deerubbin LALC therefore, has no objection on the grounds of Aboriginal cultural heritage for the landfill for the proposed extension of the substrate plant, Lot 4 in DP 610341, Mulgrave Road, Mulgrave.

Yours Faithfully,

Kevin Cavanagh
(Chief Executive Officer)

c.c. Laurel Alexander, Aboriginal Heritage & Planning Officer, Dept. of Environment and Climate Change
c.c. General Manager, Hawkesbury City Council

Appendix 2: Legislation

COMMONWEALTH LEGISLATION

ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

In January 2004 the Commonwealth *Australian Heritage Commission Act 1975* was repealed and in its place amendments to the EPBC Act were made. The amendments were contained in three new pieces of Commonwealth Heritage Legislation. The three new Acts are the:

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

   (a) amends the Environment Protection and Biodiversity Conservation Act 1999 to include 'national heritage' as a new matter of National Environmental Significance and protects listed places to the fullest extent under the Constitution

   (b) establishes the National Heritage List

   (c) establishes the Commonwealth Heritage List

2. Australian Heritage Council Act 2003 which establishes a new heritage advisory body to the Minister for the Environment and Heritage, the Australian Heritage Council, and retains the Register of the National Estate.

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

Any place that has been nominated and assessed as having cultural heritage significance at a national level can be added to the National Heritage List.

Under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) an action requires approval from the Federal Environment Minister if the action will, or is likely to, have a significant impact on a matter of national environmental significance. Matters of national environmental significance relating to cultural heritage are:

- World Heritage Places, and
- National Heritage Places.

An action includes a project, development, undertaking, activity, or series of activities.

Actions that are likely to have a significant impact on the environment of Commonwealth land (even if taken outside Commonwealth land), and actions taken by the Commonwealth that are likely to have a significant impact on the environment anywhere in the world, may also require approval under the EPBC Act.

NATIVE TITLE ACT 1993

The Commonwealth Native Title Act establishes the principles and mechanisms for the preservation of Native Title for Aboriginal people.

Under Subdivision P of the Act, *Right to negotiate*, native title claimants can negotiate about some proposed developments over land and waters (known as 'Future Acts') if they have the right to negotiate. Claimants gain the right to negotiate if their native title claimant application satisfies the registration test conditions.

The right to negotiate applies over some proposed developments or activities that may affect native title. These are known as future acts under the Native Title Act 1993. Native title claimants only have the right to negotiate over certain types of future acts, such as mining. Activities such as exploration and prospecting on the land do not usually attract the right to negotiate.

The right to negotiate is not a right to stop projects going ahead — it is a right to have a say about how the development takes place. In some situations, the right to negotiate does not apply. In these circumstances, claimants may have the right to be notified, to be consulted, to object and to be heard by an independent umpire.

The right to negotiate is triggered when a government issues a notice to say that it intends to allow certain things to happen on land, such as granting a mining lease. This notice is called a 'section 29 notice.

People who claim to hold native title in the area, but have not yet made a native title claimant application, have three months from the date given in the section 29 notice to file a claim if they want to have a say about the proposed development. To get the right to negotiate, the claim must be registered within a month after that.

If the right to negotiate applies, the government, the developer and the registered native title parties must negotiate 'in good faith' about the effect of the proposed development on the registered native title rights and interests of the claimants.

The parties can ask the National Native Title Tribunal to mediate during the negotiations.

If the negotiations do not result in an agreement the parties can ask the Tribunal (no sooner than six months after the notification date) to decide whether or not the future act should go ahead, or on what conditions it should go ahead.

The National Native Title Tribunal administers the future act processes under the Commonwealth legislation. The Tribunal's role includes mediating between parties, conducting inquiries and making decisions (called 'future act determinations') where parties can't reach agreements.

When the Tribunal receives a future act determination application, it must conduct an inquiry (an arbitration) in order to determine whether the future act can be done and if so whether any conditions should be imposed.

A member of the Tribunal (or a panel of three members) will be appointed to conduct the inquiry, and will initially hold a preliminary conference and set directions for the parties to provide submissions and evidence. Members who have mediated a particular matter are not usually appointed as inquiry members. Inquiry members conduct hearings, receive submissions and evidence from the parties and take into account matters set out in section 39 of the Native Title Act such as:

- the effect of the future act on the enjoyment by the native title party of their registered native title rights and interests; their way of life, culture and traditions; the development of their social, cultural and economic structures; their freedom of access to the land and freedom to conduct ceremonies and other cultural activities; and the effect of the future act on any area or site of particular (special) significance to the native title party;
- the interests, proposals, opinions or wishes of the native title party;
- the economic or other significance of the future act;
- the public interest; and
- the presence of any existing non-native title rights and interests and use of the land by other persons (for instance, pastoralists).

ABORIGINAL AND TORRES STRAIT ISLANDER HERITAGE PROTECTION ACT 1984

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act* 1984 provides protection for Aboriginal cultural property. 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'. There is no cut-off date and the Act may apply to contemporary Aboriginal cultural property as well as ancient sites.

PROTECTION OF MOVABLE CULTURAL HERITAGE ACT 1986

Australia's movable cultural heritage is protected at both Commonwealth and State levels. This web site only provides information on the Commonwealth laws.

In 1970 the United Nations Educational, Scientific and Cultural Organisation (UNESCO) adopted the UNESCO Convention on the Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property. Australia ratified the convention by passing the *Protection of Movable Cultural Heritage Act 1986* (the Act), giving the 1970 Convention force in Australian law.

The Act regulates the export of Australia's significant cultural heritage objects. It is not intended to restrict normal and legitimate trade in cultural property and does not affect an individual's right to own or sell within Australia.

It implements a system of export permits for certain heritage objects defined by the Act as 'Australian protected objects'. Australian protected objects are objects which form part of the movable cultural heritage of Australia and which meet the criteria established under the National Cultural Heritage Control List. The Control List is located in the Regulations to the Act, and divides Australian protected objects into two classes:

- Class A objects which may not be exported
- Class B objects which may be exported if granted a permit under the Act.

A person wishing to export a Class B object is required to apply for a permit in writing. Applications are processed in accordance with the legislative process established under section 10 of the Act.

Certificates of Exemption, granted under section 12 of the Act, allow Australian protected objects that are currently overseas to be imported into Australia and subsequently re-exported. This includes Class A objects.

The Act also includes provisions that allow Australia to respond to an official request by a foreign government to return movable cultural heritage objects that have been illegally exported from their country of origin.

The *Protection of Movable Cultural Heritage Act 1986* is administered by the Minister for the Environment and Heritage. This responsibility was transferred from the Minister for Communication, Information Technology and the Arts in November 2001.

The Movable Cultural Heritage Unit in the Department of the Environment and Heritage provides the Secretariat to the National Cultural Heritage Committee

STATE LEGISLATION

NATIONAL PARKS AND WILDLIFE ACT 1974

The *National Parks and Wildlife Act 1974* provides for the protection of Aboriginal objects (sites, relics and cultural material) and Aboriginal places. Under the Act (S. 5), an Aboriginal object is defined as:

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

This includes individual artefacts, scatters of stone artefacts, rock art sites, ancient camp sites, human burials, scarred trees, and ruins and archaeological deposits associated with Aboriginal missions or reserves.

Aboriginal places (areas of cultural significance to the Aboriginal Community declared by the Minister) are protected under Section 84 of the Act.

Aboriginal objects (any material evidence of the Aboriginal occupation of NSW) are protected under Sections 86, 87 and 90 of the Act. Section 86 of the Act identifies that a person, other than the Director-General or a person authorised by the Director-General in that behalf, who:

> *(a) disturbs or excavates any land, or causes any land to be disturbed or excavated, for the purpose of discovering an Aboriginal object*

is guilty of an offence under the NPW Act.

The *National Parks and Wildlife Act* requires that a permit from the Director General be obtained before archaeological fieldwork involving disturbance to an Aboriginal site is carried out. Consent is granted under section 87 and 90 of the Act. Queries and applications to excavate or disturb an Aboriginal archaeological site for purposes of archaeological fieldwork, should directed to the relevant Planning and Aboriginal Section Manager at the appropriate Environment Protection and Regulation Branch office. For this study the relevant branch office is at Armidale.

Section 91 of the Act requires the mandatory reporting of the discovery of Aboriginal objects, and establishes a mechanism for interim protection orders that may be used to protect objects. Identified Aboriginal objects and sites are registered with the NSW Department of Environment and Climate Change (DECC) on the Aboriginal Heritage Information Management System (AHIMS). DEC administers *the National Parks and Wildlife Act 1974*.

HERITAGE ACT 1977

The *Heritage Act 1977* details statutory responsibilities for historic buildings and gardens, historic places and objects, historical archaeological sites, and historic shipwrecks. The Act is administered by the Heritage Council of New South Wales, through the NSW Heritage Office.

The aim of the Act is to conserve the 'environmental heritage' of the state, which includes items such as buildings, works, relics, moveable objects or precincts significant for historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values. A 'Place' is defined as an area of land, with or without improvements and a 'Relic' is defined as any:

> *deposit, object or material evidence:*
>
> *(a) which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
>
> *(b) which is 50 or more years old.*

An excavation permit is required for any works, excavations or activities, associated with an archaeological site. Excavation permits are issued by the Heritage Council of New South Wales in accordance with sections 60 or 140 of the *Heritage Act*.

It is an offence to disturb or excavate land to discover, expose or move a relic without obtaining a permit from the NSW Heritage Council.

> *139 Excavation permit required in certain cases*
>
> *(1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.*
>
> *(2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.*

Excavation permits are usually issued subject to a range of conditions that will relate to matters such as reporting requirements and artefact cataloguing, storage and curation. A permit may be required from the Heritage Council of NSW for works or activities associated with a registered place or object.

General queries about site issues and permit applications can be made to the archaeological officers at the Heritage Office. The contact details are:

NSW Heritage Office
3 Marist Place
PARRAMATTA NSW 2150
Ph: (02) 9873 8500
Fax: (02) 9873 8599

Consultation and discussion with the NSW Heritage Office should begin well before lodging an application for a permit to disturb or destroy a historical archaeological site.

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The *NSW Environmental Planning and Assessment Act* will have relevance for all development projects because it requires that environmental impacts are considered in land-use planning and decision making. The definition of 'environment impacts' includes impacts on the cultural heritage of the project area. The Act has three relevant parts: Part III, which governs the preparation of planning instruments; Part IV, which relates to development where consent is required under an environmental planning instrument (EPI); and Part V, which relates to activity where development consent is not required but some other government approval assessments are needed.

Under the Act, local government authorities and The Department of Infrastructure, Planning and Natural Resources (formerly Planning NSW) prepare local and regional environmental planning instruments (LEPs and REPs) to give statutory force to planning controls. These may incorporate specific provisions for conserving and managing archaeological sites.

Integrated Development Assessment (IDA) was introduced under the *Environmental Planning and Assessment Act* so that all matters affecting a development application would be considered by the consent authority in an integrated way.

Integrated Development is one which requires development consent as well as one or more approvals from different government agencies. Such agencies may include NSW DEC or the NSW Heritage Council. If a development is likely to impact a heritage item, the consent authority must refer it, to NSW DEC (for Indigenous objects) or the NSW Heritage Council (for sites listed on the State Heritage Register) prior to approval determination.

The Local Government Act 1993

Under the State Local Government Act, councils can prepare local approvals policies that set out specific matters for consideration in relation to applications to demolish, build or undertake works. Archaeological sites could be considerations under such policies

APPENDIX 3: HERITAGE DATABASE SEARCH RESULTS

GLOSSARY

Introduction & terminology

The following list provides definitions of various terms used in this report. Many of the terms have been referenced and the sources included in the reference list at the end of this report.

There is often a degree of confusion about the use of terms such as heritage place, historical site, archaeological site and so on. The definitions of these terms, as used in this report, have been included in the glossary and their relationship outlined in Figure 1 below. The term used most consistently is heritage place and this is defined as follows:

Heritage place: A place that has aesthetic, historic, scientific or social values for past, present or future generations – ' ... this definition encompasses all cultural places with any *potential* present or future value as defined above' (Pearson & Sullivan 1995: 7).

For the purpose of discussion in this document 'heritage place' can be sub-divided into Aboriginal place and historic place (i.e. a historic place refers more particularly to non-Aboriginal sites).

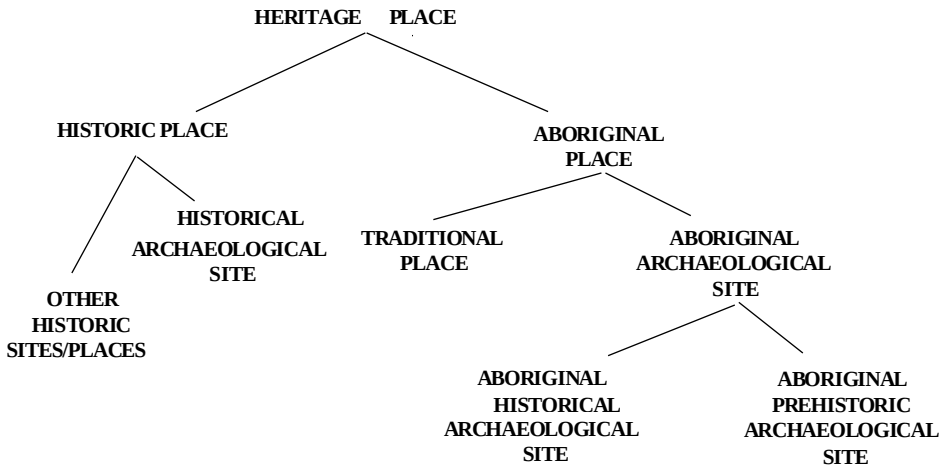

Figure G1: Terminology used for categories of heritage places.

Archaeological site types

The archaeological site types encountered in Australia can be divided into three main groups:

Historical archaeological site: an archaeological site formed since non-Aboriginal settlement that contains physical evidence of past human activity (for example a structure, landscape or artefact scatter).

Aboriginal historical archaeological site (or contact site): a site with a historical context such as an Aboriginal mission station or provisioning point; or a site that shows evidence of Aboriginal use of non-Aboriginal materials and ideas (for example: artefact scatter sites that have artefacts made from glass, metal or ceramics).

Aboriginal prehistoric archaeological site: a site that contains physical evidence of past Aboriginal activity, formed or used by Aboriginal people either before, or not long after, European settlement. These sites are commonly grouped as follows (further definition of each is contained in the glossary list):

- artefact scatter
- burial
- hearth
- isolated artefact
- mound
- quarry
- scarred tree
- shell midden
- structures
- rock art
- rock shelter
- rock well

One of the most common artefact types that provides evidence of Aboriginal people are those made from stone. Types and categories are outlined below in Figure G2, with further definition of each in the glossary list.

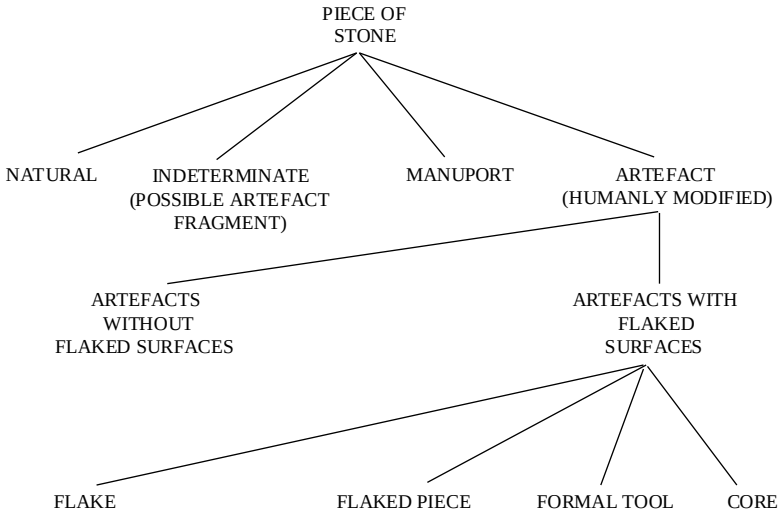

Figure G2: Stone artefact types/categories.

List of definitions

Aboriginal historical archaeological site (or contact site): either a site with an historic context such as an Aboriginal mission station or provisioning point; or a site that shows evidence of Aboriginal use of European/non-Aboriginal materials and ideas (e.g. artefact scatter sites that contain artefacts made from glass, metal or ceramics).

Aboriginal prehistoric archaeological site: a site that contains physical evidence of past Aboriginal use, formed or used by Aboriginal people either before, or not long after, European settlement.

Archaeology: the study of the remains of past human activity.

Artefact scatter: a surface scatter of cultural material. Artefact scatters are often the only physical remains of places where people have lived camped, prepared and eaten meals and worked.

Backed piece: a flake or blade that has been abruptly retouched along one or more margins opposite an acute (sharp) edge. Backed pieces include backed blades and geometric microliths. They are thought to have been hafted onto wooden handles to produce composite cutting tools. Backed pieces are a feature of the 'Australian small tool tradition', dating from between 5000 and 1000 years ago in southern Australia (Mulvaney 1975).

Bipolar working: technique used for the reduction of stone, in particular quartz, by placing a core on an anvil and 'smashing' with a hammerstone.

Blade: a flake at least twice as long as it is wide.

Burial site: usually a sub-surface pit containing human remains and sometimes associated artefacts.

Contact site: see 'Aboriginal historical archaeological site'.

Core: an artefact from which flakes have been detached using a hammerstone. Core types include single platform, multi-platform and bipolar forms.

Cortex: original or natural (unflaked) surface of a stone.

Flake: a stone piece removed from a core by percussion (striking it) or pressure. It is identified by the presence of a striking platform and bulb of percussion, not usually found on a naturally shattered stone.

Flaked piece: a piece of stone with definite flake surfaces, which cannot be classified as a flake or core.

Hammerstone: a piece of stone, often a creek/river pebble/cobble, which has been used to detach flakes from a core by percussion. During flaking, the edges of the hammerstone become 'bruised' or crushed by impact with the core.

Heritage Place: A place with aesthetic, historic, scientific or social values for past, present or future generations – '... this definition encompasses all cultural places with any *potential* present or future value as defined above' (Pearson & Sullivan 1995).

Historic place: a place that has some significance or noted association in history.

Historical archaeological site: an archaeological site formed since non-Aboriginal settlement that contains physical evidence of past human activity (for example a structure, landscape or artefact scatter).

Isolated artefact: the occurrence of one (or a small number as defined by the survey methodology) of artefacts within a given area. It/they can be evidence of a short-lived (or one-off) activity location, the result of an artefact being lost or discarded during travel, or evidence of an artefact scatter that is otherwise obscured by poor ground visibility.

Obtrusiveness: how visible a site is within a particular landscape. Some site types are more conspicuous than others. A surface stone artefact scatter is generally not obtrusive, but a scarred tree will be (Bird 1992).

Pebble/cobble: natural stone fragments of any shape. Pebbles are 2–60 mm in size and cobbles are 60–200 mm in size (McDonald et al. 1984: 78).

Pre-contact: before contact with non-Aboriginal people.

Post-contact: after contact with non-Aboriginal people.

Retouch: a flake, flaked piece or core with intentional secondary flaking along one or more edges.

Rock art: 'paintings, engravings and shallow relief work on natural rock surfaces' (Rosenfeld 1988: 1). Paintings were often produced by mineral pigments, such as ochre, combined with clay and usually mixed with water to form a paste or liquid that was applied to an unprepared rock surface. Rock engravings were made by incising, pounding, pecking or chiselling a design into a rock surface. Rare examples of carved trees occAS1onally survive.

Rock shelter: may contain the physical remains of camping places where people prepared meals, flaked stone, etc. They are often classed as a different type of site due to their fixed boundaries and greater likelihood of containing sub-surface deposits. Rock shelters may also contain rock art.

Rock-well: a natural or modified depression within a stone outcrop, which collects water. The most identifiable of these sites have been modified by Aboriginal people, either by deepening or enlarging.

Scarred tree: scars on trees may be the result of removal of strips of bark by Aboriginal People e.g. for the manufacture of utensils, canoes or for shelter; or resulting from small notches chopped into the bark to provide hand and toe holds for hunting possums and koalas. Some scars may be the result of non-Aboriginal activity, such as surveyors marks.

Significance: the importance of a heritage place or site for aesthetic, historic, scientific or social values for past, present or future generations.

Survey Transect: is a defined track recorded using a Hand-held GPS that records all area walked during the field survey.

Utilised artefact: a flake, flaked piece or core that has irregular small flake scarring along one or more margins that does not represent platform preparation.

Visibility: the degree to which the surface of the ground can be seen. This may be influenced by natural processes such as wind erosion or the character of the native vegetation, and by land-use practices, such as ploughing or grading. Visibility is generally expressed in terms of the percentage of the ground surface visible for an observer on foot (Bird 1992).