



- A CULTURAL HERITAGE ASSESSMENT -

**METZ SOLAR FARM ON "BAYLEY PARK", WATERFALL WAY VIA ARMIDALE.
ARMIDALE REGIONAL COUNCIL LOCAL GOVERNMENT AREA,
NEW SOUTH WALES**

A Report To: Infinergy Pacific

Date: 08-March-2017

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EXECUTIVE SUMMARY

Eco Logical Australia, representing Infinergy Pacific Pty Limited, commissioned Remnant Archaeology to carry out a cultural heritage assessment of portions of “Bayley Park”, a property 18.5 kilometres east of Armidale in the Armidale Regional Council local government area, on the Waterfall Way, New South Wales, in preparation for the proposed Metz Solar Farm Project. Infinergy have targeted three areas on “Bayley Park” of most interest for development and these are identified throughout this report as Study Area 1 (north), Study Area 2 (central) and study Area 3 (south). The purpose of the Aboriginal cultural heritage investigation reported in this document was to carry out the required statutory cultural heritage assessment with the participation of the local Aboriginal Community.

Searches of the OEH Aboriginal Heritage Information Management System (AHIMS) database located no Aboriginal sites within four kilometres of the “Bayley Park” study areas. The results of the field work completed for this cultural heritage assessment located no sites or places of non-Aboriginal (historical) heritage significance across the three study areas but there were Aboriginal heritage objects and places found. Three low-density (≤ 3 artefacts) artefact concentrations, one in each study area, were recorded, whilst six isolated (individual) artefacts were found in Study Area 1, eleven in Study Area 2 and twenty-one in Study Area 3. Study Area 3 also contains two scarred trees and a stone arrangement. The stone arrangement is of high significance.

Impacts to the two scarred trees and the stone arrangement can be avoided in accordance with the recommendations below. However, depending on the final detail design, the Metz Solar Farm Project may impact all three artefact concentrations and all but four isolated artefacts. Following detail design, a cultural heritage management plan (CHMP) shall be developed to document which artefacts will be impacted, and in line with the wishes of the RAPs, identify a process of removal (mitigation) and either reburial in a safe place on-site, or removal altogether to an agreed keeping place.

As a result of these findings it is recommended that:

- No further archaeological investigation is required at the artefact locations (find spots) identified as falling within “Bayley Park” Study Areas 1-3. A cultural heritage management plan (CHMP) will be developed following detail design, indicating where avoidance is not possible and an impact is unavoidable. The CHMP will be in place prior to the commencement of ground disturbance activities and shall explain the methodology for removal, who will be involved, and where any object that has been moved will be permanently stored.
- No further archaeological investigation is required at the scarred tree locations that fall within Study Area 3, the southern study area (BPST-01, BPST-02). Scarred trees, regardless of whether they are alive or dead should be avoided; initial ground surface disturbance and project construction activity should be excluded from within 10m of these trees.
- No further archaeological investigation is required at the stone arrangement (BPSA) that falls within Study Area 3, the southern study area. This site must be avoided and a 10m exclusion zone placed around it, into which no vehicles (including rubber-tyred light vehicles) must travel.
- It is recommended that for the duration of construction 10m buffer zones be established around BPST-01, BPST-02 and BPSA using star pickets and high visibility barrier fencing. At completion of construction the barrier fencing may be removed from around the scarred trees. The RAPs are to be informed of the erection and removal of barrier fencing at the time the events occur.

- It is recommended that at completion of the construction phase the high visibility barrier fencing be removed from around BPSA and that it is replaced with a stock-proof fence.
- If, through future development planning, impacts become necessary outside Study Areas 1-3 heritage assessment of these areas will need to be carried out.
- Once the detailed construction footprint has been established within the three study areas any artefact concentration or isolate locations that remain within the impact zone will need to be marked with a star picket and appropriate flagging for the interim period between construction footprint finalisation and CHMP approval.
- The RAPs have requested and it is recommended here, that they be involved in monitoring vegetation removal in the pine plantation located along the western margin of Study Area 2.
- Monitoring of tree removal will be carried out on a needs basis, the number of monitors present equal to the number of machines engaged in tree removal.
- It is recommended that initial ground surface disturbance Infinergy Pacific (and/or their contractors) be undertaken in accordance with the CHMP. The CHMP will identify appropriate communication protocols between the project and Aboriginal stakeholders.
- In the event of an unanticipated find all works must cease in the immediate area (10m buffer) and the find spot marked with high visibility barrier fencing. A protocol for unanticipated finds is to be included in the CHMP.
- Copies of this report will be sent to each of the RAPs to the project, and a digital copy submitted to the Office of Environment and Heritage for inclusion in the AHIMS database.

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Remnant acknowledges the advice and guidance of the N.S.W. Office of Environment and Heritage for advice and assistance with state government protocols and processes, and Rob Cawley from Eco Logical for advice, assistance and logistical support. Remnant also acknowledges the assistance of Cheryl Kitchener (Murrawan Cultural Consultants), Clive Ahoy (Clive Ahoy Consultants), Colin Ahoy (Nunawanna Aboriginal Corporation), David Ahoy (Anaiwan Traditional Owners Aboriginal Corporation), Derrick Vale (DFTV Enterprises), Hazel Green (Armidale and New England Gumbaynggirr Descendants), Les Ahoy (Nganyawana Cultural Consultants), Rhonda Kitchener (Nyakka Aboriginal Culture Heritage Corporation Archaeological & Cultural Heritage Consultants), Steven Ahoy (Steven Ahoy Consultants).

The fieldwork component was completed with the valuable assistance and advice of the following people:

Anthony Simon	Nganyawana CC
Bruce Cohen	Gumbaynggirr Descendants
Cheryl Kitchener	Murrawan CC
Clive Ahoy	Clive Ahoy Consultants
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Amorphous piece	A stone that displays attributes that identifies it as an artefact but it is not a flake or a core; also known by other names such as 'blocky' fragment and 'angular' fragment.
Artefact	Any item that has been created or modified by humans.
Artefact scatter	A concentration or 'scatter' of artefacts found on the ground surface indicating prehistoric human activity at that location. Also known as 'open' sites, surface scatter, general artefact scatter and when found in association with hearths can be called a 'campsite'.
Assemblage	Any collection of items from an archaeological site or deposit. The term can describe a group of similar items: the lithic assemblage or the faunal assemblage, for example. Or it can be used to describe all items, the archaeological assemblage from Test Pit 10, for example.
Axe blank	A lithic artefact, usually an igneous raw material (but not always) that has been 'shaped' using direct percussion, to a particular shape suitable for use as an axe. The edge has not yet been ground onto it. Also called 'bifaces'.
Backed artefact	Uni- or bi-directional retouch along one lateral margin of an artefact, often a flake but not always. Tends to occur on the opposite margin to the intended working edge.
Background scatter	Defined by Hiscock (Harden 2015: 39) as a continuous scatter of stone artefacts the density of which varies in response to the nature and amount of prehistoric activity. Also called 'off-site archaeological material'.
Bi-facial flaking	When, during the knapping process, flakes are removed from both the dorsal and ventral surfaces of a flake. The resulting artefact is often called a 'biface', which can be a 'blank' that is in the process of being made into something else (an axe for example), or it can be a source of raw material - a core.
Bi-facial point	Any point that has been struck after initial removal, where the scars occur on both surfaces, ventral and dorsal (initiated from either lateral margin).
Blade	A flake that measures greater in the longitudinal plane than it does in the transverse plane, usually greater than twice the width. This term does not indicate function without further clarification. For example use wear along the margins.
Bulb of percussion	The 'lump' directly below the point of force application at the proximal end of the ventral surface of a flake. The bulb represents the point at which force applied through the PFA has removed the greatest mass. As the force passes through the flake it is reduced and so less mass is removed. The bulb is the primary diagnostic feature used when identifying flaked artefacts. Conversely, the negative bulb appears on the surface of the core from which the flake was removed.
Chert	This is a cryptocrystalline sedimentary rock with high silica content that fractures conchoidally and is a preferred raw material to make stone artefacts. Jasper and agate are forms of chert.
Context	This is a term used in association with ground integrity (GI) and ground surface visibility (GSV). When assessing an archaeological site the archaeologist takes into consideration the GSV, the GI, all landmarks within the site including vegetation types, lithic raw materials present and also the surrounding environment. All aspects of the on-site and off-site landscape are taken into consideration when assessing the context within which an archaeological site exists.

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Cortex	The outer, weathered surface of a rock and is often the first thing to be removed in the initial stages of the knapping process.
Core	The core is one of the three basic items in the knapping process. It is the raw material resource that is struck with a hammer in order to produce a flake. The negative flake scars on their surfaces are what is used to identify cores.
Core: m-plat	A multiple platform core is a core that has been 'rotated' so that flakes have been removed in more than one direction from more than one platform.
Core: s-plat	A single platform core is a core that has not been 'rotated' so that flakes have been removed in only one direction, from only one platform.
Debitage	The broken and fragmentary material resulting from the knapping process. The 'waste' produced when removing flakes from a core, usually small but not always.
Direct percussion	The primary knapping technique where one stone is used to strike a flake off another stone using direct impact. See also 'pressure flaking' as another knapping technique.
Distal	A term used when defining flake attributes. The distal end is the end of a flake that displays the termination. The distal end is the bottom end of a flake. See also 'proximal', 'lateral margin', 'ventral surface' and 'dorsal surface'.
Dorsal surface	This is the 'outside' surface of a flake: the surface that was exposed to the environment when the flake was still attached to the core. The dorsal surface often (but not always) displays the negative flake scars of flake removals taken from the core prior to the removal of the flake in question. See also 'ventral surface'.
Edge-ground axe	An axe the (sharp) edge of which has been created through the grinding process.
Excavation spits	Soil removed in layers of arbitrary depth from an archaeological excavation.
Excavation units	Soil removed in layers according to the soil profile and soil type, rather than in measured (arbitrary) spits.
Flake	The direct result of the knapping process a flake can be either the product used directly from the core or reduced further at some later time to create an implement, or, the flake can be a by-product, removed and discarded.
Flaked piece	A stone that displays attributes that identifies it as a flaked artefact but that cannot be identified with any more detail than as a 'flake fragment'. For example, an artefact that does not display clearly attributes such as a bulb, proximal end or distal termination, platform, dorsal or ventral surfaces, can be called a flaked piece.
Ground Integrity	The degree to which the ground surface has been disturbed by whatever means. Ground integrity is important in assessing the archaeological value of a place and/or items found within a place. It is closely associated with ground surface visibility (GSV).
Grinding grooves	The location in close proximity to permanent water and a source of soft and/or sandy rock, where linear ruts or grooves have been ground into the base rock whilst creating edge-ground axes.

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Grindstone	A stone that has been subjected to grinding pressure by another stone to grind up various materials; grass seeds, ochre. Grindstones were also used for putting the edge onto axes or for sharpening spear tips. Large flat grindstones are called bottom-stones or base plates, whilst the smaller stone used to do the grinding is the 'muller' or topstone.
Ground-edge	Artefacts that have had an edge placed on them through the grinding process, rather than through knapping (percussion). This grinding process may be deliberate as with axes, or it might be a by-product of another process as with grindstones.
GSV	This means ground surface visibility: the degree to which the ground surface is visible.
Hammerstone	One of the two essential implements used in the knapping process to create flakes. See also 'core'.
Implement/tool	Any artefact that can be shown to have had a specific purpose. For example an axe, grindstone (base plate), muller (top stone) or tula (adze). All tools/implements are artefacts, <i>not</i> all artefacts are tools.
Isolated artefact	Also called an 'isolate'. Single artefact found in isolation - by itself.
Knapping	The mechanical process of striking one stone, the core with another stone, the hammer to produce another stone, the flake. These three stones are the foundation of the knapping process.
Knapping floor	A specialised type of artefact scatter where artefacts of the same raw material type are found in close proximity to one another, generally within 1m ² . These artefacts can often be put back together, reconstructing the original core they were struck from.
Lateral margin	There are two, the left and right lateral margins (sides). Which is which is determined by how the flake is viewed. Looking at the ventral surface with the platform at the top, the 'right' lateral margin is on the right; the 'left' lateral margin is on the left.
Mudstone	A fine-grained sedimentary rock similar to chert but without the silica content that characterises cherts.
Negative scars	The depression left on the core after a flake is removed; the place from which the flake has been fractured; the negative flake scar. These are most common on cores but are also identifiable on the dorsal surface of flakes. Flake scars on the ventral surface of flakes indicate retouch.
PFA	Point of force application is the point at which force enters the core, the impact point. Depending upon the angle and amount of force applied a flake removal is the desired result of this application of force.
Platform	The surface of a core that is struck by the 'hammer' to remove a flake.
Point	Any artefact that has the shape of a point. This term does not indicate function.
Pressure flaking	One of the two main knapping techniques. When a pointed object (that focuses pressure at one place) is placed against a core and pressure applied to the margin of the core in order to 'squeeze' flakes off. Commonly used to reduce the thickness of a flake rather than its size. See also 'direct percussion'.

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

ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
ALALC	Armidale Local Aboriginal Land Council
ASL	Above sea level
ATOAC	Anaiwan Traditional Owners Aboriginal Corporation
CHA	Cultural heritage assessment
CM	(lowercase) Centimetres
GDI	Gumbaynggirr Descendants Incorporated
GI	Ground integrity
GPS	Global positioning system
GSV	Ground surface visibility
KYA	Thousand years ago
LALC	Local Aboriginal Land Council
LGA	Local government area
MCC	Murrawan Cultural Consultants
MM	(lowercase) Millimetres
MYA	Million years ago
NAC	Nunawanna Aboriginal Corporation
NACHC	Nyakka Aboriginal Culture Heritage Corporation
NCC	Nganyawana Cultural Consultants
NSWALC	New South Wales Aboriginal Land Council
NNTT	National Native Title Tribunal
NTS	Native Title Services Corporation
NT	Native Title
OEH	NSW Office of Environment and Heritage
RAP(s)	Registered Aboriginal Party (ies)
RA	Remnant Archaeology
SAC	Steven Ahoy Consultants
TC(s)	Traditional Custodian(s)
TO(s)	Traditional Owner(s)

TABLE OF CONTENTS

Disclaimer	ii
Executive Summary	iii
Acknowledgements	v
Terminology	vi
Abbreviations	x
Table of Contents	xi
Figures	xiii
Tables	xiii
1 INTRODUCTION	01
1.1 Proponent Details	01
1.2 The Project Brief	01
1.2.1 Aboriginal Cultural Heritage Assessment	01
1.2.2 Non-Aboriginal (Historical) Cultural Heritage Assessment	01
1.3 The Objectives of This Cultural Heritage Assessment	02
1.4 The Study Areas	04
1.4.1 Study Area 1 – The Northern Area	04
1.4.2 Study Area 2 – The Central Area	04
1.4.3 Study Area 3 – The Southern Area	04
2 THE LEGISLATIVE CONTEXT	06
2.1 The NSW <i>National Parks and Wildlife Act 1974</i>	06
2.2 The NSW <i>Environmental Planning and Assessment Act 1979</i>	07
2.3 The NSW <i>Heritage Act 1977</i>	07
2.4 The NSW <i>Aboriginal Land Rights Act 1983</i>	08
2.5 The NSW <i>Native Title Act 1994</i>	08
2.6 Local Government Environmental Plans	08
2.7 The <i>Commonwealth Native Title Act 1993</i>	08
2.8 Other Acts	09
3 THE LANDSCAPE CONTEXT	09
3.1 Topography and Landforms	09
3.2 Geology	10
3.3 Vegetation	11
4 COMMUNITY CONSULTATION	12
4.1 Aboriginal Community Notification	12
4.2 The Investigator and RAPs Involved	12
4.3 Native Title Claims	13
4.4 Registered Aboriginal Party Responses to the Draft Report	14
5 THE HUMAN LANDSCAPE	14
5.1 An Ethno-Historical Account of Traditional Aboriginal Occupation	14
5.2 Traditional Aboriginal Land Use	14
5.3 Non-Aboriginal Land Use	15
6 THE ARCHAEOLOGICAL LANDSCAPE	15
6.1 Archaeological Research - Prehistoric	15
6.2 Archaeological Research – Historic	16
6.3 Archaeological Consultancy	16
6.4 Database and Register Searches	18
6.4.1 Non-Aboriginal Heritage	18
6.4.2 Aboriginal Heritage	19

7	REGIONAL CHARACTER	19
8	PREDICTIONS	21
9	FIELDWORK	22
9.1	Survey Method	22
9.2	Potential Constraints	22
9.2.1	Ground Surface Visibility	22
9.2.2	Ground Integrity	23
9.3	Outcomes	24
9.3.1	Ground Surface Visibility and Integrity	24
9.3.2	Archaeological Finds	25
10	PROVISIONAL ANALYSIS AND DISCUSSION	31
10.1	Landforms and Areas of High Potential	31
10.2	Areas of Disturbance	32
10.3	The Assemblage	34
10.3.1	Lithic Artefacts	34
10.3.2	Scarred Trees	35
10.3.3	Stone Arrangements	35
11	SIGNIFICANCE ASSESSMENT	35
11.1	Assessing Significance	35
11.2	Aboriginal Cultural Significance	36
11.3	Cultural and Scientific Value Assessment	37
11.4	Statement of Significance	39
12	ASSESSING IMPACT	40
12.1	The Proposed Development	40
12.2	The Assessment of Potential Impacts	40
13	AVOIDING AND MINIMISING HARM	41
13.1	Guiding Principles for Heritage Site Management	41
13.2	Proposed Preservation Strategies and Mitigation Measures	41
13.2.1	Avoidance	41
13.2.2	Mitigation	41
14	MANAGEMENT RECOMMENDATIONS	42
15	REFERENCES	44
APPENDIX A	STATE GOVERNMENT (DPE AND OEH) REQUIREMENTS	47
APPENDIX B	NOTIFICATION LETTER SENT TO ABORIGINAL STAKEHOLDERS	51
APPENDIX C	ABORIGINAL STAKEHOLDER RESPONSES TO THE NOTIFICATION LETTER	59
APPENDIX D	THE PUBLIC NOTICE	69
APPENDIX E	REGISTERED ABORIGINAL PARTY CONSULTATION RECORD AND TELEPHONE LOG	71
APPENDIX F	RAP RESPONSES TO THE DRAFT REPORT	75
APPENDIX G	ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS	77
APPENDIX H	ARTEFACT RECORD	79

FIGURES

FIGURE 1	“Bayley Park” east of Armidale on the Waterfall Way (Grafton Road)	02
FIGURE 2	The “Bayley Park” project area divided up into the three study areas	03
FIGURE 3	Study Area 1, the northern area	04
FIGURE 4	Study Area 2, the central area	05
FIGURE 5	Study Area 3, the southern area	05
FIGURE 6	Basic landforms identified across the “Bayley Park” study areas	10
FIGURE 7	The geology of the Metz-Hillgrove district	11
FIGURE 8	Vegetation common across the southern study area	11
FIGURE 9	Broad vistas in the north give an indication of the remnant vegetation present there	12
FIGURE 10	The location of sites on the AHIMS database	20
FIGURE 11	The location of archaeological objects and/or places in Study Area 1	27
FIGURE 12	The location of archaeological objects and/or places in Study Area 2	29
FIGURE 13	The location of archaeological objects and/or places in Study Area 3	31
FIGURE 14	Extant plant communities within the Metz Solar Farm project area	33

TABLES

TABLE 1	Registered Aboriginal Parties and their nominated field officers	13
TABLE 2	Native Title applications lodged in the Armidale Regional Council LGA	13
TABLE 3	Places of historical significance listed on the Armidale Regional Council LEP (2012)	18
TABLE 4	The location of AHIMS sites south of the four kilometre radius of the cattle yards	19
TABLE 5	The archaeological potential across the “Bayley Park” landforms	22
TABLE 6	Ground surface visibility	23
TABLE 7	Ground integrity	24
TABLE 8	Survey coverage	25
TABLE 9	Archaeological site frequency in each landform	32
TABLE 10	Provisional analysis of the artefact concentrations	34
TABLE 11	A summary of the significance assessment	40

1 INTRODUCTION

1.1 Proponent Details

Infinergy Pacific Limited (the Company) propose to develop a commercial scale solar photovoltaic (PV) site on “Bayley Park” 18.5 km east of Armidale in the Armidale Regional Council local government area (Fig. 1). The site (project area) is immediately north of the Waterfall Way (Grafton Road) and is accessed via Bayley Park Road. The proposed solar farm site will have a footprint up to 750 ha, much of which has been historically cleared for grazing and sown with improved pastures. Small plantations of introduced pine trees (*Pinus radiata*) occur in the western portion of the central study area of the project area (Study Area 2) and there are remnant patches of native woodland scattered throughout (Fig. 2). Infinergy have identified three zones within the project area as most suitable for further development, bounded in black; Study Area 1 (to the north), Study Area 2 (centre), and Study Area 3 (to the south). See Figures 2-5.

1.2 The Project Brief

Eco-Logical Australia, representing Infinergy Pacific, require a cultural heritage assessment (CHA) to be carried out as a component of an environmental impact statement (EIS) for the proposed Metz solar farm project on “Bayley Park” east of Armidale, New South Wales.

1.2.1 Aboriginal Cultural Heritage Assessment

In carrying out the ACHA REMNANT Archaeology (RA) has been guided by the specifications set out in the Office of Environment and Heritage (OEH) documents, *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales*, and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* and addresses cultural/natural and archaeological significance for registered Aboriginal objects and/or sites, and for unregistered Aboriginal objects and/or sites found during the field component of the assessment. Consultation with the local Aboriginal Community has followed along the lines set out in the OEH document *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

1.2.2 Non-Aboriginal (Historical) Cultural Heritage Assessment

The non-Aboriginal (historical) component of this investigation will assess impacts the development may have upon any historical sites of [national, state or local government] significance that are located within the specified study areas (Fig. 2) that are listed on the various registers associated with each tier of government. This assessment will include landscape survey to determine the presence/absence of historical heritage that has not been previously recorded and will include an assessment of buildings, works, relics, gardens, landscapes, views, trees or any other places of non-Aboriginal heritage significance, and of the potential impact of the solar farm upon these features. Where applicable a statement of significance and an assessment of the impact of the proposal on the heritage significance of these items will be undertaken. Any policies/measures to conserve their heritage significance are identified and this assessment will be undertaken in accordance with the guidelines in the *New South Wales Heritage Manual*.

1.3 The Objectives of This Cultural Heritage Assessment

The Company's proposed solar farm development on "Bayley Park" will be assessed as a State significant development (SSD 7931) and under Part V of the EP&A Act 1979 the state Department of Planning and Environment (DPE) has also acknowledged the need for an environmental impact assessment (EIS). This cultural heritage assessment (CHA) report responds to the cultural heritage requirements as stipulated in the Secretary's environmental assessment requirements (SEARs) issued by the DPE (letter dated 28 September 2016), and the environmental assessment requirements (EARs) of the Office of Environment and Heritage (OEH) as set out in their letter of 23 September 2016. Both these departmental communiques are found here in Appendix A.

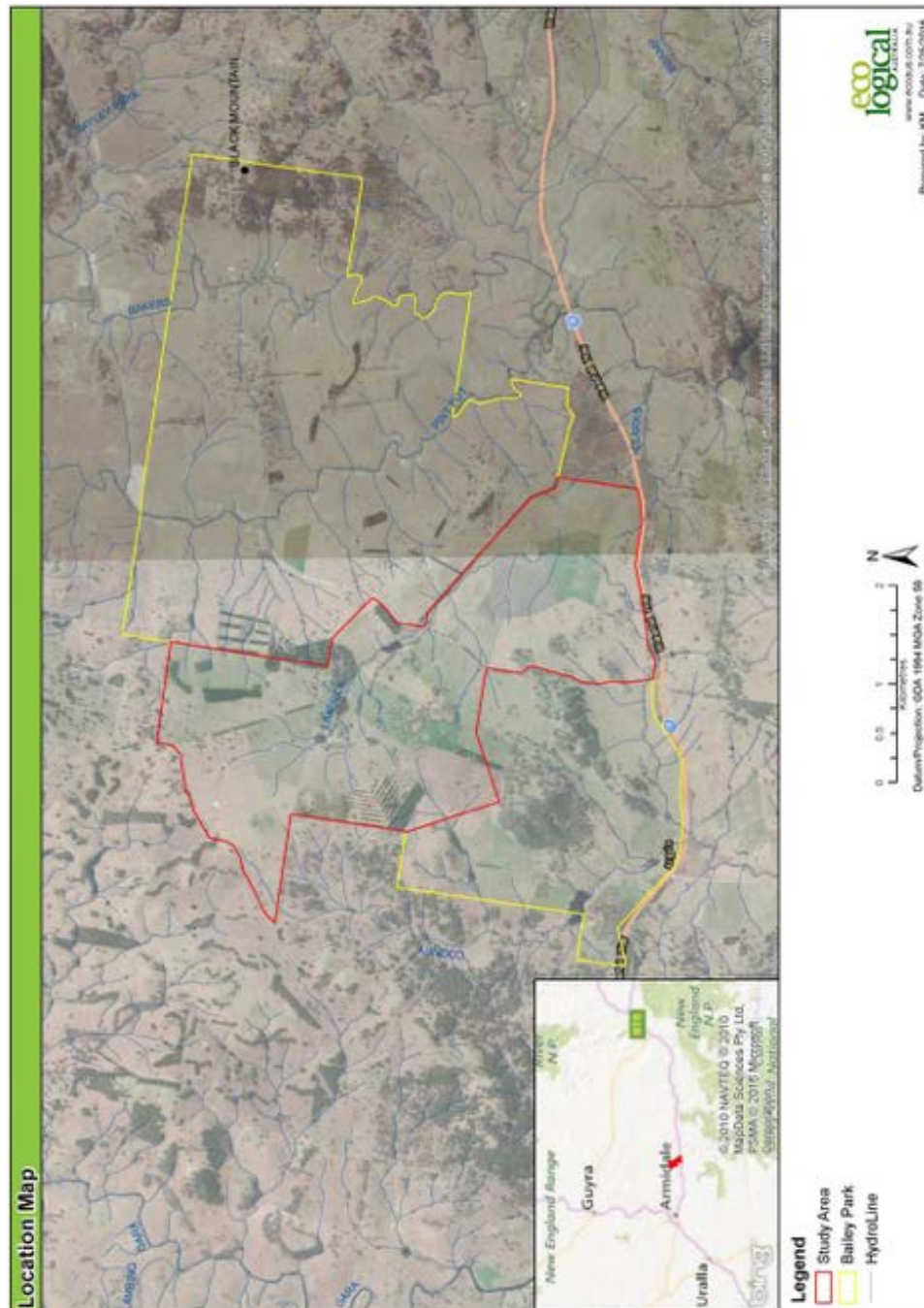


Figure 1 – "Bayley Park" east of Armidale on the Waterfall Way (Grafton Road). Image source: Eco-Logical Australia.



Figure 2 – The “Bayley Park” project area divided up into the three study areas identified by Infinergy as of most interest to their proposed solar farm project. Note the pine plantation in the central section (Study Area 2). Image source: Google Earth pro 2016.

1.4 The Study Areas

1.4.1 Study Area 1 – The Northern Area

The environment across the northern study area is dominated by undulating plains, cleared of trees with dams placed in various locations across the landscape (Fig. 3). Currently it is utilised as prime pastoral land for sheep grazing. Survey transects were completed in a north-south direction, beginning along the eastern margin and moving from east to west.

1.4.2 Study Area 2 – The Central Area

The environment across the central study area is also dominated by undulating plains, is cleared of trees and has dams present, however, across the western margin is a pine plantation covering approximately 46 hectares (Fig. 4). Currently the main portion of the study area is utilised as prime pastoral land for cattle with the pine plantation fenced off and not accessible to stock. The land surface (excluding the pine plantation) has been cultivated and sown with improved pasture. Survey transects were completed in a north-south direction, beginning along the eastern margin and moving from east to west, the last two transects occurring through the pine trees. Ground surface visibility amongst the pines was poor.

Figure 3 – Study Area 1, the northern area.

1.4.3 Study Area 3 – The Southern Area

The environment across the southern study area is also primarily undulating plains, cleared of trees with dams present. However, where the central and northern areas provided a vista to the north, the southern study area provides views with a southerly aspect. The area rises to a low ridgeline in the north east.

Currently paddocks are utilised as grazing land, with annual cropping activity also occurring; a paddock in the northeast of the area contained a (harvested) oat crop and while the field team was present the southern paddock (with cattle) was in the process of being scarified. Another paddock adjacent the harvested oats was being harvested at the time the field team was next door. Survey transects were completed in a north-south direction, beginning along the western margin and moving from west to east, away from Bayley Park Road (Fig. 5).





Figure 4 – Study Area 2, the central area.



Figure 5 – Study Area 3, the southern area.

2 THE LEGISLATIVE CONTEXT

2.1 The NSW National Parks and Wildlife Act 1974

The *NSW National Parks and Wildlife Act 1974* (the '*NPW Act*') provides protection for all Aboriginal cultural heritage (ACH) sites and objects in New South Wales and promotes the conservation of Aboriginal cultural heritage objects and places that are of high cultural significance. Sections 84, 86, and 87 of the Act provide protection for Aboriginal places (S84), describe that it is an offence to harm or desecrate an Aboriginal object or declared Aboriginal place (S86) and set out defences and exemptions available for activities that have the potential to result in harm and/or desecration (S87) to Aboriginal cultural heritage objects and/or places. Section 86 also sets out the penalties and regulations as defined in the National Parks and Wildlife Regulations, Part 8A.

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

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

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

If Aboriginal cultural heritage objects and/or places are present or are likely to be present and the proposed activity will harm those objects and/or places then Sections 90-90R of the *NPW Act* outline the permit process that must be followed prior to the commencement of that activity. These sections provide details of the Aboriginal Heritage Impact Permit (AHIP) system as regulated by the Director-General of the Office of Environment and Heritage (OEH) and describe the Aboriginal Heritage Information Management System (AHIMS), the database of registered Aboriginal site information across New South Wales.

In 2010 the Department of Environment, Climate Change and Water (DECCW, precursor to the OEH) introduced a range of guidelines regarding the assessment and management of Aboriginal cultural heritage in New South Wales including the;

- Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010a).
- Code of Practice for the Archaeological Investigation of Archaeological Objects (2010b).
- Due Diligence Code Of Practice for the Protection of Aboriginal Objects (2010c).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage (2011).

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

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

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

2.2 The NSW Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (NSW) provides for the consideration of the impact upon the environment of land use planning and decision-making involving land use. In New South Wales the definition of environmental impact includes an assessment of heritage, both Aboriginal and non-Aboriginal, and there are three parts in the Act that encompass Aboriginal heritage. These sections (Parts III, IV and V) include associated regulations, schedules and guidelines.

Part III of the EP&A Act governs the preparation of State Environment Planning Policies (SEPPs), Regional Environmental Plans (REPs) and Local Environmental Plans (LEPs) and it is these policies and plans that cover the uses to which a parcel of land can be put, and, the potential constraints applicable to that land. When putting one of these documents together Department of Planning guidelines must be followed and these guidelines state that Aboriginal heritage should be assessed as part of the process.

Under State Environmental Planning Policy (State and Regional Development) the proposal is recognised as State Significant Development. Relevant provisions under the SEPP are identified within this report.

Part IV of the Act directs the decision-making process to be followed by local government during the assessment of a development application and describes the sorts of impact that must be acknowledged before development approval is given, including impacts upon the environment. As is the case in Part III, Aboriginal heritage is included within the definition of '...the environment...'. Part IV also incorporates integrated development approvals (IDAs) and these are developments where State government bodies are linked to the DA approval process. In cases where an AHIP is required the Office of Environment and Heritage also becomes an approval body.

Part V of the EP&A Act directs the decision-making process to be followed by State government bodies when assessing proposed development activity. Under Section 111 it is the duty of the State government body involved to acknowledge environmental impacts and then, under Section 112, to determine whether the level of proposed/potential impact will trigger the requirement of an Environmental Impact Statement (EIS). As previously mentioned, it is the case that Aboriginal heritage is included here in the definition of '...environmental impacts...'. It is also the case that if an EIS is required, an assessment of cultural heritage (both Aboriginal and non-Aboriginal) must be completed as part of the EIS.

2.3 The NSW Heritage Act 1977

Administered by the Department of Planning in New South Wales the *Heritage Act 1977* protects both natural and cultural heritage. Aboriginal heritage may be subject to the provisions of this Act if the item or place is listed on the State Heritage Register or is subject to an interim heritage order (IHO). The Minister (with the advice of the NSW Heritage Council) approves the listing of items and/or places on the register and can also prevent the destruction, demolition or alteration of items of potential heritage value through an IHO until significance has been assessed.

2.4 The NSW Aboriginal Land Rights Act 1983

The New South Wales Aboriginal Land Rights Act 1983 established the roles of the NSW Aboriginal Land Council (NSWALC) and the Local Aboriginal Land Councils (LALC) that act under the guidance of the NSWALC. The Act places certain requirements on the ALCs at state and local level and it (the Act) acknowledges the statutory roles and responsibilities of the ALCs. The Act requires the Land Councils to:

- Take action to protect the culture and heritage of Aboriginal persons within the Council's area, subject to any other law.
- Promote awareness in the wider community of the culture and heritage of Aboriginal persons in the Council's area.

The Act also establishes a registrar the function of which includes, but is not limited to, maintaining a Register of Aboriginal Land Claims and a Register of Aboriginal Owners. Under the Act the Registrar is to give priority to the entry into the Register of the names of Aboriginal persons who have a cultural association with:

- Lands listed in Schedule 14 of the NPW Act 1974.
- Lands to which Section 36a of the ALR Act applies.

2.5 NSW Native Title Act 1994

The *Native Title Act 1994* (NSW) was introduced to ensure the laws of NSW are consistent with those of the Commonwealth Act on future dealings and validates past and intermediate acts and activities which may have been invalidated because of the existence of Native Title.

2.6 Local Government Environmental Plans

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

2.7 The Commonwealth Native Title Act 1993

The Native Title Act 1993 (Cth) provides the framework to:

- a. Recognise and protect Native Title.
- b. Establish ways in which future dealings affecting Native Title may proceed and to set standards for those dealings, including providing procedural rights for registered Native Title holders and Native Title claimants in relation to acts and activities that affect Native Title.
- c. Establish a mechanism for determining claims to Native Title.
- d. Provide for or permit the validation of past acts or activities invalidated because of the existence of Native Title.

The National Native Title Tribunal, established under the Act, has a number of functions including maintaining the Register of Native Title Claims, the National Native Title Register, and the Register of Indigenous Land Use Agreements, and, mediating Native Title claims.

2.8 Other Acts

The Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* may be relevant if an Aboriginal item or place of significance to the Aboriginal Community is under threat of harm or desecration and state legislation is unable to provide protection.

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* may be relevant to some proposals where there are items and/or places the heritage values which are of national importance.

3 THE LANDSCAPE CONTEXT

3.1 Topography and Landforms

The New England Tableland is a plateau of undulating hills and plains varying in height between 600m through the broad valleys to the west and rising to a maximum of 1500m to the east becoming escarpments and gorges at Metz-Hillgrove to the south of the study area. The Armidale-Metz-Hillgrove region is on the eastern margin of the Tablelands rising to 1000m at Metz on the escarpment of Baker's Creek Gorge. "Bayley Park" site at a similar altitude.

The Metz-Hillgrove topography includes undulating hills, saddles and gullies interspersed with stepped exposures and/or outcrops of basalt and/or granite rocks. Creeks (Pint Pot and Baker's Creek to the east) and rivers (Gara River to the west) are incised reflecting the gradient of the landscape as it steepens, falling away into spectacular gorges to the south and southeast. Limerick Creek flows through the study areas from the northwest through the northern study area, to the south east through the southern study area and in places is incised, whilst in others, through the southern section of the southern study area for example, it meanders across volcanic soils. In contrast, however, most creeks and rivers are stony-bottomed with associated pockets of marshland in areas where the creek margins have spread allowing decomposed greywacke soil deposits to accumulate. Creek banks can be rocky outcrops and where creek banks do consist of soils the banks tend to be degraded through erosion and weathering and by the action of grazing stock.

The landforms across the study areas were not complex and comprise three main types; gentle undulating slopes commonly with a northern aspect (although a southerly facing slope occurs along the northeastern margin of Study Area 3), undulating plains all three areas, and creek environments related to Limerick Creek as it passes through the northern and southern study areas (Fig. 6). The creek environment varies from a free-flowing, incised, stony-bottomed channel, to (more commonly) a shallow, meandering drainage with broad banks encompassing marshy areas easily waterlogged during rain events. This creek land environment is common across Study Area 3 in the south. The slopes and plains have been impacted in the main by farming activity (improved pasture management and other cropping activity), whilst the creek lands have been impacted by grazing stock, most influential during wet periods. Scouring through flooding events is apparent in areas where the creek banks consist of soil rather than stone and this is exacerbated by the lack of tree cover and grazing of the creek banks by stock.



Figure 6 – Basic landforms identified across the “Bayley Park” study areas. Image source: Google Earth Pro 2016.

3.2 Geology

The New England Tablelands are characterised by extensive beds of volcanic rocks, specifically basalts and granites that overly an older sedimentary landscape of sandstones of Carboniferous (358-298mya) and Permian (298-252mya) age (Fig. 7). Extensive tectonic activity during the Tertiary (65-1.8mya) resulted in the earlier sedimentary rock formations being intruded upon and overlain by the basalts and granites (volcanics) and at the contact between the two formations metamorphosed sedimentary rocks such as greywacke formed. It is where the Tertiary caps have weathered to expose the underlying sedimentary rocks that the more economic rocks for traditional purposes, siltstones, cherts, greywacke and jasper are found, and it is also in these erosion zones that the minerals of most interest to modern-day miners occur – gold and antimony for example.

The characteristic undulating hills and plains that dominate the Metz Solar Farm project area are dominated by decomposed greywacke-derived soils. Siliceous sands derived from the granites occur amongst the outcrops, whilst red loamy earths of mellow texture, low fertility and poor structure are also common. In the wetter areas of the valleys higher organic content occurs in the soils, supporting open forests and woodlands. In general, shallow stony loams occur on the steep areas and deep red-brown and brown-black, fertile loams are found on the valley floors and flatter areas (OEH 2011b).

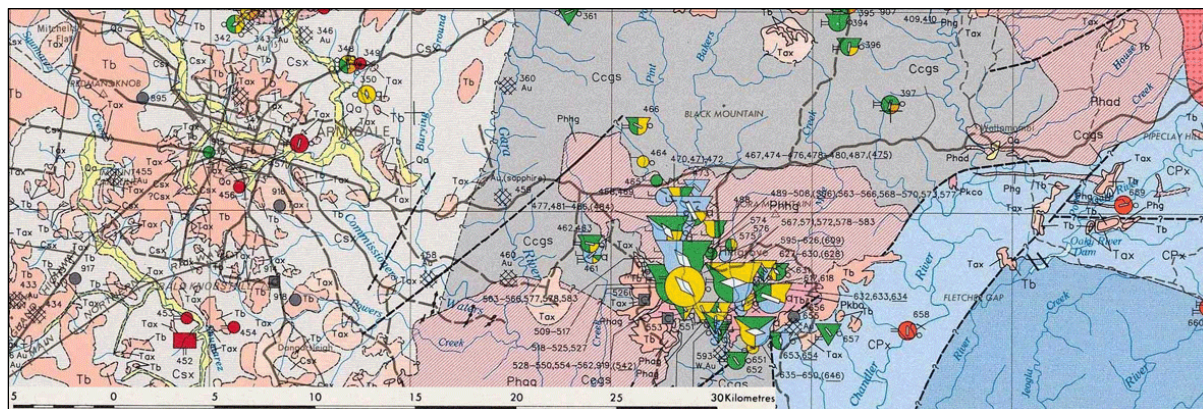


Figure 7 - The geology of the Metz-Hillgrove district is dominated by the Carboniferous/Permian greywackes (grey) and the Tertiary granites (red); note also the precious and semiprecious metals and minerals exposed through the granite capping.

3.3 Vegetation

Open forests and woodlands dominated the landscape prior to European farming endeavor and the vegetation across all three study areas has been highly modified if not removed (Figs. 8-9). In the north, this has been to facilitate pasture improvement for grazing, whilst in the south it has been for pasture improvement and for cropping. In Study Area 2 (centre) a pine plantation was sown in the 1970s but has not been tended for many years since. Existing native pastures have been heavily grazed (EA 2016).



Figure 8 – Vegetation common across the southern study area. Small pocket of remnant vegetation to east (right) identified by Eco Logical as remnant White Box-Yellow Box and Blakely's Red Gum woodland (EA 2016).

The distribution of many of the native species present is dependent upon climatic parameters rather than soil types, which are derived from the granite and greywacke rocks that dominate the region. The original forests would have consisted of predominantly stringybark communities; Silver-topped Stringybark (*Eucalyptus laevopinea*) and Youman's Stringybark (*Eucalyptus youmanii*) for example, box communities including Yellow Box (*Eucalyptus melliodora*), White Box (*Eucalyptus albens*) and Apple Box (*Eucalyptus bridgesiana*) and other species including

Rough-barked Apple (*Angophora floribunda*), Manna Gum (*Eucalyptus viminalis*) and Snow Gum (*Eucalyptus pauciflora*). White Box-Yellow Box and Blakely's Red Gum (*Eucalyptus blakelyi*) woodlands were identified during ecological surveys for this project (EA 2016).



Figure 9 – Broad vistas in the north give an indication of the remnant vegetation present there. The pine plantation is off to the west (left) out of shot.

4 COMMUNITY CONSULTATION

4.1 Aboriginal Community Notification

Contact with the Aboriginal Community was initiated in two ways; firstly, a letter of notification was circulated among the relevant Aboriginal Stake holders, and secondly a public notice was placed in the local (Armidale) print media.

On 10 November 2016 a letter was circulated amongst the Aboriginal Stakeholders informing them of the proposed solar farm development on “Bayley Park” and inviting them to register their interest in the cultural heritage assessment process to be carried out as part of the environmental impact statement. Included with the notification was an outline of the methodology proposed by Remnant Archaeology for the effective completion of the cultural heritage assessment process. A copy of the letter is contained in Appendix B and copies of Aboriginal Stakeholder responses to that letter are contained in Appendix C. A public notice was run between 11-23 November 2016 in the *Armidale Express* and the *Armidale Extra* newspapers. See Appendix D.

After the stakeholder responses to the notification letter and public notice, another letter was circulated to inform each respondent about who the other registered Aboriginal parties (RAPs) to the project were. This letter is also reproduced here in Appendix B. Prior to the commencement of the fieldwork component of the assessment a meeting was held on Monday 12 November 2016 at which all RAPs were invited to attend to discuss who had registered. Other members of the Aboriginal Community also attended and a robust discussion chaired by a member of the RAPs themselves sorted out who should and who should not participate in the fieldwork.

4.2 The Investigator and RAPs Involved

Upon finalisation of the RAPs to participate, fieldwork commenced on Monday 12 December after the RAP meeting. Due to a miscommunication between the archaeologist and the Proponent, the Proponent was not aware of the commencement on that day. Thus, fieldwork was delayed while effective communication was re-established, recommencing on Thursday 15 December. As such the field survey was completed across five days including 12, 15-18 December 2016. Table 1 lists contacts for each RAP and the field officers representing them on the ground. Appendix E tables the RAP consultation record and the RAP telephone record for the assessment process.

Table 1 - Registered Aboriginal Parties and their nominated field officers.

Registered Aboriginal Party	Contact Person	Field Officer
Anaiwan Traditional Owners Aboriginal Corp.	David Ahoy	Ricky Quinlan
Armidale and New England Gumbaynggirr Descendants Inc.	Hazel Green	Thomas Briggs Jnr Bruce Cohen
Clive Ahoy	Clive Ahoy	Clive Ahoy
DFTV Enterprises	Derrick Vale	Katina Vale
Murrawan Cultural Consultants	Cheryl Kitchener	Jocelyn Blair
Nganyawana Cultural Consultants	Les Ahoy	Anthony Simon
Nunnawanna Aboriginal Corp.	Colin Ahoy	Desmond Ahoy Anthony Simon
Nyakka Aboriginal Culture Heritage Corp.	Rhonda Kitchener	Rhonda Kitchener
Steven Ahoy Consultants	Steven Ahoy	Steven Ahoy

4.3 Native Title Claims

Since 1997 there have been seven claims lodged by various Aboriginal stakeholders/organisations over various portions of the Armidale Regional Council local government area. In that time six of these have been discontinued, dismissed or struck out. At present no registered Native Title claims exist over the Bayley Park district. The nearest registered claim (NC2011/006) falls to the west of Armidale and was lodged in 2011 by the Gomeroi People. Table 2 lists the Native Title Applications lodged since 1997 and their status.

Table 2 - Native Title applications lodged in the Armidale Regional Council local government area.

Stakeholder Name	NNTT ¹ File Number	Federal Court File Number	Date Filed	Application Status
Armidale Dumaresq Council	NN2001/005	NSD6006/2001	26-02-2001	Discontinued
Dunghutti and Anaiwan Peoples	NC1997/005	NSD6058/1998	14-03-1997	Discontinued
Gomeroi People	NC2011/006	NSD2308/2011	20-12-2011	Active
Gumbangirri People	NC1997/034	NSD6086/1998	24-11-1997	Struck out
Gumbaynggirr People	NC1998/016	NSD6105/1998	03-06-1998	Discontinued
Howard Garth Scott and Stephen Samuel Heap	NN2000/005	NSD6006/2000	22-06-2000	Discontinued
Nucoorilma Clan of the Gamilaroy Aboriginal People	NC1998/017	NSD6106/1998	07-07-1998	Dismissed

1. National Native Title Tribunal

4.4 Registered Aboriginal Party Responses to the Draft Report

At the completion of the draft report review period during February 2017 two RAPs had responded with no recommendations for adjustments, corrections or modifications to the cultural heritage assessment report. Both responses are presented in Appendix F.

5 THE HUMAN LANDSCAPE

5.1 An Ethno-Historical Account of Traditional Aboriginal Occupation

Information concerning the pre-contact inhabitants of the Tablelands is not common and Sutton (1988) suggests the reason was most likely due to the rapid spread of non-Aboriginal settlement before anthropologists appeared and were able to document Aboriginal subsistence patterns. Thus, reconstructions of how Aboriginal people lived at the time of contact are sketchy, scattered and left to the passing references of pioneer settlers and squatters, if they were interested in recording anything at all.

In the early 1800s squatters arriving from the south via the Hunter Valley were first to settle the Tablelands (McBryde 1974) and it was calculated by George McDonald, Commissioner of Crown Lands for New England, that in 1842 there would not have been more than 600 Aboriginal people present. Sutton suggests this figure is an underestimate and even when other influencing factors are taken into account (smallpox, for example), upwards of 1,000 people may have been more accurate (Sutton 1988).

Discussions amongst researchers of the Aboriginal groups that subsisted on the Tablelands revolve around linguistic studies, but even so those studies of Tablelands languages have been identified and described based on rudimentary word lists, rather than fully documented, spoken languages. As a result, comment continues to the present day, especially within the Aboriginal Community, as to which group or groups occupied the district to the east between Armidale and Metz-Hillgrove. In the mid-1970s the language spoken in the Armidale-Hillgrove district was identified as *Nganjaywana* and that it had two dialects; *Himberong* spoken to the south in the Walcha district and *Inuwon* spoken in the area encompassed by Armidale, Uralla and Bundarra (Crowley 1976). It is most probable therefore that people in the Metz-Hillgrove district spoke the *Inuwon* dialect of the *Nganjaywana* language. Crowley's (1976) research suggested *Nganjaywana* was distantly related to the coastal language *Dhan-gadi*.

5.2 Traditional Aboriginal Land Use

Movement of people through the Tablelands has been a topic of debate amongst archaeologists for many years and it wasn't until the work of Godwin (1983) in the mid-1980s showed that the archaeology actually lent more support to occupation all year-round, as opposed to transitory visits as had been argued previously (Bowdler 1981). See the discussion in the archaeology section. Early settlers noticed that human movement was seasonal and regular given the need to seek out food resources, to maintain camp hygiene, and to honour protocols relating to death and other ceremonies (Wyndham 1889; 1890; Dawson 1929; Anon 1978). In support of this idea travelers to the Tablelands in the late 19th century found bark huts, some in groups, abandoned and suggesting temporary or even seasonal occupation following game and also escaping the extreme (winter) temperatures in certain areas (McBryde 1974).

The Tablelands were rich in fauna with kangaroos and possums being important to subsistence (Crawford 1939) and their skins being used for rugs sewn together with bone awls and kangaroo tail sinew (McBryde 1974). Waterfowl and crayfish, turtles and eels were available in the swamps and lagoons, emu and bustard in the woodlands (Mundy 1852; Wyndham 1889; 1890). Large and complex nets were commonly used to ensnare

kangaroos and other large game and large numbers of people were employed in drives to catch them (McBryde 1974; Anon 1978). As far as implements are concerned McBryde (1974) states that the sources indicate a focus upon spears, clubs and boomerangs amongst the wooden items used, with tomahawks and stone knives amongst the stone items (McBryde 1974).

5.3 Non-Aboriginal Land Use

The study areas on “Bayley Park” have been modified through the action of pastoral activity from as early as the mid-1800's. The portions of “Bayley Park” of interest here has been intensely cleared with remnants of native vegetation existing, in the main, in areas where the grade is not conducive to pasture production or extensive rock outcrops pre-empt the planting of crops. Therefore, small pockets of native vegetation still occur where there are granite outcrops and on the steeper areas above the low undulating hills. Subsequent to tree removal on the low undulating hills and plains however, pastoral activity has predominated with sheep grazing historically and cattle becoming more common in recent times. Improved pasture production has been an important management strategy and stocking rates have been well managed, preserving ground cover vegetative matter available.

6 THE ARCHAEOLOGICAL LANDSCAPE

6.1 Archaeological Research – Prehistoric

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

Williams (1980) excavated a series of rock shelters in the vicinity of, and including, Mount Yarrowyck Art Site to the west of Armidale and found the art site was most likely occupied around 400 years ago and possibly as far back as 4,000 years ago (Williams 1980: 83), but the results of her excavations at Mount Yarrowyck and in the surrounding rock shelters suggested none of these places were 'habitation' sites. Rather they appeared to have been used for maintenance activities, and that the Mount Yarrowyck site itself was a ceremonial site (Williams 1980: 85). Also in the early 1980s Davidson (1982) looked at lagoons at Llangothlin, north of Guyra and found six edge-ground axes in association with Little Llangothlan Lagoon and some others to the west of Llangothlan Lagoon. Four grindstones were also found in the area along with a number of small, low density artefact scatters (Davidson 1982). Interpretation of these items added little to the debate current at that time.

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

6.2 Archaeological Research – Historic

In the 1970s Isobel McBryde's successor at the University of New England, Graham Connah, was active in both Aboriginal and historical archaeological circles. In 1978 he carried out excavations on the Tablelands on "Winterbourne", a property established in the late 1830s by William Richards a retired merchant navy captain who had been with the Royal Navy during the Napoleonic War (Connah *et al.* 1978). "Winterbourne" is located south of Walcha and is connected to the spectacular 'Gorge Country' via a bridle track along a spur (Winterbourne Spur) down Reedy Creek, a tributary of the Apsley River, itself a tributary of the Macleay River (Harden 2015). Connah's investigations at the site of Richards' homestead documented a substantial dwelling and revealed an array of domestic objects and farming equipment that offered an insight into the world of the squatter in the pioneering days of the mid-nineteenth century period in Australian colonial history that Connah notes is poorly documented in the literature (Connah *et al.* 1978). No such evidence of early settlement was found during the surveys across Study Areas 1-3 on "Bayley Park".

6.3 Archaeological Consultancy

An extensive range of archaeological investigations were carried out across the Armidale and surrounding districts, including Hillgrove, during the late 1980s and early 1990s and Appleton (1991) provides a review of these reports. A précis of this review is provided here.

In 1988 the Armidale City Council commissioned Stephen Sutton to carry out an archaeological reconnaissance in Armidale to gauge to what degree Aboriginal heritage sites existed within the city limits. Sutton's survey was not designed to be comprehensive but nonetheless he recorded seven artefact locations including three isolated artefacts and four locations where low-density scatters of artefacts were found - two locations with 5-6 artefacts present and two locations with two artefacts present (Sutton 1988). The dominant raw material type was silcrete.

Subsequent to Sutton's (1988) archaeological survey Piper investigated a silcrete quarry known to exist (but not recorded in Sutton's archaeological reconnaissance) within the north eastern city limits of Armidale, confirming its use by Aboriginal people prior to European settlement as a stone source (Piper 1989). Appleton later confirmed this and recognised the location as the most significant source of silcrete (at that time) known in the Armidale district (Appleton 1994).

Beck and Appleton (1990) added to Sutton's list of artefact locations when they recorded 33 artefacts at 13 different places within the Armidale city limits; six locations were found along creeks and five of them contained 11 artefacts (no indication of how many occurred at each location), the other was a low-density scatter of five artefacts. Of the remaining seven locations six were isolated artefacts and the seventh was a small scatter of sixteen artefacts. All but three of the isolates were found on erosion features and all but two of the artefacts were silcrete raw material (Beck and Appleton 1990).

In 1991 Appleton reported that to that time only four sites had been recorded and registered in the National Parks and Wildlife Sites Register (the Minark database), within 10 kilometres of his study area between Armidale and Hillgrove and none within it. As a result of his archaeological survey Appleton (1991) recorded a further eight locations that contained archaeological material; three isolated stone artefacts, two low-density artefact scatters - one of four artefacts the other with two artefacts, two knapping floors - one with twenty-six artefacts the other described as low-density (10 artefacts were identified) consisting of mainly debitage, and a campsite further to the east with as many as 2,000 artefacts present (Appleton 1991). The dominant raw material types artefacts were composed of in these sites were silcrete and greywacke. The knapping floor consisting of debitage, Appleton's Site

TH/JA7, was located on Clarks Gully (AHIMS Site No. 21-4-0028) and is the closest AHIMS registered site to the current study areas on “Bayley Park”. The actual location of this site, however, was the main subject of discussion in a due diligence assessment completed by Knuckey (2014) because as suspected by Hillgrove Mines and verified by Knuckey’s due diligence investigation, the location of the site in the AHIMS database and its position on the ground were not the same.

In 1992 Appleton carried out an archaeological survey to the north of Armidale at Thalgarrah and found 6 artefact locations; five low-density artefact scatters and one individual artefact. All sites were found in what the consultant referred to as erosion features and the individual artefact was found along a vehicular track. Of the 27 artefacts he inspected from these sites, 14 were silcrete raw material; all raw material types encountered (apart from basalt) were available locally (Appleton 1992).

Brayshaw (1996) mentions an archaeological survey completed in 1991 at Hillgrove by Mary Dallas Consulting from which no report was produced and no artefacts were located (Brayshaw 1996: 1). Brayshaw mentioned the Mary Dallas survey as background to her own investigation carried out as part of an EIS commissioned by New England Antimony Mines (NEAM) to carry out a preliminary assessment of the archaeological resource in the region. The consultant’s study area was at the base of the escarpment to the south and west of Hillgrove and as with the Dallas survey did not locate any archaeological material (Brayshaw 1996).

Another cultural heritage assessment was commissioned by NEAM in 2000 in preparation for the construction of another tailings dam to the south of Hillgrove on Lot 1 DP 979339 (Durkin 2000). The lot is located on the undulating plateau atop the Baker’s Creek Gorge escarpment and as such is a similar environment to that on “Bayley Park”. Durkin too found no archaeological material during her survey (2000).

In 2014, as a preliminary to its proposed Clark’s Gully Project, the current owner of the Hillgrove mining leases, Hillgrove Mines, commissioned Remnant Archaeology to carry out a cultural heritage due diligence assessment of the Clark’s Gully project area, with the express purpose of pinning down exactly where Appleton’s AHIMS registered site (21-4-0028) was (Knuckey 2014). Co-ordinates on the database at that time placed it amid the project area at a place showing no sign of any archaeological material, nor any sign that some form of disturbance may have impacted what may have once been there. See Knuckey (2014) for a discussion of how the (AHIMS) co-ordinates did not correspond with the site description provided by Appleton.

The following year Hillgrove Mines commissioned Remnant Archaeology to carry out a full cultural heritage assessment of the Clark’s Gully Project area including the proposed haul road route from Clark’s Gully to the processing plant at Hillgrove (Knuckey 2015). Knuckey’s investigation found 7 individual (isolated finds) artefacts including one axe and one axe blank, no artefact concentrations/scatters, eight scarred trees and was informed of the general location of one ceremonial place. The predominant raw material type was silcrete, both axes were greywacke. The most common artefact form recorded were flakes.

In 2016 the author completed an investigation for Armidale Regional Council involving the upgrade of sections of three local roads, the Guyra-Ebor Road west of the Rockvale Road; a section of the Rockvale Road at the Winter-Irving Road intersection, and the Wollomombi Falls Road (Knuckey 2016). Prior to the commencement of upgrade works it was necessary for cultural inspections to be carried out at each location and no artefacts were found. One culturally scarred tree was located within the road corridor on the Rockvale Road section.

6.4 Database and Register Searches

Searches of databases that list Aboriginal heritage objects and places were carried out including the Armidale Regional Council local environment plan (ARC LEP) and the RAPs were engaged in discussions of local sites of significance known to them. Remnant's archaeologist was notified of the general significance of the area as it falls within a pathway to and from significant ceremonial sites to the east and west.

6.4.1 Non-Aboriginal Heritage

There are several relevant databases and heritage registers that document historical heritage items and places. Searches of the following lists were carried and no items and/or places were listed for the "Bayley Park" area.

- Commonwealth Heritage List
- NSW State Heritage List
- World Heritage List
- National Heritage List
- Register of the National Estate

A search of the Armidale Regional Council (formerly Armidale-Dumaresq Council) LEP 2012 -Schedule 5, revealed no sites/places of historical heritage significance within the immediate vicinity of the "Bayley Park" study areas. Listings occur for Hillgrove and its environs to the south across the Waterfall Way, as documented by Eco Logical (EA 2015; 2016). Table 3 lists those sites. The preliminary historical assessment of the Clark's Gully site also found a series of mine shafts and surface diggings and the remains of a chimney/hearth (EA 2015). No evidence of early settlement (mining activity or otherwise) was found during the surveys across Study Areas 1-3 on "Bayley Park".

Table 3 – Places of historical significance listed on the Armidale Regional Council LEP (2012).

Register	Name	ID No ¹	Level of Sig.	Location
ARC LEP ²	Eleanora Mine Chimney	199	Local	130 Brackin St, Hillgrove. Lot 2 DP 597107
	BCM ³ Chimney	200		132b Brackin St, Hillgrove. Lot 7300 DP 1139642
	BCM Winding Engine House	201		132b/132f Brackin St, Hillgrove. Lot 407, DP 755834 and Lot 7300 DP 1139642
	BCM Surface Buildings	202		132b Brackin St, Hillgrove. Lot 7300 DP 1139642
	Garibaldi Mine Chimney	203		132b Brackin St, Hillgrove. Lot 7300 DP 1139642
	"Hillgrove" Station- Shearing Shed	204		2457 Waterfall Way. Lot 1 DP 1556558
	"St Helena" Station Homestead	209		3138 Waterfall Way. Lot 3 DP 1145435, Lots 9-10, 12-18, 26, 32, 42, 53, 57-58, 73, 75, 96 DP 755828
	Hillgrove Cemetery	227		55 Hillgrove Cemetery Road. Lot 7304 DP 1137270
Register of the National Estate ⁴	Hillgrove Gold Mining Area	311	Indicative Place	Stockton Road, Hillgrove
	Hillgrove Antimony Mine	312		Stockton Road, Hillgrove
	Metz Gold Mining Area	313		Chinaman's Gully Road, Hillgrove
	Oxley Wild Rivers NP	382		Oxley Highway, Wollomombi
National Trust of Australia	Hillgrove Gold Mining Area	-	Industrial Archaeology Site	Stockton Road, Hillgrove
	Hillgrove Antimony Mine	-		Stockton Road, Hillgrove
	Metz Gold Mining Area	-		Chinaman's Gully Road, Hillgrove

1. Leading prefix letter has been removed. 2. ARC – Armidale Regional Council Local Environment Plan. 3. Baker's Creek Mine. 4. No longer current.

6.4.2 Aboriginal Heritage

- The Aboriginal Heritage Information Management System (AHIMS) -

Searches of the above-mentioned databases (Sub-section 6.4.1) can reveal Aboriginal sites that may be listed there but on this occasion, no such listings were found. The most relevant database to consult for Aboriginal objects and/or places is the Office of Environment and Heritage (OEH), Aboriginal Heritage Information Management System (AHIMS) database, and a search with a four-kilometre radius of the cattle yards on Bayley Park Road (at the centre of all three study areas) was carried out. A list of six sites were located within five kilometres of the cattle yards, however, none were found within the four kilometre radius. These sites are all situated to the south of the Waterfall Way, at Clark's Gully (Fig. 10) and are reported in more detail in (Knuckey 2015), Table 4 lists them and Figure 10 shows their position in relation to the current investigation. The AHIMS search result is presented in Appendix G.

Table 4 – The location of AHIMS sites south of the four kilometre radius of the cattle yards on Bayley Park Road.

Site ID	Area	Site name	Zone	Easting ¹	Northing ¹	Easting ²	Northing ²
21-4-0028	Clark's Gully	TH/JA7	56J	392750	6621170	392854	6621360
21-4-0127	Clark's Gully	CG Artefact 1	56J	-	-	392766	6621342
21-4-0128	Clark's Gully	CG Artefact 2	56J	-	-	392778	6621358
21-4-0129	Clark's Gully	CG Artefact 3	56J	-	-	392955	6621603
21-4-0130	Clark's Gully	CG Artefact 4	56J	-	-	393335	6621492
21-4-0131	Clark's Gully	CG Artefact 5	56J	-	-	393365	6620831

1. Datum=AGD84. 2. Datum=GDA94

- Armidale Regional Council Environmental Plan 2012 -

A search of the *Armidale Regional Council LEP 2012* showed one AHIMS site had been listed with Council, this site is located south of the Waterfall Way at Clark's Gully.

- AHIMS Site No. 21-4-0028 (Site Name TH/JA7) - Knapping floor containing silcrete debitage.

7 REGIONAL CHARACTER

With the landform profile (Sub-section 3.1), the archaeological evidence recorded in the adjacent district (Knuckey 2015), and the research and investigations completed in nearby areas of the Tablelands (Sub-sections 6.1, 6.3), it becomes possible to put together a generalised picture of the cultural heritage landscape of (pre-European contact) Aboriginal occupation. From this background information, the sorts of sites most likely to be encountered across the "Bayley Park" study areas can be estimated and from this information a predictive model can be constructed. A word of caution is necessary however because, regardless of how accurate this picture of regional character may be, the degree of landscape modification that has occurred on "Bayley Park" may have skewed the picture considerably.



Figure 10 – The location of sites on the AHIMS database. Image source: Google Earth Pro (2016).

Keeping landscape modification in mind, it is still worth noting the site types and the landscapes they were found in can be expected to adhere to the following character traits, as found throughout the surrounding environment.

- Open artefact scatters of low- to medium-density were found most readily along areas of exposure such as creek banks and along stock pads and vehicular tracks.
- Campsites; locations that reveal more than one activity in one place (indicators of occupation rather than transitory, one-stop locations) were found in the same sorts of landscape as open artefact scatters given they are a similar site type.
- Scarred/carved trees were found in almost any environment the vital criterion being the presence of trees. If trees (dead or alive) of the right size/age are present, there is a possibility that scarring or carvings may be present. Scarred trees are more common given they seem to have been indicators of everyday utilitarian activity as opposed to carved trees which were often connected to ceremonials, burials or other uses.
- Quarry locations were found at the sources of raw material, for example silcrete.
- Art sites were found in rock monoliths that weather at varying rates creating overhangs (shelters) and were found in granite country where large outcrops are exposed to the elements.

- Ceremonial rings occurred on flat, exposed locations such as basalt/granite outcrops, or flat low-lying locations.
- Stone arrangements of a form other than rings occurred (but not only) in locations similar to where ceremonial rings occur.
- Burials are associated with carved trees as is shown by AHIMS Site No. 21-4-0006 at Bora Mountain to the south east of Clark's Gully (not marked on Fig. 10).
- Hearth sites - campfires - are most often found in association with campsites and thus in open, exposed areas.
- Middens (particularly shell middens) may be found in association with campsites but also within proximity to semi- to permanent water.

8 PREDICTIONS

All things being equal and putting aside the landscape modification on "Bayley Park" for a moment, based upon the regional character model built above (Section 7), put together using site location data and associated landscape features contained within the results of archaeological investigations discussed in Section 6, it becomes possible to assess the landform features of the study area (Section 3) with a view to formulating a predictive model for the potential occurrence of archaeological sites across the "Bayley Park" study areas. Table 5 indicates the potential for each landform type in Study Areas 1-3 to possess archaeological items and/or places.

The predictive model suggests that:

- Artefact scatters and/or campsites are most likely to occur along the banks of Limerick Creek but not along the minor tributaries that drain into it. Scatters and campsites may occur at the junction of these tributaries with Limerick Creek.
- Low-density artefact scatters are likely to occur within any landscape away from major creeks. Potential for these sites is low-to-moderate across the undulating plains, and gentle slopes.
- Isolated artefacts are likely to be found within any landscape but particularly in areas of erosion and weathering such as creek banks, vehicular tracks, cattle pads, fence lines and gateways. Potential for isolated artefacts is high across the undulating plains and gentle slopes.
- Scarred trees are likely to occur wherever the open forest/woodland environment has been preserved including stands of ring-barked (dead) trees. Potential for these sites is high across the undulating plains and gentle slopes.
- Carved trees are likely to occur in association with burials, ceremonial sites or as indicators of 'dreaming' tracks and pathways. As such they will potentially exist in most landforms but only where trees are still present. There is potential for carved trees to exist across the undulating plains and gentle slopes.
- Quarry locations are likely to occur only where accessible raw material sources are found. This does not include exposed outcropping monolithic basalt or granite structures that have not been fractured in some way to allow access to smaller, usable cobbles. It does include outcropping silcrete and potential for these sites is moderate across the undulating plains.
- Art sites are likely to occur in areas where granite or basalt monolithic structures are exposed and have been weathered to create overhangs and/or shelters. Potential for these sites is very low.
- Ceremonial sites, e.g. rings, and other stone arrangements are most likely to occur on low-lying flat areas or on exposed basalt/granite outcrops on higher ground. Moderate potential exists in the undulating plains.

- Burials are likely to be associated with carved trees and areas of deposit allowing interment. Although there is potential across the undulating plains and gentle slopes it is low.
- Hearths and middens will be associated with campsites and as such are most likely to occur along the banks of Limerick Creek.

It is worth re-iterating the warning from Section 7 - regardless of how accurate this picture of regional character (and any resulting predictive model) may be, the degree of landscape modification that has occurred on “Bayley Park” has skewed the picture considerably.

Table 5 - The archaeological potential across the “Bayley Park” landforms.

Landform ¹	Archaeological Potential		
	Low	Moderate	High
Gentle Slope (light brown)		✓	✓
Undulating plains (green)		✓	✓
Creeks (blue)		✓	✓

1. Colour in parentheses from Fig. 6

9 FIELDWORK

9.1 Survey Method

Pedestrian field surveys in the form of linear transects were carried out across the study areas; imaginary lines were superimposed over the areas to be inspected and then loaded into the archaeologist's hand-held GPS unit. The archaeologist began at the cattle yards on the western side of the southern study area and walked south following a transect line on the GPS. Members of the field team aligned themselves along the archaeologist's right and left side and commenced walking using the archaeologist as a guide for direction, inspecting the ground surface in front and to the sides as they went. When the archaeologist reached the southern end of that line the team moved eastward to new ground, turned around and began walking north along the next transect.

This process continues with each transect and thus the team work its way across the land from west to east. The archaeologist stops at various points to record information about individual artefacts, archaeological sites, ground surface modification, ground surface visibility, stone raw materials present, soil types, vegetation and any other observations of interest. Items and/or places found by members of the field team are flagged (using stake flags) for the archaeologist to record, map and measure and the stake flags are collected by the archaeologist at completion of artefact/site recording. Photographs are taken and all information is recorded in a field book.

9.2 Potential Constraints

9.2.1 Ground Surface Visibility

Estimations of ground surface visibility are essential in allowing some determination of how much of the ground surface can be seen (and thus inspected for archaeological and/or cultural remains). The most common constraints to GSV include vegetation cover, both growing (grasses after rain) and dead (humus cover in a forest environment), however concrete, road-fill gravel and bitumen can also be inhibitors to GSV. The definition of GSV used here has been adapted from (Hnatiuk *et al.* 2009: 87) and is scaled as a percentage of total coverage, (Table 6). Ground

surface visibility across the “Bayley Park” study areas was categorised as poor (0-25%) to moderate (51-75%), good (76-95%) in pockets of weathering and erosion; that is along vehicular tracks and areas of sheet erosion resulting from grazing activity, for example.

Table 6 - Ground surface visibility. Based on Table 19 of Hnatiuk, Thackway and Walker (2009: 87).

Description (coverage)	Percent	Designation
Any number of plants covering $\frac{3}{4}$ of the area (75-100%)	0-25	Poor
Any number of plants covering $\frac{1}{2}$ to $\frac{3}{4}$ of the area (50-75%)	26-50	Fair
Any number of plants covering $\frac{1}{4}$ to $\frac{1}{2}$ of the area (25-50%)	51-75	Moderate
Any number of plants covering $\frac{1}{4}$ of the area (25%)	76-95	Good
Few individual plants with little cover, to completely bare ground (0-5%)	96-100	Excellent

9.2.2 Ground Integrity

Assessing ground integrity provides an opportunity to determine if the land under scrutiny has been modified by natural, non-natural and/or Aboriginal/non-Aboriginal means, and to what degree. Natural vectors through which landscape modification occurs can be subtle, such as the action of wind and rain across many years, and they can be abrupt, the flood events. Non-natural, non-Aboriginal vectors can also be subtle and in some contexts, the grazing activity of livestock is an example. Livestock can be a more serious impact upon GI when high stocking rates and low rainfall combine to degrade the landscape more rapidly. More blatant non-natural vectors are those directly related to mining and infrastructure construction. Evidence of modification of the landscape as the result of Aboriginal vectors, however, is exactly what is being sought after here, as indicators of human occupation into the distant past.

In an archaeological context determinations of GI are essential to establish some degree of archaeological integrity. Is the archaeological material observed in the same location as where it was originally left? Or have events through the passage of time changed that location? If the archaeologist is not confident then integrity is reduced. All archaeological inquiry depends heavily upon maximising archaeological integrity and any lessening of archaeological integrity lessens the power of all subsequent archaeological investigation, observation and interpretation.

Experience has shown, however, that removal of archaeological significance (or integrity) does not always equate with removal and/or destruction of the archaeological record itself. Neither does the destruction of archaeological integrity remove Aboriginal cultural significance, and for Aboriginal people the existence of archaeological material can be just as important, in some cases more so, as the context within which that material has been found. Ground integrity is determined here using a percentage scale, 0% meaning all context (integrity) is gone, 100% equating to excellent preservation of the landscape (Table 7). Ground surface integrity across the three “Bayley Park” study areas was categorised as poor (51-75%) across the cropped paddocks in Study Area 3 (south) and low (26-50%) across the cleared, undulating paddocks in all three study areas.

Table 7 – Ground integrity, based on non-natural, non-Aboriginal vectors of impact.

Description	Percent	Designation
Landscape totally disturbed showing 100% modification, with no remnant vegetation present	0-25	Poor
Landscape heavily disturbed 75-100% modification, may contain (minimal) remnant vegetation	26-50	Low
Landscape disturbed, 50-75% modification present, may contain 25-50% remnant vegetation	51-75	Moderate
Landscape displaying low disturbance; includes to 25% modification. Remnant common	76-95	Good
Landscape dominated by remnant canopy and ground cover ($\leq 5\%$ modification)	96-100	Excellent

9.3 Outcomes

Areas of erosion and weathering present the best opportunity for ground surface visibility (GSV) but reduce the integrity (GI) of the landscape. Therefore, it is in areas where ground disturbance is highest, along vehicular tracks, animal pads and along creeks and other drainages that GSV is highest and these areas are found across all landform types. However, when an artefact or artefacts is/are found in these areas the integrity of where the artefact(s) has/have been found will be compromised. It is up to the archaeologist to determine to what degree GI at that location has been affected.

9.3.1 Ground Surface Visibility and Integrity

On average across all three study areas, ground surface visibility was fair-to-moderate (26-75%), however, the picture varies from this average if GSV is considered across specific landform types. For example, across the gentle slopes GSV was moderate (51-75%), although in amongst the pine trees ground surface visibility was poor (0-25%) and across the harvested oat crop in the northeast of Study Area 3 GSV was good (76-95%). On the undulating plains GSV is similar; fair to moderate overall with pockets of good-to-excellent (76-100%) visibility in the northern portion of Study Area 1 near the electricity corridor and pockets of poor visibility, such as the rye (?) grass paddock south of the electricity corridor in Study Area 3, being harvested during the fieldwork reported on here. Ground surface visibility in the creek lands landform was on average poor-to-fair (0-50%) throughout. Across all three study areas there were pockets of exposed and weathered landscapes resulting from vehicular tracks, dam construction and maintenance, fence construction and maintenance, cattle pads and camps and all these areas displayed varying degrees of erosion from wind and rain. These exposures all provide excellent ground surface visibility, but with excellent GSV usually comes poor ground surface integrity.

On average across all three study areas ground surface integrity (GI) was low (26-50%). Contrary to the description of GSV, even where GI is considered across landforms it remains low because the landforms that dominate lend themselves to improved pasture management and/or cropping. In areas of more intensive activity, the pine plantation for example, GI is poor (0-25%), and in other areas where it is clear earthmoving machinery (rubbish pits) or agricultural machinery (across Study Areas 2 and 3) has been used, ground integrity is low. Even along the creek lands where farm machinery has little impact, the activity of grazing stock, especially in wet weather, has reduced GI.

Table 8 approximates the size of each study area, ground surface visibility, land surface exposure, another way of gauging ground integrity, and the effective area covered during the surveys in both square metres and as a percentage of the total.

Table 8 - Survey coverage.

Landform	Survey Area (m ²)	Visibility (%) ¹	Exposure (%)	Effective Coverage (m ²)	Effective Coverage (%)
Gentle Slope	1,602,217 (160ha)	63 (Mod)	38 (Low)	383,570 (38ha)	23.9
Undulating Plain	1,768,677 (176ha)	50.5 (Fair)	38 (Low)	339,409 (33.9ha)	19.1
Creekland	364,721 (36.4ha)	25 (Poor)	38 (Low)	34,648 (3.4ha)	9.5

1. Visibility calculated on a scale between two percentages (See Table 6), the mid-point between the two is used here.

9.3.2 Archaeological Finds

- Non-Aboriginal Heritage Items and/or Places -

No sites/places of historical heritage significance are listed on the Armidale Regional Council LEP within the immediate vicinity of the “Bayley Park” study areas. No evidence of early settlement (mining activity, such as south across the Waterfall Way at Clark’s Gully or otherwise) was found during the surveys across Study Areas 1-3 on “Bayley Park”

- Aboriginal Heritage Items and/or Places -

Three low-density artefact concentrations (ACs) were recorded across the three study areas (n=2, n=2, n=3). Six isolated (individual) artefacts (IAs) were found in Study Area 1 (north), eleven in Study Area 2 (central) and twenty-one in Study Area 3 (south). Study Area 3 also contains two scarred trees and a stone arrangement. Figures 11-13 illustrate each of the study areas and where each artefact, artefact concentration, scarred tree and the stone arrangement were found in those study areas. Each concentration, scarred tree and the stone arrangement is detailed further in the tables below and a log of all artefacts located during this investigation is presented in Appendix H.

- Artefact Concentrations –

Location	Bayley Park Artefact Concentration-1 (Study Area 3, Wpts. 15, 32-33)
Co-ordinates¹	391617E 6623090N
Description	Low-density artefact concentration
Landform	Undulating plain with low grade to the north, toward Limerick Creek
Environment	Cleared – Broad-leaved Stringybark-Blakely’s Red Gum grassy woodland. Small, shallow borrow pit, 40m long bearing NE-SW, associated with the electricity corridor
Geology	Stony loams on fine-grained sedimentary rocks, metamorphosed sedimentary rocks, granites and basalt flows
Site Dimensions	Dimensions of the borrow pit – 40m NE-SW x 10m NW-SE
Artefact Density²	3
GSV	Fair (26-50%)
GI	Low (26-50%)
Impacts	Tree clearing and grazing. Within the electricity corridor but still used for grazing
Comments	Silcrete flaked piece (Wpt 15) at SW end of the borrow pit Small chert flake (Wpt. 33) with a transverse snap at the NE end of the pit A quartz amorphous piece (Wpt. 32) on the eastern side of the pit

1. Datum GDA94. 2. Maximum

Location	Bayley Park Artefact Concentration-2 (Study Area 2, Wpts. 67-68)
Co-ordinates ¹	390693E 6623656N
Description	Low-density artefact concentration
Landform	Undulating plain with low grade to the east, toward Bayley Park Road
Environment	Cleared – open forest/woodland
Geology	Stony loams on fine-grained sedimentary rocks, metamorphosed sedimentary rocks, granites and basalt flows
Site Dimensions	Artefacts 15 metres apart NE-SW
Artefact Density ²	2
GSV	Fair (26-50%)
GI	Low (26-50%)
Impacts	Tree clearing and grazing. Pasture improvement/management and evidence of cropping
Comments	Large basalt flaked piece Quartz or possibly quartzite, flaked piece

1. Datum GDA94. 2. Maximum

Location	Bayley Park Artefact Concentration-3 (Study Area 3, Wpts. 077-078)
Co-ordinates ¹	389778E 6625168N
Description	Low-density artefact concentration
Landform	Undulating plain with low grade northward
Environment	Cleared – Blakely's Red Gum-Yellow Box open forest/woodland
Geology	Stony loams on fine-grained sedimentary rocks, metamorphosed sedimentary rocks, granites and basalt flows
Site Dimensions	Artefacts 7 metres apart E-W
Artefact Density ²	2
GSV	Fair (26-50%)
GI	Low (26-50%)
Impacts	Tree clearing and grazing. Pasture improvement/management
Comments	Silcrete assayed piece; one flake removal to assess 'flakability' then discarded Mudstone flaked piece; (no platform, bulb or PFA present)

1. Datum GDA94. 2. Maximum



Figure 11 – The location of archaeological objects and/or places in Study Area 1. Image source: Google Earth Pro 2016.

- Scarred Trees -

Location	Bayley Park Scarred Tree-1 (Study Area 3, Wpt 060)	
Co-ordinates ¹	392378E 6621813N	
Status	Dead, still standing	
Species	Stringybark sp?	
Aspect	Scar facing west	
Landform	Gentle slope grading to the north	
Scar Dimensions ²	L= 59, W= 15, D= 3. Height from ground surface = 80	
Environment	Cleared paddock with sparse stands of timber, dead and living, standing and fallen, with no understory present. Remnants of Broad-leaved Stringybark-Blakely's Red Gum grassy woodlands	
Description	Located on top of a low hill as it begins to fall away to the north. 100m from the eastern boundary	
Impacts	Tree clearing-dead trees with ring-bark scars. Cattle rubbing. Ground surface erosion from sheep grazing. Farm machine activity (scarifier) across ground surface	
Comments	To east is the stone arrangement and this tree may be associated though it is not possible to verify	

1. Datum GDA94. 2. Centimetres

Location	Bayley Park Scarred Tree-2 (Study Area 3, Wpt 065)	
Co-ordinates ¹	391835E 6621678N	
Status	Living	
Species	Stringybark sp?	
Aspect	Scar facing east	
Landform	Gentle slope grading to the north	
Scar Dimensions ²	L= 30, W= 20, D= 10. Height from ground surface = 90	
Environment	Sparse stand of living trees, with no understory present. Decumbent grass cover. Recorded by Eco Logical as remnant Broad-leaved Stringybark-Blakely's Red Gum grassy woodlands	
Description	Located on the higher ground toward the Waterfall Way, gentle slope. Granite outcropping nearby	
Impacts	Tree clearing-dead trees with ring-bark scars in surrounding area, live trees thinned. Stock rubbing. Ground surface erosion from sheep grazing	
Comments	Original scar is much longer but vigorous callus regrowth has covered over two thirds of it. May have been a branch scar originally and not the result of cultural activity. Tree is outside the cultural heritage survey zone.	

1. Datum GDA94. 2. Centimetres



Figure 12 – The location of archaeological objects and/or places in Study Area 2. Image source: Google Earth Pro 2016

- Stone Arrangement -

Location	Bayley Park Stone Arrangement (Study Area 3, Wpt 062)
Co-ordinates¹	392485E 6621808N
Description	Small arrangement of five stones, granite (local) raw material. One stone standing upright to mid-calf height
Landform	Gentle slope grading to east
Environment	Cleared paddock with sparse stands of timber, dead and living, standing and fallen, with no understory present. Remnants of Broad-leaved Stringybark-Blakely's Red Gum grassy woodlands
Geology	Stony loams on fine-grained sedimentary rocks, metamorphosed sedimentary rocks, granites outcropping, basalts also present
Site Dimensions	1m ²
Artefact Density	Not applicable
GSV	Excellent (95-100%)
GI	Low (26-50%)
Impacts	Tree clearing-dead trees with ring-bark scars. Cattle rubbing. Ground surface erosion from sheep grazing. The arrangement, however, is in excellent condition
Comments	Immediately recognised as a marker by the field team though further information was not offered or requested. It was clear to the archaeologist the stones had been arranged (that it was not natural) and that the arrangement was not a recent construction

1. Datum GDA94



Figure 13 – The location of archaeological objects and/or places in Study Area 3. Image source: Google Earth Pro 2016

10 PROVISIONAL ANALYSIS AND DISCUSSION

10.1 Landforms and Areas of High Potential

In Section 8 a predictive model was put together suggesting the types of Aboriginal cultural heritage most likely to occur would be artefact scatters and/or campsites, scarred (and possibly carved) trees and sources of raw material-quarries. The model suggests scatters and campsites would more readily occur along creeks and that scatters of artefacts alone could also occur in environments away from creeks. In contrast, however, isolated artefacts could occur randomly across any landform type, the most predictable factor determining the location of isolates being the state of erosion and weathering present on the land surface. Further, scarred (or carved) trees could occur across any landform, their presence influenced only by the modified nature of the environment. Quarries were predicted in areas where sources of economic (usable) raw material could be found; silcrete in Study Area 1, for example). As such, Table 5 listed archaeological potential in all three landforms present as moderate to high. Table 9 lists where cultural heritage objects and places were found in Study Areas 1-3.

Table 9 – Archaeological site frequency in each landform.

Landform	Surveyed Area	Effective Coverage	Find Spots	Waypoint Number	Artefact/Feature
Gentle Slope	160ha	23.9%	18	039, 041, 042, 044, 045, 046, 047, 048, 053, 055, 057, 059, 060, 062, 064, 065, 074, 093	Isolated artefact (n=15), scarred tree (n=2), stone arrangement
Undulating Plain	176ha	19.1%	23	000, 009, 014, 015, 032, 033, 067, 068 , 069, 075, 076, 077, 078 , 080, 081, 082, 083, 084, 085, 086, 087, 089, 090	Artefact concentration (n=3), isolated artefact (n=16)
Creekland	36.4ha	9.5%	6	012, 034, 035, 037, 079, 091	Isolated artefact (n=6)

Numbers in **bold type** are the artefact concentration artefacts

The identification of spatial patterns of artefact location that may be apparent in the Table 9 and in Figures 11-13, and the interpretation of these patterns as being the result of traditional Aboriginal activity should be avoided. This is because the disturbed nature of the ground surface (through improved pasture practices across the gentle slopes and undulating plains, for example) and the activity of grazing stock will have altered artefact location, compromising archaeological integrity. Movement of artefacts does not, however, remove their cultural importance to RAPs as direct links to Aboriginal ancestors.

It is clear, therefore, that the most important factors influencing archaeological potential across the “Bayley Park” study areas are twofold; actual existence (the obvious one) but also disturbance. Despite predictive models about the potential for archaeological material to be present in any specific landform type, landscape disturbance as the result of vectors such as land and farm management (regardless of how effective and organised), stocking rates and weather, are primary impacts upon object and/or place existence and integrity. Which of these two (existence and integrity) is more important in the cultural heritage assessment process depends upon the assessor; for the archaeologist context, location and the surrounding land surface is just as important as the object/place itself, whereas for the Aboriginal person a single artefact (whether it is in its original location or has been moved by whatever vectors) is a direct link to ancestors and is as such of great value wherever it is found.

10.2 Areas of Disturbance

Putting together a map of areas of disturbance is not necessary in this instance given the landscape across all three study areas on “Bayley Park” has been impacted by farming practices, both pastoral and cropping, over many years. Added to this is the fact Infinergy Pacific have consciously targeted those areas of disturbance to reduce the impact of their development on what remains of the remnant landscape. The vegetation map produced by Ecological Australia and reproduced here in Figure 14 provides an indication of the level of disturbance present within all three study areas, remembering that prior to European arrival the area was covered in eucalypt forest and open woodland.

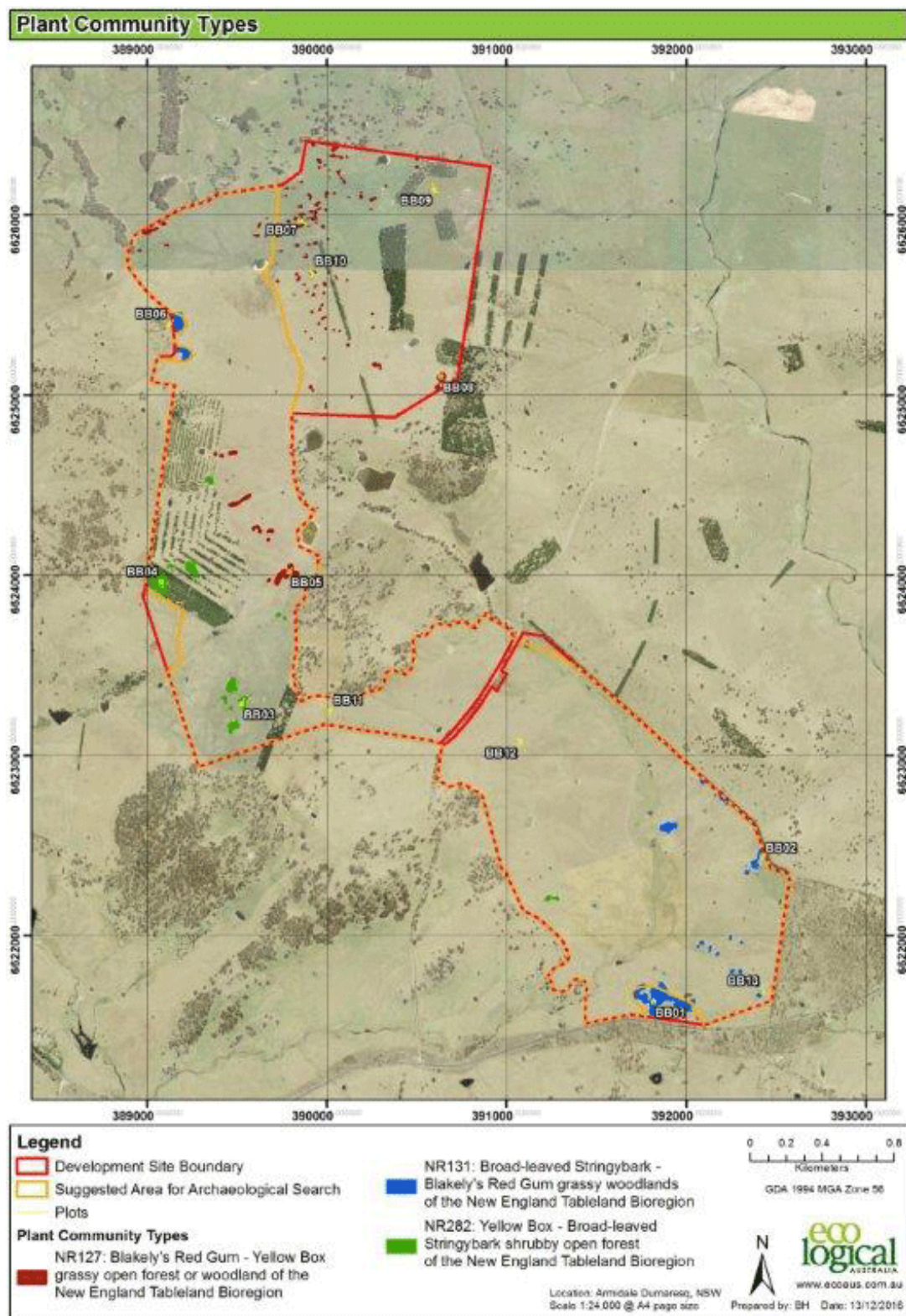


Figure 14 – Extant plant communities within the Metz Solar Farm project area.

10.3 The Assemblage

Archaeological investigations from Armidale to the margins of the Tablelands at Metz-Hillgrove, have found isolated artefacts and low-density artefact (between 5-20 artefacts) scatters most common (Sutton 1988; Beck and Appleton 1990; Appleton 1992). Two studies in the Hillgrove district located no artefactual material at all (Brayshaw 1996; Durkin 2000). One study located a raw material source close to Armidale (Piper 1989) later confirmed by another investigator to have been quarried by Aboriginal people from the past (Appleton 1994). Whilst completing an investigation that passed through Clark's Gully south of "Bayley Park" Appleton located on the National Parks database a bora/ceremonial ground in the vicinity of Burying Ground Creek, a carved tree/burial location at Bora Mountain, a carved tree at Hillgrove and a scarred tree at Thalgarrah, 15km to the north (Appleton 1991). Also at Clark's Gully, the author found isolated artefacts and a series of scarred trees parallel to Baker's Creek Gorge (Knuckey 2015). None of these sites are within the four kilometre radius of the current study areas (See Fig. 10) but they underline the potential site types present on "Bayley Park" and provide support for the predictive model put together for Study Areas 1-3.

10.3.1 Lithic Artefacts

- Artefact Concentrations -

Three low-density artefact concentrations were recorded during the current surveys; all contained 3 artefacts or less. Artefact concentration BPAC-01 (Wpts. 015, 032-033 in Sub-section 6.3.2) contained three artefacts in association with a small borrow pit most likely related to the adjacent electricity corridor. The other two concentrations of 2 artefacts each have no distinguishing features other than the vicinity of the objects to one another. Table 10 provides a provisional analysis of each artefact contained within each concentration.

Table 10 – Provisional analysis of the artefact concentrations.

Conc. ID	Wpt No.	Landform	Raw Material	Artefact Form	Co-ordinates ¹		Length (mm)	Width (mm)	Thickness (mm)
					Easting	Northing			
BPAC-01	015	UP	Silcrete	Flaked piece	391599	6623072	35	25	10
	032		Quartz	Amorphous	391617	6623090	20	16	5
	033		Chert	Flake	391630	6623098	17	16	5
BPAC-02	067	UP	Basalt	Flaked piece	390706	6623665	110	90	40
	068		Quartz	Flaked piece	390693	6623656	55	43	20
BPAC-03	077	UP	Silcrete	Assay	389778	6625165	90	80	75
	078		Mudstone	Flaked piece	389785	6625168	75	50	10

1. Datum = GDA94, Zone 56J

- Isolated Artefacts -

Thirty-seven isolated artefacts were located during the five days in the field. Six (16.2% of the total) of those were in Study Area 1 (northern area), eleven (29.7%) in the Study Area 2 (central area) and twenty (54.0%) in Study Area 3 (southern study area). When combined with BPAC-1-3 forty-four artefacts were located. Across all artefacts silcrete was the most common raw material utilised (25.0%, n=11) which is not unexpected given silcrete was noted outcropping in the northern undulating plains. Mudstone and quartz (24.3%, n=9) were the other most common raw material types utilised.

A wide range of artefact forms occurred amongst the objects found including axes (n=3), multiple-platform cores (n=2), retouched flakes (n=2) and a grindstone. Several pebbles were recorded as potential hammer stones (n=7) although no crushing or 'bruising' was apparent on either end of six of them. Flakes (40.5%, n=15) and flaked pieces (13.5%, n=5) aside from the potential hammer stones, were the most common artefact forms present. All isolated artefacts are recorded in the Artefact Record in Appendix H.

10.3.2 Scarred Trees

Two scarred trees were recorded during the surveys across Study Area 3 in the south; both were in the southern portion toward the Waterfall Way. The tree at Waypoint 23 (392377E 6621813N – GDA94) is dead but still standing. The scar may be related to the stone arrangement further to the east as it (the scar) does not appear to be a coolamon or shield scar. Regrowth of the callus around the wound may be restricting the view of a broader, more oval-shaped scar reminiscent of a coolamon or shield. The scar itself has a westerly aspect.

The remaining scarred tree at Waypoint 065 (391835E 6621678N – GDA94) is alive although the bole on which the scar occurs is dead. The scar has an easterly aspect and is long, approaching 1.5-2m. The scarring event has not affected tree growth and vigorous callus regrowth has enveloped the entire upper section of the scar. At some point prior to the entire scar being covered however, the bole has died leaving the lower section of the dry face exposed to weather and insect damage. The scar appears to be a partially regrown branch scar; however, the RAPs were not convinced of this and requested the tree be recorded.

10.3.3 Stone Arrangement

The small stone arrangement was located toward the southeast boundary of the southern study area at Waypoint 062 (392485E 6621808N). The arrangement was immediately identified by the Aboriginal members of the field team as a marker of some form although further information was not offered, or requested by the archaeologist. It was clear to the archaeologist, however, that the stones had been arranged (that it was not natural) and that the arrangement was not a recent construction.

11 SIGNIFICANCE ASSESSMENT

11.1 Assessing Significance

Assessing cultural significance means defining why a place is culturally important and to whom (OEH 2011). Aboriginal items and places possess value in the wider community in different ways and for different reasons, but what is foremost in assessing these items and places is that the Aboriginal community is involved and central to the process. The NSW Office of Environment and Heritage (OEH) acknowledge this role stating that Aboriginal people are the primary source of information about their culture, they must have an active role in its assessment and they must have control over how their cultural knowledge is used (OEH 2011).

The non-Aboriginal community and the scientific (archaeological) community in particular look at the value of Aboriginal objects and places in a different way, and archaeologists use differing value criteria to assess that value. In both cases, Aboriginal and non-Aboriginal, the primary document of reference is the Burra Charter (Marquis-Kyle and Walker 2004: 103) which defines cultural significance as the:

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

The criteria used here for assessing significance have been adapted from those used by the Burra Charter (Marquis-Kyle and Walker 2004), and the NSW Heritage Branch Manual *Assessing Heritage Significance* (NSWHS 2001) who use four principal values to assess cultural significance. In consultation with the registered Aboriginal parties (RAPs) to the project these values have been applied in assessing the cultural significance of the “Bayley Park” study areas to the local Aboriginal Community. The Office of Environment and Heritage elaborates upon these four principle values suggesting that any significance assessment should also consider criteria such as research potential, representativeness, rarity and educational potential (OEH 2011: 10).

The four principal values are as follows:

1. Historic Value (Heritage Branch Criterion A) - Associations with a person, event or activity of importance to the Aboriginal Community. In common with places of cultural value, locations of historical value will not necessarily possess physical evidence of that person/event/activity. “They may have ‘shared’ historic values with other (non-Aboriginal) communities” (OEH 2011: 9).
2. Aesthetic Value (Heritage Branch Criterion C) - How a place looks and ‘feels’ can be significant, especially when associated with social/cultural value. The aesthetics of a place considers “...form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use...” (OEH 2011: 9).
3. Social-Cultural Value (Heritage Branch Criterion D) - The associations and attachments a place has for Aboriginal people including both traditional links to country and links arising from contemporary community identity. “Social or cultural value can only be identified through consultation with Aboriginal people” (OEH 2011: 8).
4. Scientific Value (Heritage Branch Criterion E) - Scientific value comes from the fact a place, item, or landscape can provide further information to current understanding and knowledge. The degree of significance depends upon the degree of rarity or representativeness the item, place, or landscape possesses.

The OEH criteria are explained thus:

5. Research potential - The potential of a place to contribute to an understanding of the area, or region, or state natural and/or cultural history.
6. Representativeness - Builds on the Charter concept by assessing how much variability exists both inside and outside the subject area, what is already conserved and how much connectivity exists.
7. Rarity - Also builds on the Charter concept of rarity by assessing whether a place demonstrates a distinctive way of life, custom, process, land-use, function or design no longer in use.
8. Educational Potential - Assessing whether a place contains teaching sites or sites that might have teaching potential.

11.2 Aboriginal Cultural Significance

All artefacts are important to Aboriginal People and discussions with the RAP representatives after each artefact being found reflected that fact. The RAPs also acknowledged all scarred trees, both dead and alive, as being of high cultural importance.

11.3 Cultural and Scientific Value Assessment

As required by the OEH, the core values listed above are used to grade the cultural significance of Study Areas 1-3 using a low, moderate or high ranking and the OEH criteria will be used to grade the scientific significance of the study areas using the same ranking system. What follows is an assessment of the cultural value to the RAPs of Study Areas 1-3 and an assessment of their scientific value to the wider non-Aboriginal community. The locations of interest found during the field surveys are addressed in four groups; artefact concentrations, isolated finds, scarred trees, and stone arrangements. The assessment is summarised in Table 11.

1. Historic Value

Artefact Concentrations - Artefacts themselves represent a tangible link to the past but to no specific historical event or person either pre- or post-European contact. As tangible links to the past the artefacts held value, but the location of the concentrations were not significant. **Status - medium significance.**

Isolated Finds - Discussions with RAP reps. indicate each individual artefact represents a tangible link to the past and in that sense, they held value, their location (find spot) was not significant. **Status - medium significance.**

Scarred Trees – Significant (and vanishing) tangible links to the past, regardless of whether these trees were dead or alive they are of value. **Status - high significance.**

Stone Arrangement – Indicator of pre-contact ceremonial activity in the broader landscape. **Status - high significance.**

2. Aesthetic Value

Artefact Concentrations – Other than the aesthetic value of identifiable objects within the concentrations (of which there are none), the concentrations themselves hold little value of this sort. **Status - low significance.**

Isolated Finds – The more recognisable objects such as axes and grindstones are immediately identifiable and as such maintain a degree of aesthetic value. **Status - medium significance.**

Scarred Trees - Living trees retain aesthetic value in a tactile, sensory and scenic sense. This value is lessened but still present with the dead trees. **Status - medium significance.**

Stone Arrangement – Aesthetic value apparent in the location and aspect of the arrangement and its being a tangible representation of metaphysical and other ceremonial aspects of pre-European Aboriginal culture. **Status - high significance.**

3. Social-Cultural Value

Artefact Concentrations – In this instance the concentrations themselves are of little value, it is the artifacts within the concentrations that are important. See isolated artefacts. **Status - low significance.**

Isolated Finds – Each artefact represent a direct and tangible link to the pre-European Aboriginal past and to how people dealt with the everyday challenges of survival. Given the disturbed nature of the landscape the location of each object was not significant. **Status - medium significance.**

Scarred Trees – A direct link to pre-European Aboriginal subsistence patterns and the activities of daily life. **Status – high significance.**

Stone Arrangement – A direct link to pre-European Aboriginal metaphysical belief systems and other areas of ceremonial life. **Status - high significance.**

4. Scientific Value

Artefact Concentrations – The context of the landscape where each concentration was recorded, especially that for the three artefacts at BPAC-01 (in the electricity corridor), has been disturbed over many years and is thus reduced or compromised (as for BPAC-01), so that archaeological value is of no use. **Status –low significance.**

Isolated Finds - The context of the landscape where each artefact was recorded, has been disturbed over many years and is thus reduced or compromised (as for BPAC-01), so that scientific (archaeological) value is of no use. Some individual artefacts in themselves (the axes and grinding stone, for example) present some value as indicators of human activity, however, their compromised context reduces their value. **Status –low significance.**

Scarred Trees - Potential to provide scientific information about how people produced wooden implements and in comparison, this information can be related to scarred trees from other areas this data can contribute to the understanding of human occupation. Some scars are not related to utilitarian purposes but to creation myths, pathways or burial ceremonies. Value is compromised to a degree by the tree clearing and the potential bias the clearing process introduces. **Status - medium-high significance.**

Stone Arrangement - Not assessed at this stage and would only be assessed on a scientific basis with the permission of the RAPs. The potential scientific value of the location is significant. **Status - high significance.**

5. Research Potential

Artefact Concentrations – Given the disturbed nature of the landscape it is likely these concentrations possessed a higher density of artefacts in the past, but that they have been spread through the landscape over time, dissipating the concentrations and reducing their research potential. **Status - low significance.**

Isolated Finds – As for the concentrations, disturbance of the landscape has led to a reduction in ‘find spot integrity’ – are the artefacts where they were left by Aboriginal people or have they been moved around by non-Aboriginal human and/or natural vectors since initial discard? **Status – low-medium significance.**

Scarred Trees - Potential to provide scientific information about how people produced wooden implements and in comparison, this information can be related to scarred trees from other areas this data can contribute to the understanding of human occupation. Some scars are not related to utilitarian purposes but to creation myths, pathways or burial ceremonies. Value is compromised to a degree by the tree clearing and the potential bias the clearing process introduces. **Status - medium-high significance.**

Stone Arrangement - Not assessed at this stage and would only be assessed on a scientific basis with the permission of the RAPs. The potential scientific value of the location is significant. **Status - high significance.**

6. Representativeness

Artefact Concentrations – Most common site type on the Northern Tablelands. **Status - low significance.**

Isolated Finds – Flakes and flake derivatives are commonly found across the Tablelands but axes and grinding stones are not as common. **Status - moderate significance.**

Scarred Trees – The forms of scarring present are commonly found across the Tablelands. If the tree at BPST-01 is related to the stone arrangement as another form of marker, it is less common, but not rare. **Status - moderate significance.**

Stone Arrangement – Although most likely common prior to European arrival as markers for people to follow through the environment, these stone arrangements are less common now because of tree clearing, farming and infrastructure development activity (the electricity corridors, for example). **Status - high significance.**

7. Rarity

Artefact Concentrations - Most common site type on the Northern Tablelands. **Status - low significance.**

Isolated Finds - Most common site type on the Northern Tablelands. **Status - low significance.**

Scarred Trees - Commonly found in areas where trees are still prolific, along the riparian verges of rivers and creek, for example. The issue here is the existence of scarred trees, not necessarily the form the scars take (although carved trees maintain high significance). Scarred trees are becoming less common as fires and farming take their toll. **Status – medium to high significance.**

Stone Arrangement – Although most likely common prior to European arrival as markers for people to follow through the environment, these stone arrangements are less common now because of tree clearing, farming and infrastructure development activity (the electricity corridors, for example). **Status - high significance.**

8. Educational Potential

Artefact Concentrations – Low-density with no specific site type attributes. **Status – low significance.**

Isolated Finds – Educational opportunities occur on a regular basis throughout the field surveys as team members discuss finds with each other and the archaeologist. Field surveys present Elders with opportunities to teach younger members about the items being found. On a broader scale, isolated artefacts can be used in the wider Aboriginal and non-Aboriginal communities, to teach others about Aboriginal culture and archaeology. **Status – high significance.**

Scarred Trees - Field surveys present Elders with opportunities to teach younger members about tree scarring practices and what different scars mean. **Status – high significance.**

Stone Arrangement – Restricted access to knowledge about this arrangement and education can only occur with those qualified to receive the knowledge. **Status – high significance** (but to a limited demographic in the community).

11.4 Statement of Significance

Three low-density (≤ 3) artefact scatters were found and none of the individual, isolates recorded were found in association with deposit that held potential for subsurface archaeological material to be present; all concentrations and isolates were found either on disturbed ground. All artefacts were of importance to the RAP representatives because they represent a tactile link to the pre-European past. The scarred trees, regardless of whether they were alive or not were attributed moderate to high significance and the stone arrangement was attributed high significance in every category (Table 11).

Table 11 - A summary of the significance assessment.

	1	2	3	4	5	6	7	8	Overall Status
Artefact Concentrations	M	L	L	L	L	L	L	L	L
Isolate Artefacts	M	M	M	L	L-M	M	L	H	M
Scarred trees	H	M	H	M-H	M-H	M	M-H	H	M-H
Stone Arrangement	H	H	H	H	H	H	H	H	H

1. Historic value 2. Aesthetic value 3. Social-cultural value 4. Scientific value
5. Research potential 6. Representativeness 7. Rarity 8. Educational potential

12 ASSESSING IMPACT

12.1 The Proposed Development

The potential impacts upon Aboriginal cultural heritage items and places posed by the proposed Metz Solar Farm project on “Bayley Park” include:

- Direct impact to Aboriginal items and/or places within the identified work zones (Study Areas 1-3, in Fig. 2) brought about by solar panel array construction.
- Direct impact to Aboriginal items and/or places within the identified work zones from modifications to the landscape relating to solar panel array support infrastructure.
- Direct impact to Aboriginal items and/or places within the identified work zones from modifications to the landscape relating to new road construction and/or existing road upgrades.
- Indirect impact to Aboriginal items and/or places within the identified work zones as the result of altered vegetation structures and/or altered wind/water erosion patterns.

12.2 The Assessment of Potential Impacts

All artefacts located during the cultural heritage assessment field surveys of Study Areas 1-3 on “Bayley Park” were found during the week of 12-18, and were completed by the author and representatives from all RAPs (Table 1). No sites/places of historical heritage significance were found during the surveys across Study Areas 1-3, whilst in total three low-density artefact concentrations (n=2, n=2, n=3) were located (one in each study area), along with six isolated artefacts in Study Area 1 (north), eleven in Study Area 2 (central) and twenty-one in Study Area 3 (south). Two scarred trees and one stone arrangement were also found in Study Area 3.

Four artefacts recorded fall outside the designated work areas, Wpt. 079 adjacent Study Area 1 in the north (Fig. 11), and Wpts. 74-76 in the central area adjacent Study Area 2, (Fig. 12). All other items and places recorded fall within the designated construction areas (See Figs. 11-13) and as such all have the potential to be subject to direct and total harm, the consequence of which will be total loss of information.

13 AVOIDING AND MINIMISING HARM

13.1 Guiding Principles for Heritage Site Management

The Office of Environment and Heritage aims at ensuring impacts to Aboriginal objects and places are avoided or reduced and that where possible Aboriginal sites should be conserved. Three OEH policies promote this aim:

1. Impacts to significant Aboriginal objects and places should always be avoided wherever possible.
2. Where impacts to Aboriginal objects and places cannot be avoided the Proponent is required to develop (or amend) proposals to reduce the extent and severity of impacts to Aboriginal objects and places using reasonable and feasible measures. Any measures proposed should be negotiated between the Proponent and the Aboriginal community.
3. Once all avoidance, minimalisation and mitigation options have been adequately explored OEH may also consider the appropriateness of any proposed actions having potential Aboriginal cultural heritage benefit. Any actions proposed should be negotiated between the Proponent and the Aboriginal community.

The guiding principle is therefore that wherever possible avoidance should be the primary management option but that if avoidance is not feasible, measures must be taken to mitigate against impacts to Aboriginal items and/or places. If mitigation is adopted the nature of that mitigation is based on the significance assessment, both cultural (as defined by the Aboriginal community) and scientific, applied to the Aboriginal items and/or sites in question.

13.2 Proposed Preservation Strategies and Mitigation Measures

Perusal of Figures 11-13 clearly shows that all Aboriginal objects (artefacts) and places other than those at Wpts. 074-076, and Wpt. 079 will be impacted by the proposed solar farm. Infinergy Pacific has made it clear that as far as is possible it will follow Option 1 from Sub-section 13.1 (Avoidance) but that where this is not possible a program of mitigation as set out under Point 2 in Sub-section 13.1 will be followed.

13.2.1 Avoidance

Three sites must be avoided regardless of the solar farm construction plan; the scarred tree at Wpt 060 (BPST-01), the scarred tree at Wpt. 065 (BPST-02) and the stone arrangement at Wpt. 062 (BPSA). The scarred tree at Wpt. 065 is within a stand of trees toward the southern end of Study Area 3. This stand of trees is remnant Broad-leaved Stringybark-Blakely's Red Gum grassy woodland and is of ecological significance (See Fig. 14, a reproduction of Eco Logical Australia's vegetation communities map). As such BPST-02 should be in no danger of direct impact. If tree removal becomes an option, this tree must not be harmed and a 10m buffer will need to be placed around it. The other scarred tree (BPST-01) at Wpt. 060 will need a 10m buffer around it marked with high visibility orange, barricade fencing before any pre-construction landscape development begins and throughout construction. The stone arrangement will also require a 10m buffer around it, marked with high visibility barricade fencing for the duration of construction, to be removed and replaced with a stock-proof fence after the completion of construction. No markings, high visibility or otherwise, will be necessary around the stone arrangement after construction is complete, and in fact the less attention the fence attracts the better. The fence must be stock-proof.

13.2.2 Mitigation

In all other cases, where avoidance is not an option, recorded artefacts should be collected prior to commencement of initial ground disturbance and in consultation with the RAPs, removed to a safe location either on-site and reburied, or to some keeping place as nominated by the RAPs themselves. The collection must be carried out in accordance with Requirement 26 of the OEH *Code Of Practice For The Archaeological Investigation Of Aboriginal*

Objects In New South Wales (DECCW 2010b: 35) and OEH requirements. Mitigation might still be prevented, however, and avoidance maintained if modifications are made to the current construction footprint (Fig. 2).

14 MANAGEMENT RECOMMENDATIONS

After the consideration of:

- The relevant legislative requirements (set out in Section 2 and in Sub-section 14.1),
- The results of the cultural heritage assessment field survey program as reported here,
- The concerns and interests of the Aboriginal Community, represented by the RAPs, and,
- The proposed impacts of the Metz Solar Farm Project development.

It has been found that:

- The Metz Solar Farm proposed for construction on “Bayley Park” is categorised state significant development. A cultural heritage management plan (CHMP) will be developed to guide the management of Aboriginal cultural heritage objects and places found during the cultural heritage surveys of the three study areas.
- The “Bayley Park” study areas lie within a corridor of high cultural importance to the Aboriginal Community.
- The tangible (archaeological) evidence supporting that significance has been extensively modified if not completely removed across those study areas.
- Tangible evidence that does remain is of moderate to high value.
- The proposed solar farm development will have a direct impact upon the “Bayley Park” study areas as a cultural landscape, however;
 - BPST-01, BPST-02 and BPSA can be avoided,
 - All artefacts that remain, as documented in Appendix H may need to be mitigated IF modified zones of impact/construction cannot be incorporated into the current areas nominated by Infinergy Pacific.

As a result of these findings it is recommended that:

- No further archaeological investigation is required at the artefact locations (find spots) identified as falling within “Bayley Park” Study Areas 1-3. A cultural heritage management plan (CHMP) will be developed following detail design, indicating where avoidance is not possible and an impact is unavoidable. The CHMP will be in place prior to the commencement of ground disturbance activities and shall explain the methodology for removal, who will be involved, and where any object that has been moved will be permanently stored.
- No further archaeological investigation is required at the scarred tree locations that fall within Study Area 3, the southern study area (BPST-01, BPST-02). Scarred trees, regardless of whether they are alive or dead should be avoided; initial ground surface disturbance and project construction activity should be excluded from within 10m of these trees.
- No further archaeological investigation is required at the stone arrangement (BPSA) that falls within Study Area 3, the southern study area. This site must be avoided and a 10m exclusion zone placed around it, into which no vehicles (including rubber-tyred light vehicles) must travel.
- It is recommended that for the duration of construction 10m buffer zones be established around BPST-01, BPST-02 and BPSA using star pickets and high visibility barrier fencing. At completion of construction the barrier fencing may be removed from around the scarred trees. The RAPs are to be informed of the erection and removal of barrier fencing at the time the events occur.

- It is recommended that at completion of the construction phase the high visibility barrier fencing be removed from around BPSA and that it is replaced with a stock-proof fence.
- If, through future development planning, impacts become necessary outside Study Areas 1-3 heritage assessment of these areas will need to be carried out.
- Once the detailed construction footprint has been established within the three study areas any artefact concentration or isolate locations that remain within the impact zone will need to be marked with a star picket and appropriate flagging for the interim period between construction footprint finalisation and CHMP approval.
- The RAPs have requested and it is recommended here, that they be involved in monitoring vegetation removal in the pine plantation located along the western margin of Study Area 2.
- Monitoring of tree removal will be carried out on a needs basis, the number of monitors present equal to the number of machines engaged in tree removal.
- It is recommended that initial ground surface disturbance Infinergy Pacific (and/or their contractors) be undertaken in accordance with the CHMP. The CHMP will identify appropriate communication protocols between the project and Aboriginal stakeholders.
- In the event of an unanticipated find all works must cease in the immediate area (10m buffer) and the find spot marked with high visibility barrier fencing. A protocol for unanticipated finds is to be included in the CHMP.
- Copies of this report will be sent to each of the RAPs to the project, and a digital copy submitted to the Office of Environment and Heritage for inclusion in the AHIMS database.

15 REFERENCES

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APPENDIX A – STATE GOVERNMENT (DPE AND OEH) REQUIREMENTS

Environmental Assessment Requirements

State Significant Development

Section 78A(8A) of the *Environmental Planning and Assessment Act 1979*

Application Number	SSD 7931
Proposal	Metz Solar Farm which includes: - the construction, operation and decommissioning of a solar photovoltaic (PV) plant up to 300 MW; and - associated infrastructure, including a grid connection.
Location	Bayley Park Metz, Armidale
Applicant	Infinergy Pacific Ltd
Date of Issue	28 September 2016
General Requirements	The Environmental Impact Statement (EIS) for the development must comply with the requirements in Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i> (EP&A Reg). In particular, the EIS must include: - a full description of the development, including: - details of construction, operation, upgrading and decommissioning; - a site plan showing all infrastructure and facilities (including site access location, site access routes, site compounds, laydown areas, substation, carpark and any other ancillary infrastructure that would be required for the development); - a strategic justification of the development focusing on site selection and the suitability of the proposed site, including the permissibility of the proposal and the capacity of the existing electricity transmission network with consideration for other potential electricity generation projects; - an assessment of the likely impacts of the development on the environment, focusing on the specific issues identified below, including: - a description of the existing environment likely to be affected by the development; - an assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice; - consideration of the cumulative impacts of other developments (where relevant); - a description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development (including draft management plans for specific issues as identified below); - a description of the measures that would be implemented to monitor and report on the environmental performance of the development; - a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; and - the reasons why the development should be approved having regard to the biophysical, economic and social costs and benefits of the development. While not exhaustive, Attachment 1 contains a list of some of the environmental planning instruments, guidelines, policies, and plans that may be relevant to the environmental assessment of this development. In addition to the matters set out in Schedule 1 of the EP&A Reg, the development application must be accompanied by: - a signed report from a suitably qualified person that includes an accurate estimate of the capital investment value of the development (as defined in clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>); and

	the consent in writing of the owner of the land (as required in clause 49(1)(b) of the <i>Environmental Planning and Assessment Regulation 2000</i>).
Specific Issues	The EIS must address the following specific issues: Constraints – including a detailed map identifying the key environmental and other land use constraints that have informed the final design of the development, including but not limited to existing electricity transmission lines, the project site boundary, proposed infrastructure, site access, vegetation types, residences within 2 km of the project site, existing waterbodies, proposed perimeter planting, Crown public roads and all identified Aboriginal heritage items. Land – including: - a baseline assessment of the soil and land capability prior to development; - an assessment of the impact of the development on agricultural land, flood prone land and mineral resources and exploration activities in proximity to the project site, having regard to the requirements of the Department of Industry requirements (attachment 2); and - consideration of the compatibility of the development with the existing agricultural land uses on and adjacent to the site both during operation and after decommissioning, particularly in relation to the zoning provisions applying to the land. Biodiversity – including an assessment of the likely biodiversity impacts of the development, particularly in regard to all native vegetation present including Endangered Ecological Communities (EECs) and isolated trees, and any steps taken to avoid, mitigate or offset any identified impacts, having regard to the <i>NSW Biodiversity Offsets Policy for Major Projects</i>, and in accordance with the <i>Framework for Biodiversity Assessment</i>, unless otherwise agreed by the Department. Heritage – including an assessment of the likely Aboriginal and historic heritage (cultural and archaeological) impacts of the development, including adequate consultation with the local Aboriginal community. Transport – including an assessment of the site access route, the site access point off Waterfall Way, the likely traffic volumes and transport impacts of the development on the capacity, condition, safety and efficiency of any local and State road networks including Waterfall Way and Bayley Park Road, having regard to the requirements of Roads and Maritime Services (attachment 2), and a description of: - the measures that would be implemented to mitigate any impacts during construction, upgrading or decommissioning; and - any proposed road or intersection upgrades developed in consultation with the relevant road authorities (if required). Visual – including an assessment of the likely visual impacts of the development (including any glare, reflectivity and night lighting) on surrounding residences, scenic or significant vistas, air traffic and road corridors in the public domain, including a draft landscaping plan for on-site perimeter planting, with evidence to demonstrate it has been developed in consultation with affected landowners. Water – including an assessment of the likely impacts of the construction, operation and decommissioning of the development on: - the quality and quantity of groundwater and surface water resources (including any nearby watercourses), adjacent water users, riparian land, and aquatic and groundwater dependent ecosystems, and measures that would be implemented to mitigate any impacts; - annual volumes of surface water and groundwater required, details of water supply arrangements, and a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with <i>Managing Urban Stormwater: Soils & Construction</i> (Landcom 2004); and - details on proposed creek crossing locations and designs (if required). Noise – including an assessment of the construction, upgrading and decommissioning noise impacts of the development in accordance with the <i>Interim Construction Noise Guideline</i> (ICNG) and sub-station noise impacts

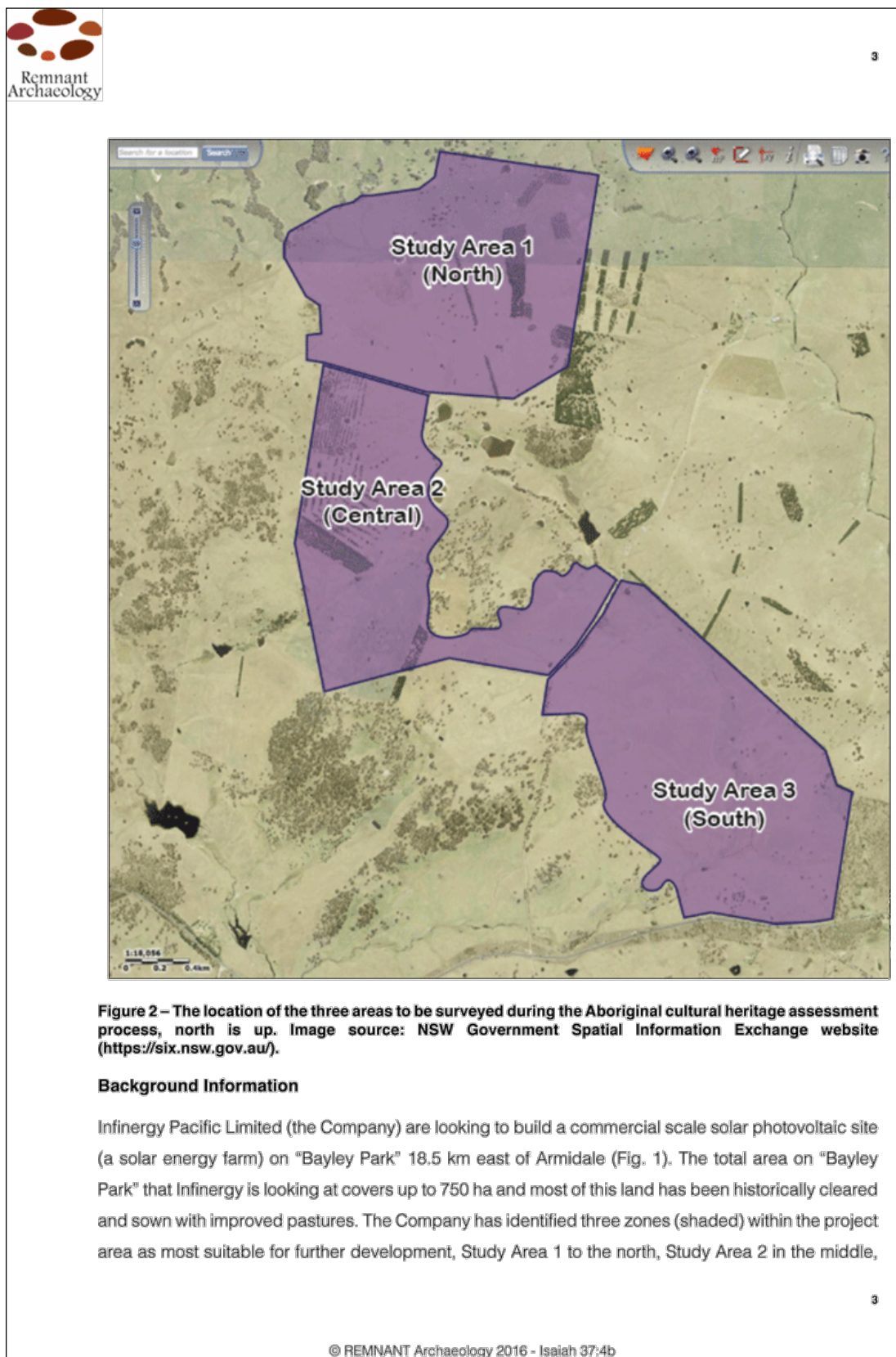
	in accordance with the <i>NSW Industrial Noise Policy (INP)</i>, and a description of the measures that would be implemented to mitigate any impacts if the assessment shows construction, upgrading or decommissioning noise is likely to exceed applicable criteria. • Hazards – consideration of any relevant hazards including electrical fire and impacts from electromagnetic interference.
Consultation	In preparing the EIS for the development, you should consult with relevant local, State or Commonwealth Government authorities, infrastructure and service providers, community groups and affected landowners. In particular, you must undertake detailed consultation with affected landowners surrounding the development, and Armidale Regional Council. The EIS must describe the consultation that was carried out, identify the issues raised during this consultation, and explain how these issues have been addressed in the EIS.

Attachment A – OEH Standard Environmental Assessment Requirements (SSD7931)

Biodiversity 1. Biodiversity impacts related to the proposed project can be assessed and documented in accordance with the Framework for Biodiversity Assessment, unless otherwise agreed by OEH, by a person accredited in accordance with s142B(1)(c) of the <i>Threatened Species Conservation Act 1995</i>.
Aboriginal cultural heritage 2. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the project and document these in the EIS. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and consultation with OEH regional officers. 3. Where Aboriginal cultural heritage values are identified, consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the EIS. 4. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the EIS. The EIS must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the EIS must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.
Historic heritage 5. The EIS must provide a heritage assessment including but not limited to an assessment of impacts to <i>State and local heritage</i> including conservation areas, natural heritage areas, places of Aboriginal heritage value, buildings, works, relics, gardens, landscapes, views, trees should be assessed. Where impacts to State or locally significant heritage items are identified, the assessment shall: a. outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996), b. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria), c. include a statement of heritage impact for all heritage items (including significance assessment), d. consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and e. where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations (terrestrial and maritime as relevant) and include the results of these test excavations.

APPENDIX B – NOTIFICATION LETTER SENT TO ABORIGINAL STAKEHOLDERS

 Remnant Archaeology	PO Box 1787 Armidale, New South Wales. 2350 M - 0488 097 916 E - dr_grumpy@remnantas.com.au ABN – 99 092 565 110
Thursday, 10 November 2016	
RECIPIENT COMPANY ADDRESS, TOWN STATE. POSTCODE	
Notification Letter – Proposed Metz Solar Farm, “Bayley Park”, Waterfall Way via Armidale, New South Wales	
Dear ... Remnant Archaeology has been asked by Eco-Logical Australia (on behalf of Infinergy Limited - the Company) to put together a cultural heritage management strategy to reduce the impact upon Aboriginal cultural heritage items and places, for a proposed commercial-scale solar photovoltaic (PV) project (a 'solar energy farm') to be located on “Bayley Park” station 18.5km east of Armidale along the Waterfall Way (Grafton Road). See Figure 1. The project is in the preliminary phase of assessing environmental and archaeological/cultural impacts and as you know under state government guidelines the Aboriginal Community must be consulted and invited to participate in the Aboriginal cultural heritage management strategy before initial earthworks (vegetation removal, clear and grade) can begin. Infinergy have identified three zones on “Bayley Park” as most suitable for the location of arrays of photovoltaic panels; Area 1 to the north, Area 2 in the centre, and Area 3 to the south – Area 3 has the Waterfall Way as its southern border. Figure 2 shows the areas to be surveyed during the cultural heritage assessment component of the project. The purpose of this letter is to notify your organisation of the proposed solar farm and to invite your organisation to register an interest in the project so as to advise on the appropriate identification and management of Aboriginal cultural heritage objects and/or places in the three study areas (Figure 2). The second reason for this letter is to give your organisation the opportunity to review and comment upon the methods Remnant Archaeology proposes to use for the identification and management of Aboriginal cultural objects and/or places. These methods are set out in this letter and comments and advice from your organisation on possible modifications to this methodology are welcome.	
REMANT Archaeology PO Box 1787, Armidale, NSW. 2350	M – 0488 097 916 E – dr_grumpy@remnantas.com.au ABN – 99 092 565 110
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and Study Area 3, to the south (Figure 2). In these areas the Company are looking to install banks of photovoltaic panels with a combined capacity of up to 300 megawatts. There will need to be added infrastructure on site to support the panels, including inverters to convert DC current to AC current and on-site modular substations to allow the solar farm to be connected to 132 KV and 330 KV transmission lines that already exist on the property.

Fieldwork

Remnant Archaeology proposes using archaeological field survey to begin the cultural heritage assessment program for the Metz Solar Farm Project. Remnant will assess the potential for Aboriginal cultural and archaeological objects and/or places to be found on the surface of the ground within the boundaries of the three study areas shown in Figure 2. After the field survey and depending upon what is found, a sub-surface test-pitting exploration program may become necessary. Field survey method and test-pitting method are described below.

Survey - On-foot (pedestrian) field surveys will be carried out across the study areas with three main objectives:

1. To carry out a ground surface archaeological survey to determine the presence/absence of archaeological material across the study areas.
2. To confirm what is already known from background AHIMS site register searches.
3. To allow the Registered Aboriginal Parties (RAPs) the opportunity to identify any other areas of concern known to them within the study areas.

Field survey will be based upon linear transects; this means imaginary lines are superimposed over a map of the study areas in a north-south direction (Figure 3) that will be 100-200m apart and these lines are loaded onto the archaeologist's hand-held GPS unit.

The survey will be done as follows; the archaeologist starts at the southern end of the first transect line on the western side of the study area and walks north following the line on his GPS. Members of the field team line up along the archaeologist's right side and all walk along inspecting the ground surface in front and to the sides as they go. When the archaeologist reaches the northern end of that line the team swings around the last member in the line to the east and the archaeologist moves to the eastern end. The team then starts walking south along the next transect line – this continues with each transect and in this way the team works across the land from west to east until the study area has been inspected. The archaeologist will stop at various points to record information in his field book, information about land surface modification, ground surface visibility, stone raw materials present, soil types, vegetation, for example. Items and/or places of interest found by members of the field team are flagged (using stake flags) for the archaeologist to record, map and measure. The archaeologist collects the flags as he goes - no flags or flagging tape will be left in the study area. All information will be recorded in a field book.

Test Pitting (if required) - Depending upon what is found during the ground surface surveys, it may become necessary to carry out sub-surface test pitting. IF required, a test-pitting program can be completed without an Aboriginal heritage impact permit (AHIP) in place, as per the *Code of Practice for Archaeological Investigation of Aboriginal Objects In New South Wales*.

At each location chosen a 50cm² square is set up using a string line and then dug (using trowel and brush) to a depth where the team members are satisfied no archaeological items will be discovered. This depth coincides with the base of the first soil layer (the A horizon) and is usually between 100-500mm deep. The A horizon is dug out in layers called 'spits' or excavation units and each bucketful of soil is weighed before it is run through a 5mm sieve. Artefacts found during excavation are photographed where they were found, mapped in the pit, removed, measured, photographed again, bagged, labelled and returned to the pit. Artefacts found on the sieve are measured and photographed, bagged, labelled and returned to the pit. If possible the depth they came from is recorded. During the test-pitting process the archaeologist fills out paperwork for each excavation unit and completes the relevant documentation when artefacts are found.



Figure 3 – The proposed survey transects (blue) heading north-south (and 100m apart) across Study Area 1 (red). The same pattern will be used in all three study areas. Image source - NSW Government Spatial Information Exchange website (<https://six.nsw.gov.au/>).

Research Methodology

Aims - The aim of any archaeological study (research) is to try to find information that will answer questions about how Aboriginal people in the past moved through the landscape and how they used the landscape - basically, how did Aboriginal people in the past interact with their environment? Answering questions about the past may also lead to increased knowledge of current Aboriginal use of the landscape and the connection of current-day Aboriginal people to sites in the district.

Questions of relevance here may include;

1. Have artefacts found remained *in situ* (that is, where they were originally placed or dropped), or have farming activities (tree clearing and grazing, for example) and erosion moved these artefacts away from their original location?
2. If there are very few artefacts present, and subject to the agreement of the RAPs, would a detailed analysis of these items:
 - o Assist in identifying the uses Aboriginal people from the past gave these objects?
 - o Highlight the tool-making technologies used by the local people?
 - o Provide information about the range of raw materials used to make tools?
 - o Provide information about the range of food resources used by the local people?

Analysis - A spatial analysis of artefact location, (where across the land surface artefacts are found and how that position might relate to the position of other artefacts found), across the study areas will be carried out. If agreed to by the RAPs and if at all possible, more detailed analysis of the artefacts themselves may be requested in order to attempt to answer the questions presented above.

Artefact Management

During field survey no artefacts will be recovered until the appropriate OEH protocols have been satisfied. Recovery and/or removal of artefacts is addressed within an AHIP. IF a test-pitting program is required all artefacts recovered will be dealt with in the following manner.

- o Artefacts will be recorded using standard OEH site recording forms including photographs of the items and scale drawings of the site and/or excavation from which the items came.
- o Artefacts from each excavation spit within each square will be placed in a sealed plastic bag.
- o Each bag is labelled with relevant information, and a similar label will be in the bag.
- o All artefacts will be stored in a hard plastic container.
- o Excavation ends when enough information to satisfy OEH requirements has been recovered.
- o When all required information has been gathered, all artefacts will be reburied on-site.

If reburial on-site is not possible, for whatever reason, (a large number of items to be processed is one possible example), materials will be temporarily stored at Remnant Archaeology's office in a secured and locked cabinet. Within 7 days of recording being completed the artefacts will be reburied in their



7

test pits and the locations noted for future reference. Any materials returned to a pit that will later be disturbed due to works will be subject to a care agreement for their future protection and this care agreement will be a condition of the AHIP. Site cards will be submitted to OEH and all findings are included in the report.

Personnel

The field survey work will be a collaborative effort between Graham Knuckey (Remnant Archaeology) and stakeholders from the Aboriginal Community who are registered for the project (registered Aboriginal parties – RAPs).

This current letter is the formal request to those appropriate stakeholders to register their interest in this project, and it will be from the written responses to this letter that Remnant Archaeology will put together a list of registered Aboriginal parties (RAPs). This list will then be sent to all registered Aboriginal parties so that all RAPs are aware of who else has been registered for this project. It will be the responsibility of the RAPs to select their representative to participate in any fieldwork. IF test-pitting becomes necessary it will be carried out as described above and will also be subject to further discussions between the RAPs, Remnant Archaeology and the Proponent before any excavations can begin

Logistics

The fieldwork set out in this notification letter is subject to a number of possible restrictions and the most obvious will be weather conditions. Fieldwork will not be carried out during inclement weather. With regard to field survey constraints may include:

- The level of expertise of the RAP representatives - Remnant recommends experienced field officers be selected as RAP representatives but Remnant also understands this decision is entirely up to each RAP body and will support those decisions wherever possible.
- Issues relating to difficult topography and/or vehicle-landowner access.

With regard to test pit excavation (IF required) other constraints may include:

- Site preparation – the amount of time required to prepare the land surface for excavation.
- Soil profile and density at each location - the degree of excavation difficulty.
- Excavation depth - this will vary between trenches and test pits.
- The frequency of Aboriginal cultural heritage material encountered – the more found, the more time will be required to process the material.

7



8

Taking into consideration the potential constraints and the size of the study area involved, it is predicted the number of days required for the field survey will be six days, with a minimum of eight hours work time in each day. These eight hours do not include travel time to and from the work site. No predictions concerning time required for test-pitting can be calculated until it has been decided that test-pitting is actually required and secondly to what degree test-pitting will be carried out.

RAP representatives will be responsible for their own transport, personal protective equipment, drinking water, morning tea and lunches.

oOo

Your organisation is invited to indicate its interest in becoming a registered party to this proposed development. Acknowledgment of this letter and a desire to register as an Aboriginal Party will need to be lodged in writing within 14 days of the date of this letter. Also note that even though you need to register an interest within 14 days, you have more time (28 days from the date on this letter) in which to review the field and research methodology proposed here. If after those 28 days you have any comments and/or require any modifications to the fieldwork and/or research methodology proposed, don't hesitate to contact me.

If you send an e-mail and it 'bounces' back to you, please make telephone contact – unsuccessful e-mails will not be accepted as a reason for late requests to be registered. If you do not register an interest, there is no need for you to review the methodology.

Thank you for your interest and I look forward to hearing from your organisation.

Faithfully Yours

Graham KNUCKEY PhD

Archaeologist – Remnant Archaeology

8

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APPENDIX C – ABORIGINAL STAKEHOLDER RESPONSES TO THE NOTIFICATION LETTER

From: Colin Ahoy
Subject: RE: Proposed Solar Energy Farm
Date: 10 November 2016 2:55:56 pm AEDT
To: Graham KNUCKEY <dr_grumpy@remnantas.com.au>

Hi Graham,

Im writing to confirm that Nunawanna Aboriginal Corporation is registering with you as a Aboriginal Stakeholder in the proposed Cultural heritage assessment at Clarkes Gully Waterfall way. It would be appreciated if you can keep me up to date with the progress of the work that will be undertaken.
Cheers

Colin Ahoy

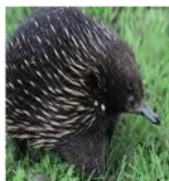
From: Graham KNUCKEY [mailto:dr_grumpy@remnantas.com.au]
Sent: Thursday, 10 November 2016 2:14 PM
To: Colin Ahoy
Subject: Proposed Solar Energy Farm

Hello Colin
Infinergy Limited are proposing to build a solar energy farm east of Armidale, across the Waterfall Way from Clark's Gully and have asked me to carry out the cultural heritage assessment for them.

Attached you'll find a copy of the notification letter I've sent out by Australia Post to Aboriginal Stakeholders (including yourself) that may have an interest in registering as parties to the project.

I've also put a public notice in the Armidale Express for tomorrow's issue (11 Nov) and for the two issues next week.

Thanks



STEVEN AHOY CONSULTANTS

A.B.N: 74943673909

[Armidale N.S.W](#)
[Australia.](#)

A.B.N: 74943673909
10/11/2016

Dear Graham,
Good to hear from you,

We are delighted and appreciate your correspondence in regards to the solar energy farm project, we are very interested and would like to register our interest in being involved with the project.

Yours sincerely
Steven Ahoy
Senior Sites Officer

From: Cheryl Kitchener
Subject: Proposed Solar Energy Farm
Date: 14 November 2016 5:12:24 pm AEDT
To: dr_grumpy@remnantas.com.au

Dear Graham,

I would like to register for the above project.

My name is Cheryl Kitchener, my company is Murrawan Cultural Consultants.

I am a Anaiwan Traditional Owner, and currently the Chairperson on the negotiating panel for Yarrowyck Nature Reserve in Anaiwan country.

I have 30 years experience in cultural heritage management and a qualified archaeologist.

I am fit and able to participate in the project and I'm able to provide cultural knowledge to assist in this project.

I look forward to your response.

Regards

Cheryl Kitchener



**NYAKKA ABORIGINAL CULTURE HERITAGE
CORPORATION ARCHAEOLOGICAL & CULTURAL
HERITAGE CONSULTANTS**

14/11/2016

Proposed Metz Solar Farm, "Bayley Park", Waterfall Way via Armidale, New South Wales

Attention: **Graham Knuckey**

I would like to formally register an interest in the above project.

Nyakka Aboriginal Cultural Heritage Corporation was established by Aboriginal people who have direct connection to Anaiwan country. Surrounding areas mentioned form part of the Anaiwan country therefore, we would like to register our group as interested stakeholders and Aboriginal Owners within Armidale and Hillgrove area.

Rhonda Kitchener is our Senior Sites Officer and Knowledge Holder who can assist you with cultural information in the Anaiwan country.

Can you please ensure that Rhonda is placed on your data base as a registered Knowledge Holder and Aboriginal Owner in Anaiwan Country

Yours sincerely

Rhonda Kitchener

Chairperson

From: Decka Vale
Subject: EOI BAYLEY PARK
Date: 15 November 2016 8:15:57 am AEDT
To: "dr_grumpy@remnantas.com.au" <dr_grumpy@remnantas.com.au>

G'day Dr Graham

Please accept DFTV ENTERPRISES'S registered interest in the proposed Metz Solar Farm, Bayley Park.

Kind Regards

Derrick Vale
DFTV ENTERPRISES

Sent from my Samsung Galaxy smartphone.

From: Clive Ahoy
Subject: Re: Metz Solar Energy Farm notification
Date: 16 November 2016 4:46:46 pm AEDT
To: Graham KNUCKEY <dr_grumpy@remnantas.com.au>

As per our discussion, I am not interested in disputing ownership of the land, rather the identification and protection of Aboriginal Cultural site throughout the Northern Tablelands region.

I have been trained and have a good understanding of how to do Aboriginal Site works at a level that would benefit the surveillance group and would appreciate the the opportunity to participate in the wind farm project.

Look forward to a quick response with the dates and times would be also appreciated as I have to changes with my employee

Cheers
Clive Ahoy

On 16 November 2016 at 16:43, Graham KNUCKEY
<dr_grumpy@remnantas.com.au> wrote:

Hello Clive

Here's my e-mail address. If you could send me a message with the info we talked about on the telephone that'd be good.

Thanks

Sincerely
GrahamK

Graham KNUCKEY
Archaeologist

REMANT Archaeology
PO Box 1787, Armidale, 2350. NSW
Mobile-0488 097 916
E-mail-dr_grumpy@remnantas.com.au
www.facebook.com/remnantas
[LinkedIn-http://au.linkedin.com/in/abelarch](http://au.linkedin.com/in/abelarch)

NGANYAWANA CULTURAL CONSULTANTS



ABN: 40 232 011 064

Graham Knuckey PhD
PO Box 1787
Armidale NSW 2350

RE: Proposed Metz Solar Farm, "Bayley Park", Waterfall Way, Armidale NSW.

G'Day Graham,

As a Traditional Custodian and Cultural Knowledge Holder of the Nganyawana Clan Group which is part of the Anaiwan Nation, I would like to register to participate in any survey that will be conducted within in the scope of the proposed Metz Solar Farm Project.

Background Information

As you may be aware, I have been a participant in many Aboriginal Cultural Surveys within the New England area and more specifically within the Armidale area. My cultural knowledge is extensive which was gained through my interactions and being taught by my Elder Mentors, especially the initiated men.

The Metz Area

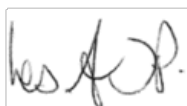
I am aware of several scarred trees that signify burials which are located along Metz Gorge. Unfortunately due to cultural lore I am unable to disclose their exact locations. I am also aware of several stone artefact scatters, a napping site and several isolated stone artefacts which are in nearby locations from an earlier survey.

My Elder Mentors have spoken about a songline which linked Armidale area to the Serpentine Site. The other songline being from Oban to the Serpentine Site.

I will be participating in the initial stages of any survey and then my nominated representative, Anthony Ahoy will attend the later stages of the survey.

I look forward to participating in this proposed project as I have a commitment to protecting and conserving that which is left of our fragmented cultural past history.

Yours truly,



Les Ahoy JP.



ANAIWAN TRADITIONAL OWNERS ABORIGINAL CORPORATION

ABN 28 986 505 507

16/11/2016

Graham KNUCKEY PhD
PO Box 1787 Armidale
New South Wales 2350

Dear Graham,

Re: Proposed Metz Solar Farm, Bayley Park, Waterfall Way, Armidale NSW
On behalf of Anaiwan Traditional Owners Aboriginal Corporation (ATOAC) I would like to register an Interest in the proposed Solar Farm and state that the Anaiwan traditional owners and community members have been presented and agree to support the proposed methodology with no further comments to add. There are no known sacred sites in the area but the land is culturally significant to the Aboriginal descendants of the Anaiwan people as they wish to preserve and recover as much cultural heritage history as possible for future generations. We would like to be involved in all aspects of project including survey with Darrell Ahoy as our Snr Sites Officer, Darrell has worked on many past surveys in the region including the recent Solar Farm near Glenn Innis.

Executive Summary

ATOAC has members that are traditional owners of the land and Direct Descendants of the Anaiwan people and are in the process of submitting a Native Title claim which covers the whole of the Northern Tablelands region.

We are a registered Aboriginal Corporation under the Federal Governments Aboriginal Corporations Act and are registered with the Office of Environment & Heritage (OEH). Our Sites Officers have more than 30 years of experience and are properly certified with all the necessary qualifications.

The ATOAC has a responsibility to its traditional owners for the ongoing protection and conservation of the Aboriginal Culture and Heritage and recommends that all proposed projects and cultural heritage works to be assessed by an Anaiwan Traditional Owners Aboriginal Corporation Cultural and Heritage Officer.

Yours sincerely
David Ahoy
Director
ATOAC



ARMIDALE & NEW ENGLAND GUMBAYNGGIRR DESCENDANTS

ABN: 67 207 864 653

ARMIDALE NSW 2350
Phone:

(running water)

25 December 2016

Dr Graham Knuckey
Remnant Archaeology
Hillgrove Mines
PO Box 1787
ARMIDALE NSW 2350

Dear Dr Knuckey

**RE: Registration of Interest to the proposed Metz Solar Farm, "Bayley Park",
Waterfall Way via Armidale.**

I refer to previous correspondence dated 28 November 2016.

I would like to express a registration of interest in the above-mentioned program on behalf of the Armidale and New England Gumbaynggirr Descendents.

I would like to nominate Mr Bruce Cohen and Mr Thomas Briggs Jnr as representatives of the Armidale and New England Gumbaynggirr Descendents.

If you require any further information please contact me on the above telephone number.

I look forward to a response from you in due course.

Yours faithfully



Hazel Green
Public Officer
Armidale and New England Gumbaynggirr Descendents



APPENDIX D – THE PUBLIC NOTICE

10 ARMIDALE EXPRESS Wednesday, November 16, 2016



INMAN
10/9/1957-15/11/2016

We thought of you today, but that is nothing new. We thought of you yesterday & will tomorrow too. We think of you in silence & make no outward show. For what it meant to lose you, only those who love you know. Remembering you is easy, we do it every day. It's the heartache of losing you that will never go away.

Alyce, Thomas & Rosie

Infinergy Pacific Limited

propose the development of a solar energy farm at the property "Bayley Park", Waterfall Way 18.5km east of Armidale, New South Wales. In accordance with Office of Environment & Heritage guidelines (Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010), registrations of interest are sought from Aboriginal people (stakeholders) with cultural knowledge relevant to the determination of the significance of Aboriginal objects at this location.

Those Aboriginal stakeholders wishing to register must make contact within 14 days. If an email message 'bounces', you must ring the number below & register your interest directly.

Contact: Graham KNUCKEY Archaeologist, REMNANT Archaeology, PO Box 1787, Armidale, NSW. 2350. Mobile: 0488 097 916

Email: dr_grumpy@remnantas.com.au

ANDERSON,
Brian Hugh
14.11.02

Always remembered, never forgotten. Maureen, Kerry,

Thank You

THE families of the late **Julie Williamson** would like to sincerely thank family & friends for their sympathy & kindness in their time of

26 ARMIDALE EXPRESS EXTRA Wednesday, November 16, 2016

Infinergy Pacific Limited

propose the development of a solar energy farm at the property "Bayley Park", Waterfall Way 18.5km east of Armidale, New South Wales. In accordance with Office of Environment & Heritage guidelines (Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010), registrations of interest are sought from Aboriginal people (stakeholders) with cultural knowledge relevant to the determination of the significance of Aboriginal objects at this location.

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Contact: Graham KNUCKEY Archaeologist, REMNANT Archaeology, PO Box 1787, Armidale, NSW. 2350. Mobile: 0488 097 916

Email: dr_grumpy@remnantas.com.au

appropriately qualified and experienced for the nature of the work required.

Inclusion on the list will not guarantee employment as offers will be made on the basis of the School's requirements.

Informal enquiries may be directed to Professor Jane Conway.

Ph: 02 6773 3653 or

Email: jconway4@une.edu.au

For more information about the School of Health visit:

www.une.edu.au/about-une/academic-schools/school-of-health

To submit an application please go to:

www.une.edu.au/jobs-at-une

Reference: 216136

APPENDIX E – REGISTERED ABORIGINAL PARTY CONSULTATION RECORD AND TELEPHONE LOG

Consultation Record

Date	Stakeholder	Contact Medium	Topic	Stakeholder Contact	Response Received	Comments
09-Nov-16	Armidale Express	Web Site	Lodged a Public Notice for the Express	Marie Gallagher	n/a	Notice to appear across three issues from 11 Nov
10-Nov-16	Anaiwan Traditional Owners Aboriginal Corporation	Aust Post/E-mail	Notification letter	David Ahoy	16-Nov-16	Response letter attached to e-mail
10-Nov-16	Armidale Aboriginal Elders Congress	Aust Post	Notification letter		No response	
10-Nov-16	Armidale Local Aboriginal Land Council	Aust Post/E-mail	Notification letter	Michael Brogan	No response	
10-Nov-16	Cohen Patsy	Aust Post	Notification letter	Patsy Cohen	No response	
10-Nov-16	DFTV Enterprises	Aust Post	Notification letter	Derrick Vale	15-Nov-16	Request to be registered. Received via e-mail
10-Nov-16	Gumbaynggirr Descendents Incorporated	Aust Post/E-mail	Notification letter	Hazel Green	Response received via telephone	
10-Nov-16	Murrawan Cultural Consultants	E-mail	Notification letter	Cheryl Ahoy	14-Nov-16	Request to be registered. Received via e-mail
10-Nov-16	Nunawanna Aboriginal Corporation	Aust Post/E-mail	Notification letter	Colin Ahoy	10-Nov-16	Request to be registered. Received via e-mail
10-Nov-16	Nyakkka Aboriginal Corporation	Aust Post/E-mail	Notification letter	Rhonda Kitchener	14-Nov-16	Request to be registered. Received via e-mail
10-Nov-16	Steven Ahoy Consultants	Aust Post/E-mail	Notification letter	Steven Ahoy	10-Nov-16	Request to be registered. Received via e-mail
10-Nov-16	Thungutti Local Aboriginal Land Council	Aust Post/E-mail	Notification letter	Richard Campbell	No response	
10-Nov-16	Walford, Margaret	Aust Post	Notification letter	Margaret Walford	No response	
16-Nov-16	Clive Ahoy	Telephone/E-mail	Response to the public notice	Clive Ahoy	16-Nov-16	Request to be registered by telephone. Requested he also send an e-mail
17-Nov-16	Nganyawana Cultural Consultants	E-mail	Response to public notice	Les Ahoy	17-Nov-16	Response letter attached to e-mail
21-Nov-16	Clive Ahoy	E-mail	Assessment methodology	Clive Ahoy	21-Nov-16	Sent off, via e-mail, the proposed assessment methodology

Date	Stakeholder	Contact Medium	Topic	Stakeholder Contact	Response Received	Comments
2811/2016	Anaiwan Traditional Owners Aboriginal Corp	E-mail	RAP List notification letter	David Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	DFTV Enterprises	E-mail	RAP List notification letter	Derrick Vale	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Gumbaynggirr Descendents Incorporated	E-mail	RAP List notification letter	Hazel Green	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Murrawan Cultural Consultants	E-mail	RAP List notification letter	Cheryl Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Nunawanna Aboriginal Corporation	E-mail	RAP List notification letter	Colin Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Nyakkka Aboriginal Corporation	E-mail	RAP List notification letter	Rhonda Kitchener	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Steven Ahoy Consultants	E-mail	RAP List notification letter	Steven Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
2811/2016	Clive Ahoy	E-mail	RAP List notification letter	Clive Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
28-Nov-16	Nganyawana Cultural Consultants	E-mail	RAP List notification letter	Les Ahoy	n/a	Letter listing all RAPs, outlining fieldwork timing options, requesting fee schedules, etc
08-Dec-16	Steven Ahoy Consultants, Nunawanna AC	Meeting	RAP fees, Mondays meeting	Steven Ahoy, Colin Ahoy	n/a	No issues with RAPs listed or RAP reps nominated. Fee set at two options; \$120/hr flat rate covering all expenses, or \$100/hr with \$75/day travel
12-Dec-16	All RAPs	SMS and e-mail	Infinergy's request to stop work and re-start on Wednesday		n/a	Infinergy thought Wednesday was the start day, not today. Not happy we begin today and have requested we desist until Wednesday. Breakdown in communication

Telephone Log

Date	In/Out	Time (mins)	Name	Subject
10/11/2016	Out	1	Richard Campbell	Advice on address to send notification letter to
16/11/2016	Out	5	Clive Ahoy	Wanting to register an interest in the project
20/11/2016	In	1	Clive Ahoy	Asking about the methodology letter
25/11/2016	Out	1	Hazel Green	Enquiry about the notification letter
25/11/2016	In	1	Hazel Green	Response received
26/11/2016	In	11	Hazel Green	Confirming the Gumbanggirr response
29/11/2016	In	2	Bruce Cohen	Confirming availability for Week 2 (Mon 19Dec)
1/12/2016	In	4	Clive Ahoy	Providing details requested in RAP List letter
6/12/2016	In	2	Bruce Cohen	RAP meeting
12/12/2016	Out	5	Derrick Vale	Query about survey for tomorrow and offered Katina's mobile number
14/12/2016	In	8	Les Ahoy	Query about the meeting at 8:00am
14/12/2016	In	7	Les Ahoy	De-brief on 4pm meeting
14/12/2016	In	10	David Ahoy	De-brief on 4pm meeting
15/12/2016	In		Derrick Vale	Josh can't make it tomorrow, may find another person to represent. Katina commented on there being no toilet available
23/12/2016	Out	1	Cyril Green	Chasing insurance paperwork and GDI invoice
23/12/2016	Out	5	Les Ahoy	Nganyawana invoice
24/12/2016	Out	4	Hazel Green	Gumbaynggirr invoice and insurance

APPENDIX F – RAP RESPONSES TO THE DRAFT REPORT

From: Colin Ahoy < >
Subject: RE: Metz Solar Farm draft review
Date: 27 February 2017 8:50:46 pm AEDT
To: Graham KNUCKEY <dr_grumpy@remnantas.com.au>

Hi Graham thanks for your email I read a fair bit of it and I must admit I haven't had the chance to finish.

I'm happy to accept what I did read but would like to express my disappointment about the lack professionalism shown by the client I have never worked with people who rude as they are.

I'm sending you this message from

I am happy to go with your report with no changes

Cheers

Colin Ahoy
Aboriginal campus and college Student mentor
67735939
University of New England

From: Graham KNUCKEY [dr_grumpy@remnantas.com.au]
Sent: Monday, 27 February 2017 12:09 PM
To: Graham Knuckey
Subject: Metz Solar Farm draft review

Dear RAPs

Just a reminder the review period for the Metz Solar Farm CHA draft report ends on March 1, that's Wednesday this week.

Thanks

Sincerely
GrahamK

Graham KNUCKEY
Archaeologist

REMNANT Archaeology
PO Box 1787, Armidale, 2350. NSW
Mobile-0488 097 916
E-mail-dr_grumpy@remnantas.com.au<mailto:E-mail-
dr_grumpy@remnantas.com.au>
www.facebook.com/remnantas<<http://www.facebook.com/remnantas>>

From: Anaiwan TOAC < >
Subject: Re: Metz Solar Farm CHA Draft
Date: 2 March 2017 12:46:53 am AEDT
To: Graham KNUCKEY <dr_grumpy@remnantas.com.au>

Hi Graham

On behalf of Anaiwan TOAC I would like to state that the relevant members have been presented with the report.

ATOAC expresses that the report and comments were taken on board and we have agreed that all consultation and report were well done and presented in the proper manner with respect to Aboriginal Culture and Values.

We have agreed that all bases were covered and no relevant comments were needed to be incorporated in the Report.

Thank You David Ahoy

Director
ATOAC
Mobile

Yugga danya Ngawanya
(I am a Man of the Anaiwan people.)
Roonyahra tanya tampida Ngawanya
(This is the ancestral land of the Ngawanya.)
Ootila tanya yoonyarah

(I welcome you to this land.)

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error please notify the sender immediately.

APPENDIX F – ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM SEARCH RESULTS



Office of
Environment
& Heritage

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 1607 ARMDALE

Client Service ID : 260992

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
21-4-0027	TH/JA 5	AGD	56	386000	6620280	Open site	Valid	Artefact : -	Permits	2172,100973
	Contact	Recorders	Mr:John Appleton							
21-4-0028	TH/JA 7	AGD	56	392750	6621170	Open site	Valid	Artefact : -	Permits	2172
	Contact	Recorders	Mr:John Appleton							
21-4-0029	TH/JA 8	AGD	56	395090	6621000	Open site	Valid	Artefact : -	Permits	2172
	Contact	Recorders	Mr:John Appleton							
21-4-0060	TH/JA 6	AGD	56	387150	6620500	Open site	Valid	Artefact : -	Permits	2172
	Contact	Recorders	Mr:John Appleton							
21-4-0127	Clarks Gully Artefact 1	GDA	56	392766	6621342	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0128	Clarks Gully Artefact 2	GDA	56	392778	6621358	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0129	Clarks Gully Artefact 3	GDA	56	392955	6621603	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0130	Clarks Gully Artefacts 4	GDA	56	393335	6621492	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0131	Clarks Gully Artefacts 5	GDA	56	393365	6620831	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0132	Clarks Gully Artefact 6	GDA	56	395149	6621081	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-4-0133	Clarks Gully Artefact 7	GDA	56	394110	6619821	Open site	Valid	Artefact : 1	Permits	
	Contact	Recorders	Remnant Archaeology							
21-1-0039	Ja/Thal 4;	AGD	56	385860	6627530	Open site	Valid	Artefact : -	Permits	2489
	Contact	Recorders	Mr:John Appleton							

Report generated by AHIMS Web Service on 05/01/2017 for Graham Knuckey for the following area at Datum : GDA, Zone : 56, Eastings : 386961 - 395039, Northings : 6619449 - 6627480 with a Buffer of 1000 meters. Additional Info : cultural heritage assessment. Number of Aboriginal sites and Aboriginal objects found is 12

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission of such acts or omission.

APPENDIX H - ARTEFACT RECORD

LANDSCAPE AND LOCATION: “Bayley Park”, Metz-Hillgrove, Waterfall Way. Limerick Ck dissects the southern study area (Study Area 3). Undulating plains amid gentle slopes.

ARTEFACT FORM: A-amorphous piece, Ax-axe, Ay-Assay C-mp-core-multi plat, D-debitage, F-flake, FP-flaked piece, G-grindstone, H-hammer, RF-retouched flake.

NOTES: Cleared of trees across all three study areas, small sparse pockets of remnant trees still present. Good indicator of previous forest environment along Bayley Park Road. Most paddocks sown with improved pasture, especially in the northern study areas. Cropping occurs in the north-east quarter of the southern study area. Grazing cattle all other areas except northern-most portion of Study Area 1 where sheep are pastured.

DATE: December 2016

RECORDER: KNUCKEY

RAW MATERIAL: Ba-basalt, Ch-chert, Gr-granite, Gw-greywacke, Mu-mudstone, Qu-quartz, Si-silcrete.

ARTEFACT and LOCATION DATA

Study Area	Wpt ID	Site ID	Art. No.	Co-ordinates (GDA94)		Raw Mat.	Art. Form
				East	North		
SA-3	000	BPIA-01	-	391028	6623492	M	F
SA-3	009	BPIA-02	-	391166	6622291	Si	F
SA-3	012	BPIA-03	-	391622	6621803	Si	C-mp
SA-3	014	BPIA-04	-	391631	6622111	Si	F
SA-3	015	BPAC-01	001	391599	6623072	Si	FP
SA-3	032		002	391617	6623090	Qu	A
SA-3	033		003	391630	6623098	Ch	F
SA-3	034	BPIA-05	-	391562	6623341	Qu	C-mp

FLAKES

Dimensions (mm)			Platform Surface	Platform (mm)		% Dorsal Cortex	Termination
L	W	T		W	T		
10	5	3	-	-	-	0	F
23	20	5	Trans. snap – proximal missing				F
60	50	55	-	-	-	-	-
33	25	7	Cortex	10	2	25	F
35	25	10	Indeterm	-	-	50	-
20	16	5	-	-	-	50	-
17	16	5	Fl. scar	8	4	25	-
90	80	40	-	-	-	-	-

CORES

Platform Count	Platform Prep	% Cortex	Termination Count	
			Feather	Step
-	-	-	-	-
-	-	-	-	-
2	Y	0	5	2
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Trans. snap-distal missing			-	-
3	N	25	4	2

[illegible]

SA-2	076	BPIA-24	-	389887	6624420	Qu	Ay
SA-1	077	BPAC-03	001	389778	6625165	Si	Ay
SA-1	078		002	389785	6625168	M	FP
SA-1	079	BPIA-25	-	389740	6625677	Si	F
SA-1	080	BPIA-26	-	389632	6625886	Si	F
SA-1	081	BPIA-27	-	389660	6625884	Ba	Ax
SA-1	082	BPIA-28	-	389534	6625610	Gw	H
SA-2	083	BPIA-29	-	389742	6623991	Qu	D
SA-2	084	BPIA-30	-	389800	6624027	Si	F
SA-2	085	BPIA-31	-	389627	6623719	Ba	Ax
SA-2	086	BPIA-32	-	389669	6623860	Ba	F
SA-2	087	BPIA-33	-	389755	6623897	M	F
SA-2	089	BPIA-34	-	389498	6624413	Si	RF
SA-1	090	BPIA-35	-	389509	6625579	M	F
SA-1	091	BPIA-36	-	389457	6625705	M	F
SA-2	093	BPIA-37	-	389334	6624650	Qu	D

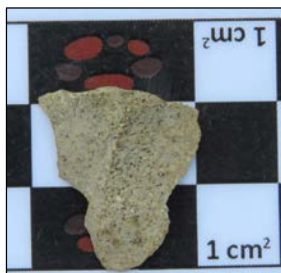
65	80	40	-	-	-	75	-
90	80	75	Scar	40	10	25	F
75	50	10	Indeterm	-	-	12	-
65	65	30	Scars x2	40	15	50	F
45	37	10	Cortex	10	4	50	F
100	80	35	-	-	-	12	-
150	90	50					
20	13	5	Bipolar	Crushing present on both ends			
36	28	5	Cortex	15	5	25	F
150	70	40	-	-	-	12	-
24	24	5	Cortex	15	5	0	F
30	23	5	Cortex	10	4	0	F
30	26	9	Scar x2		20	10	F
15	19	4	Scar	8	4	0	-
65	40	8	Scar	10	4	50	F
16	15	5	Indeterm	-	-	75	-

-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Flake scar at proximal end, on ventral surface. Retouch or removed at same time as initial strike?				
Small area of ground surface still visible				-
Crushing present on both ends				-
-	-	-	-	-
-	-	-	-	-
Small area of ground surface still visible				-
-	-	-	-	-
-	-	-	-	-
Some retouch around margins				-
Trans. snap – distal missing				-
Stock damage along margin				-
-	-	-	-	-

Waypoint 000

n/a

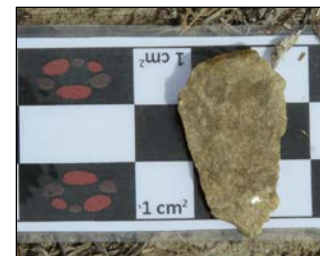
Waypoint 009



Waypoint 012



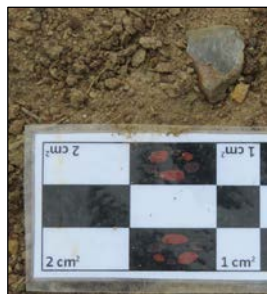
Waypoint 014



Waypoint 015



Waypoint 032



Waypoint 033



Waypoint 034



Waypoint 035

n/a

Waypoint 037



Waypoint 039



Waypoint 041



Waypoint 042



Waypoint 044



Waypoint 045



Waypoint 046



Waypoint 047



Waypoint 048



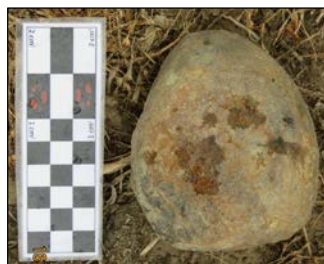
Waypoint 053



Waypoint 055



Waypoint 057



Waypoint 059



Waypoint 064



Waypoint 067



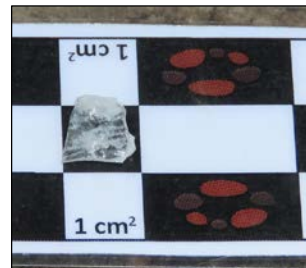
Waypoint 068



Waypoint 069



Waypoint 074



Waypoint 075



Waypoint 076



Waypoint 077



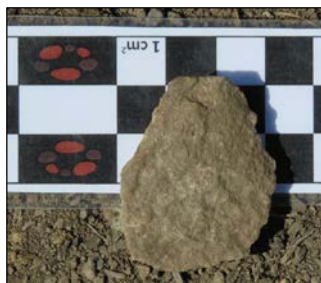
Waypoint 078



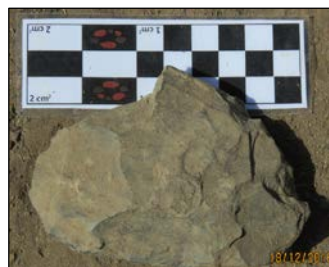
Waypoint 079



Waypoint 080



Waypoint 081



Waypoint 082



Waypoint 083



Waypoint 084



Waypoint 085



Waypoint 086



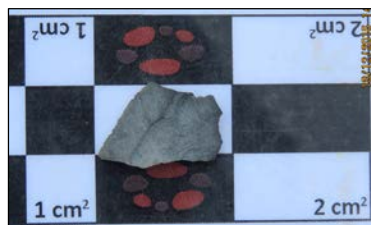
Waypoint 087



Waypoint 089



Waypoint 090



Waypoint 091



Waypoint 093

