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Titles / Tenements	AN25438
Mine / Project Details	Mount Bundy
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# **TERRITORY RESOURCES LTD**

A.C.N. 100 552 118

**MT BUNDEY**

**AN 25438**

**ANNUAL REPORT**

**FOR THE PERIOD**

**5<sup>TH</sup> MARCH 2008 TO 4<sup>TH</sup> MARCH 2009**

**Darwin 1:250,000 Sheet  
Mary River-Point Stuart 1:100,000 Sheet  
NORTHERN TERRITORY**

I Hassall  
April 2009

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## **1. SUMMARY**

This report details exploration activities conducted by Territory Resources Limited for Mt Bunday style haematite/magnetite mineralisation within AN25438 during Year 2 ending 4<sup>th</sup> March 2008.

Exploration activities during the reporting year comprised:

- 1) A review of all historical data, including that collected by Territory Resources in the 2007 – 2008 drilling season;
- 2) Rehabilitation of all previously drilled holes on the tenement;
- 3) Field inspections to familiarise new exploration staff. Territory Resources replaced its entire exploration crew during the year;
- 4) Pit mapping of the existing Mount Bundy pit;
- 5) An Aboriginal Heritage Survey over the Mount Bundy tenements that include the areas cover by AN 25438;
- 6) Drill program design and pegging over the tenement;
- 7) Preparation of an EOMP for the Mount Bundy area.

The drilling program was not conducted since higher priority targets associated with the Frances Creek iron ore operations ramp up and evaluation required more urgent assessment.

Application for tenement renewal was submitted, after approval had been obtained from Mr Terry Baldwin, the underlying land owner. The drilling will be completed during the 2009 – 2010 drilling season.

Total expenditure during the reporting period total \$ 12,600.



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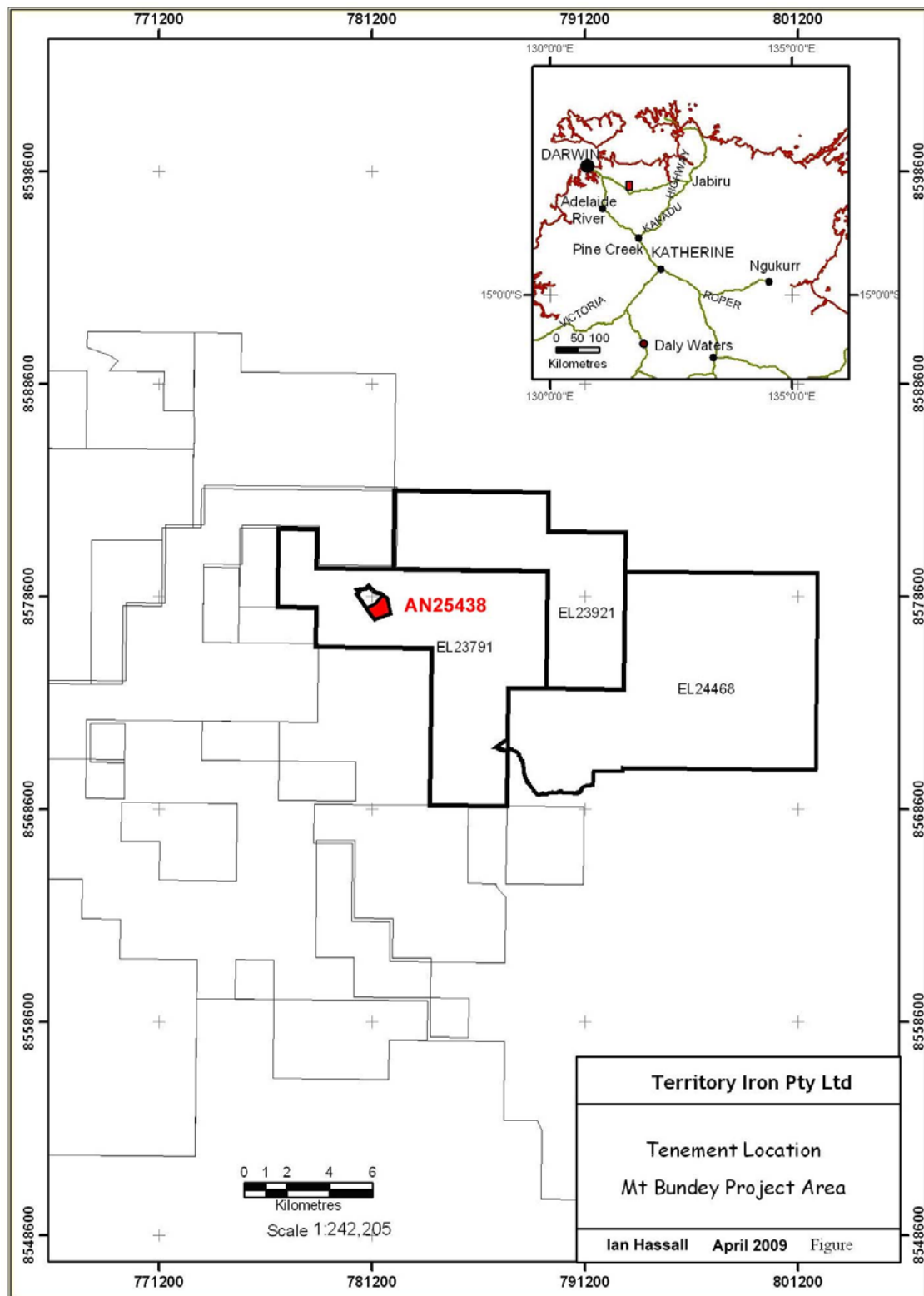
## **2. INTRODUCTION**

This report details exploration activities conducted by Territory Resources Limited within AN25438 for iron ore mineralisation during the year ending 4<sup>th</sup> March 2009.

Authority AN25438, covering 2 graticular sub-blocks or a total of 0.6 square kilometres, was granted for a 2-year term on 5<sup>th</sup> March 2007. AN25438 along with Exploration Licence 23921, Exploration Licence 23791, and Exploration Licence 24468 form the Mt Bunday Project area.

The tenement area is located approximately 100km ESE of Darwin. Access from Darwin to the property is by way of the Arnhem Highway that runs eastwards to Jabiru, Figure 1.

Climate is tropical and humid with a rainy season from December to March. Fieldwork is largely restricted to the dry season.



**Figure 1**      **Tenement Location AN25438**

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### **3. REGIONAL GEOLOGY**

The Mount Bunday tenement area is located over rocks of the Lower Proterozoic Pine Creek Orogen metasedimentary sequence. The sequence unconformably overlies Archaean gneissic granite, Figure 2.

The basal unit of the metasedimentary sequence in the area consists of the Mundogie Sandstone and the Wildman Siltstone of the Mount Partridge Group. The Mundogie Sandstone is comprised of sandstone and conglomerate with siltstone and shale while the Wildman Siltstone consists predominantly of fine grained sediments with minor sandstone and carbonate units. Many of the finer grained units are ferruginous.

Unconformably overlying the Mount Partridge Group is the South Alligator Group which has three members. The Koolpin Formation forms the basal member and consists of carbonaceous and pyritic fine grained sediments that are ferruginous in outcrop. Above this is the Gerowie Tuff which comprises fine grained sediments and tuff. The uppermost member is the Mount Bonnie Formation which is comprised of generally fine grained sediments.

Sills of the Zamu Dolerite intrude the Lower Proterozoic sedimentary sequence. The sequence is also intruded by the Lower Proterozoic Mount Bunday Granite and the Mount Goyder Syenite. They are considered to be two phases of a co-genetic plutonic complex. The older Mount Bunday Granite is present in the west central portion of the property with the Mount Goyder Syenite flanking it to the north and northeast. The upper surface of the intrusive is interpreted to dip away to the north at a shallow angle.

### **4. LOCAL GEOLOGY & STRUCTURE**

The Koolpin Formation to Burrell Creek Formation portions of the Lower Proterozoic sequence crop out in the eastern part of the Mount Bunday property area and on the western margin of the property. The stratigraphically lower Wildman Siltstone and the Mundogie Sandstone are present in the central property area and in the north. Outcrops to sub-outcrops of the Mt Bunday Granite and Mt Goyder Syenite predominate in the western and central portions of the property.

The broad overall structure is a south-plunging metasediment synclinorium intruded along its fold axis by granite and syenite of the plutonic complex. In detail, the synclinorium is composed of many constituent anticlines and synclines that have northerly to neither north nor easterly fold axes that plunge at low angles to the south.



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## 5. MINERALISATION

Economic iron mineralisation in the Mount Bunday-Mt Goyder district is known from the abandoned Mt Bunday mine where some 843,000 tonnes of 63.4% Fe and 0.057% P were produced from 1968-1972.

The Mt Bunday deposit occurs in Mount Bunday Granite on the margin of the Mount Bunday intrusive complex. Ore reserves have been depleted; though sulphur-rich tonnage remains beneath the old pit floor. The mineralisation formed two approximately parallel lodes that struck north easterly. The Main or Pritchard's Lode was around 700 metres long and had a maximum width of 32 metres. To the northwest was the Parallel Lode that ranged up to 9 metres in width. Between and adjacent to these two structures occurred highly altered and ferruginised country rock sediments.

The iron bearing materials present were of four types. The martite caprock lode consisted of massive martite with little texture but abundant vugs and various amounts of massive goethite generally along fractures. Quartz was present in stringers and filling some of the vugs. Boxworks were present and rarely pyrite. The haematite lode comprised massive haematite with small amounts of goethite whilst the haematite-goethite lode consisted of massive amorphous goethite associated with haematite. The limonite-clay lode consisted of limonite of lateritic origin. The lodes passed downwards into a martite-magnetite-pyrite rock.

Flanking the original outcrop ridge forming the iron deposit were rubble and scree of iron bearing materials that were partially cemented in places. Some 40% of production came from this material.

The Mount Bunday iron ore may be skarn mineralisation formed by the intrusion of the Mt Bunday Granite into a metasediment roof pendent comprised of carbonaceous, pyrite sediments (possibly the Wildman Siltstone). Hydrothermal processes emplaced iron mineralisation under reducing conditions promoted by the carbonaceous content of the Wildman Siltstone. Subsequent supergene enrichment (during the Tertiary?) converted this mineralisation into haematite/martite.

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## 6. EXPLORATION ACTIVITIES

Exploration during the year focussed on assessing the potential remnant iron mineralisation using existing available data collected by previous holders and also since Territory Resources acquired the tenement in March 2007. This work was part of a study across all of the current holders tenements to prioritise exploration efforts in an environment where employee attraction was difficult.

The Mount Bundy tenements did not represent as high priority targets when compared with the requirement to improve Reserve confidence at the Frances Creek mining tenements during production ramp up and stabilisation.

### 6.1. Previous Data & Site Inspections

A review of previous data confirmed the existence of remnant mineralisation in the floor and along strike of the old Mount Bundy open cut pit. Further, it confirmed that the remnant mineralisation is high in sulphur.

A number of site inspections were made by various new members of the exploration team, principally to access the ground, classify the remnant mineralisation, and log the reverse circulation drilling reject samples.

The pit walls were mapped for geology, and a drilling program planned and pegged to investigate the remaining mineralisation under and along strike from the remnant mineralisation in the open cut. The drilling plan involved a HQ3 diamond drilling program to investigate metallurgy and the style of mineralisation, and a follow-up reverse circulation program to assess grade. Territory Resources cut its diamond drilling program prior to the rig being mobilised to site due to concerns over cash-flow and expenditure away from the operating Frances Creek minesite. Without the preliminary diamond drilling, it was decided to drop the reverse circulation drilling program until 2009 – 2010, under the assumption that tenure could be renewed.

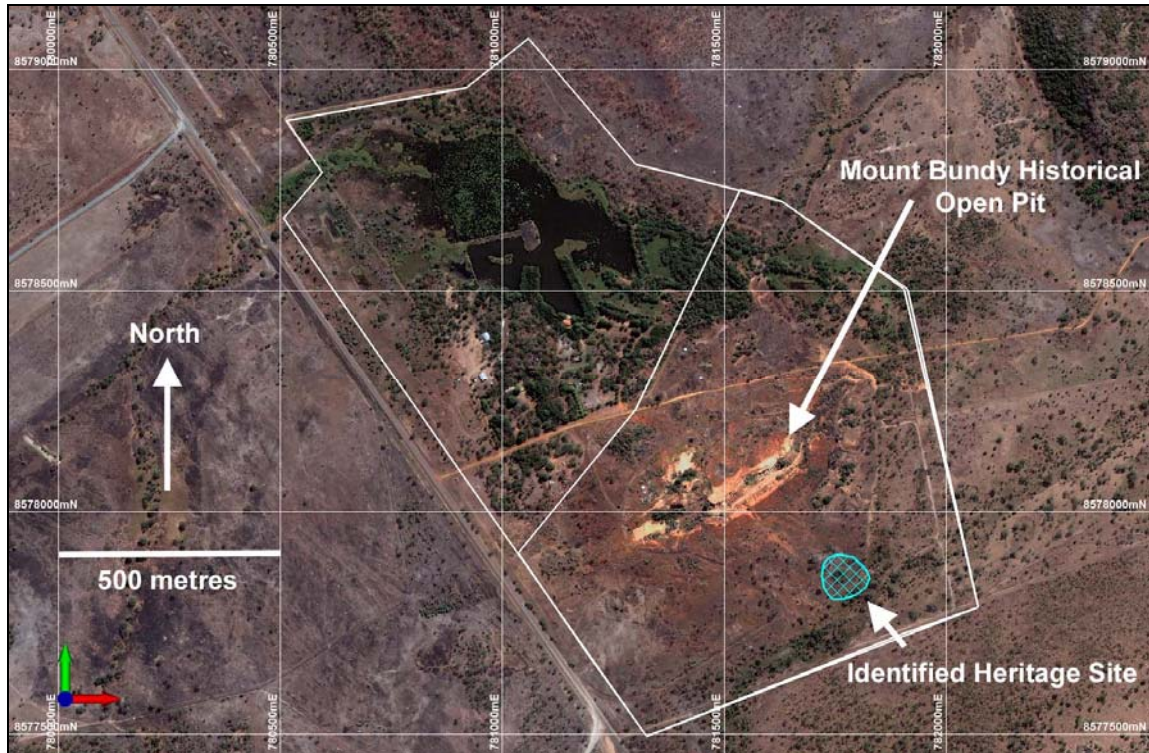
### 6.2. Heritage Survey

A Heritage Survey was lead by archeologist Richard Wolfe and the traditional owners of the Mount Bundy area, including the tenement AN25438. An area approximately 100 metres across was identified as having significance to the traditional owners. The entire report for the survey is included in *Appendx 1*.

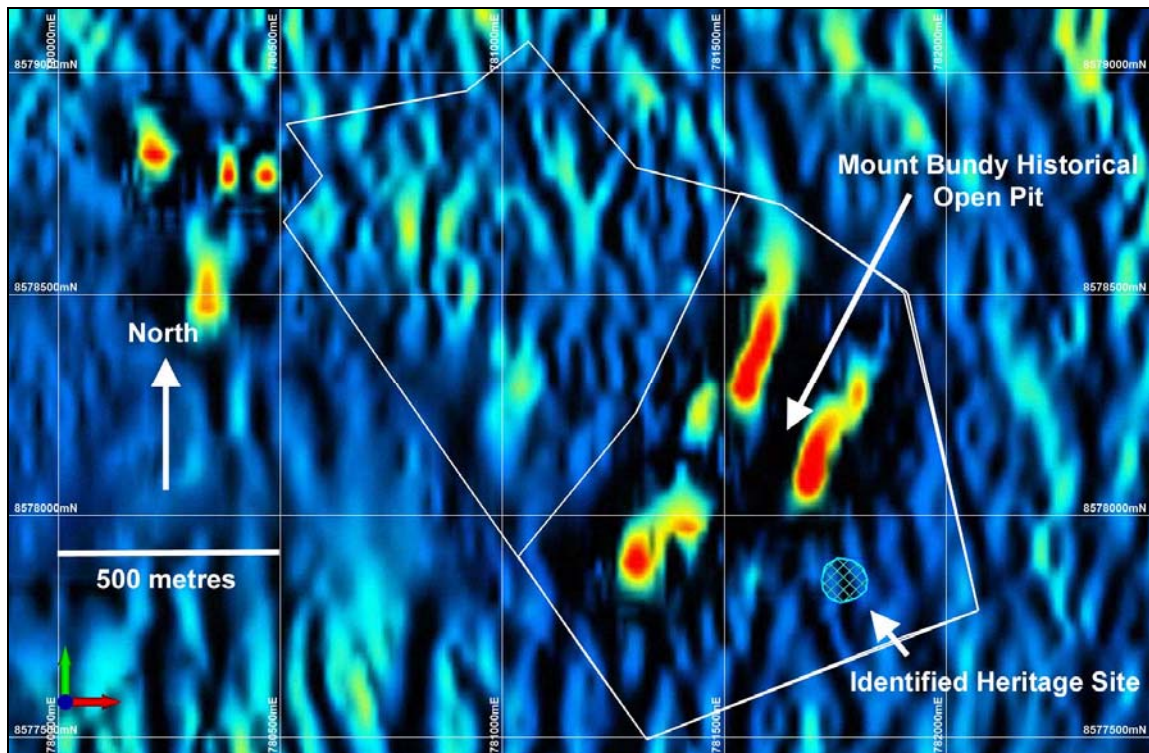
East	North	East	North
781728	8577887	781797	8577813
781756	8577904	781762	8577803
781787	8577899	781738	8577813
781811	8577884	781722	8577834
781823	8577856	781720	8577857
781819	8577831	781728	8577887

Table 1: Points describing the site boundary, GDA 94, Zone 52





**Figure 3** *Aerial Photograph of Mount Bundy Minesite – AN25438 – with the identified heritage site.*



**Figure 4** *Radiometric Survey of Mount Bundy Minesite – AN25438 – with the identified heritage site. The heritage site is away from any potential mineralisation.*

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### **6.3. Field Inspections and Drill Hole Planning**

Field inspections confirmed the remaining mineralisation outcropping in the floor of the pit, and also that this mineralisation corresponds to an aeromagnetic high associated with magnetite content. Drill chippings from a previous drilling program confirmed the magnetite contained a significant amount of sulphur.

Holes drilled during 2007 – 2008 were rehabilitated, with drill cuttings returned down the hole, drill collars were cut and capped, and drill pads were generally levelled using hand tools.

Diamond holes were planned to twin historical open hole percussion holes, and a 20x20 metre reverse circulation grid was planned over the floor of the old pit and along strike of mineralisation identified from recent reverse circulation drilling.

The aim of this program is to develop a resource model to and Indicated Resource status so an economic decision can be made over the tenement. The drilling is scheduled for August 2009, when a full assessment will also be made of stockpiled ore from previous operations.



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## **8. YEAR 3 PROGRAMME**

Field exploration activities proposed for Year 2 aims to consolidate on establishing a reserve capable of supporting a campaign-style mining operation that supplements Frances Creek ore, and provides a blending strategy to include higher sulphur – lower phosphorous ore from Mount Bundy with lower sulphur – higher phosphorous ore from Frances Creek. The additional stockpiling area at the port will facilitate this strategy of accepting ore from a number of regional mining areas and blending to a consistent company iron ore specification that meets customer requirements, and for marketing specification products to specialist customers.

It is likely that further work on AN25438 will include:

- Approximately 1,000 metres of reverse circulation drilling for resource definition work;
- Approximately 200 metres of HQ diamond drilling for metallurgical testwork and geotechnical studies.

Estimated expenditure for the proposed work is approximately \$150,000.

## **9. EXPENDITURE**

Expenditure for the year was \$12,600 as detailed in the expenditure report in Appendix 3.

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**APPENDIX 1      ABORIGINAL HERITAGE SURVEY REPORT**

# Cultural Heritage Survey of Part of EL23791 and 23921 Territory Resources 2009

Richard Woolfe

*Earth Sea Heritage Surveys*

Report prepared for:  
Territory Resources Pty. Ltd.

5 April 2009

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## 1.0 INTRODUCTION

Earth Sea Heritage Surveys was engaged to undertake a cultural heritage/ archaeological survey of parts of NT Mineral Exploration Leases EL 23921 and EL 23791. These leases are currently held by Territory Resources Ltd for the purpose of exploration for iron ore. The location of these leases is to the north and south of the Arnhem Highway near Mt Bunday. The survey was carried out by Ben Keys and Tim Maloney from Earthsea Pty Ltd during October of 2008. The traditional owners of the land were represented by Graham Keynon.

The survey located 14 sites that are protected under the provisions of Section 29 and 39 of the NT *Heritage Conservation Act* 1991. These sites consisted of stone artefact scatters, numbers of grinding grooves in granite boulders and a culturally modified tree. In addition, the survey identified four areas that were inaccessible due to the dense unburned vegetation, however were situated in areas that the surveyors considered were highly likely to contain archaeological materials.

The area contains a number of registered and recorded Sacred Sites within the meaning of the NT *Sacred Sites Act* 1991. The location of the restricted work areas associated with these sites was obtained from the Aboriginal Areas Protection Authority prior to the survey. The senior traditional custodian of these sites, Graham Keynon, was able to inform the surveyors of any sacred site that has not been recorded or registered under the Authority's processes. Therefore the boundaries of the restricted work areas were not crossed by the survey team, except with the approval of the senior custodian. The surveyors noted that there had been some mineral exploration in the past that had transgressed the boundary of the restricted work area near Mt Goyder.

The Project Area includes 12 sites listed on the Archaeological Site Database maintained by the Northern Territory Department of Natural Resources, the Environment, the Arts and Sport (NRETAS). Coordinates of these sites are included in the report for the information of Territory Resources.

The recommendations arising from this survey are listed in Section 10.

### 1.1. Objectives of the survey

The objectives of the survey are to:

- locate and record prescribed archaeological objects or places as defined under the Northern Territory of Australia *Heritage Conservation Act 1991*;
- assess the nature and distribution of any archaeological materials located;
- assess the significance of any archaeological places or materials to the traditional owners of the land and to the wider community;
- advise Territory Resources on the mitigation of impacts on any located places or objects; and,
- advise Territory Resources on the future management of any located places or objects.

The information contained in the report outlines<sup>1</sup>:

1. The regulatory environment for cultural heritage protection and land access;
2. The processes of cultural heritage protection and management;
3. The establishment of 'significance' to different cultural groups (what is significant and to whom); and,
4. How cultural heritage sites are defined, identified, recorded and managed.

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<sup>1</sup> This sometimes means that there is more information in a report than seems necessary, however, this information will enable the results and recommendations to be scrutinised in a legal situation if necessary.

The report is designed to:

1. Give an archaeological, environmental and ethnographic background to the Project Area with a particular focus on how past survey results will apply to the archaeological findings of this survey;
2. Present the results of the field survey including physical descriptions of the features, their location in UTM (coordinate system MGA94, datum GDA 94) and images of the features;
3. Present an archaeological assessment of the heritage significance for the sites/ features;
4. Assess the current cultural heritage significance of the sites or features from discussions with the Traditional Owner representatives in the field;
5. Present recommendations concerning the desirability of conserving the places and the practical issues with their ongoing management; and,
6. Analyse and discuss the archaeological features of the places, in particular their ability to add to the archaeological knowledge of the Top End of the Northern Territory.

## 1.2. The Legislative and Social Basis for Cultural Heritage Protection.

Heritage legislation can be complex in Australian jurisdictions. This complexity results from the evolution of the Australian constitutional framework, particularly the inclusion of new themes, such as Aboriginality, heritage and the environment into an existing legislative framework. The result of this evolutionary change was that the Commonwealth gained responsibility for Indigenous issues, while the States and Territories retained control of land use and development control. Therefore, inter-jurisdictional disputes and contradictions often cloud the nature of cultural heritage protection.

### Commonwealth Acts:

The *Native Title Act 1993*. Aboriginal issues were moved to the Commonwealth's jurisdiction following the Constitutional referendum of 1967. The result of this referendum amended Section 51 and gave the Commonwealth powers to legislate on Aboriginal issues. The Native Title Act gives some Aboriginal people the ability to access and use traditional lands for some purposes. Agreements, known as Indigenous Land Use Agreements, may be entered into by Native Title claimants and other interested parties on the nature of land use and access to land, including the protection of cultural heritage resources. Non-registered agreements between Native Title holders and other parties may deal with Aboriginal cultural heritage issues. An agreement of this type applies to the lands in the project area.

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*. This Act is a site protection Act of 'last resort', meaning that the Act is meant to provide emergency protection for Aboriginal and Torres Strait Islander heritage sites when all other avenues have been exhausted. Generally an Indigenous group must apply to the Minister to have protective covenants placed over an area or



site. The power to provide such protection resides in Section 51 of the Constitution giving the Commonwealth powers on Aboriginal issues. Therefore this Act may override all State and Territory cultural heritage acts.

The *Environment Protection and Biodiversity Conservation Act* (EPBC Act) commenced on 16 July 2000. On 1st January 2004, a new Commonwealth heritage regime came into effect following amendments to the EPBC. The Act lists the criteria for listing National Heritage places and Commonwealth heritage places and management principles for National Heritage and Commonwealth Heritage places. The Heritage Division of Department of Environment and Water Resources is the Commonwealth agency responsible for the administration of the EPBC Act and providing support to the Australian Heritage Council. The Australian Heritage Council is supported by an Indigenous Heritage Committee to advise the Council on sites of Aboriginal significance. The new Commonwealth heritage regime is retaining the Register of the National Estate as a database.

### Legislation in the Northern Territory.

Some cultural heritage in the Northern Territory is protected under both Commonwealth and NT statutes. Protected cultural heritage places can be divided into three main areas which are listed below, with the legislation that is relevant to each area.

**Table 1 Legislative basis for protection of Cultural heritage places in the Northern Territory**

Type of Cultural Heritage Place	Relevant Legislation
1. Sites of significance according to Aboriginal Tradition (Sacred Sites)	<i>Northern Territory Aboriginal Sacred Sites Act 1989</i>  <i>Aboriginal Land (Northern Territory) Rights Act 1976</i>
2. Indigenous archaeological places and objects	<i>Heritage Conservation Act 1991</i>
3. Historic Heritage Places	<i>Heritage Conservation Act 1991</i>

Sections 29, 39 and the regulations to the Heritage Conservation Act 1991 (HCA) provide a 'blanket' protection for Aboriginal and Makassan archaeological places and objects until a decision by the Minister to either add them to the NT Heritage Register or permit their disturbance. This decision making process is usually only triggered by an application to disturb.

The NT *Sacred Sites Act* 1989 protects sites that area of significance in the Aboriginal Tradition. Sites are protected whether the location of these places are known or not by any person or company seeking to do work on lands. The Act is administered by the Aboriginal Areas Protection Authority. The Authority can issue a Certificate indemnifying any proponent for an area upon application and payment of a fee. The Certificate will contain conditions limiting or preventing works in and around registered and recorded Sacred Sites. The Authority Certificate will contain maps outlining any restricted work areas in the area of application. The Authority can issue a certificate under Section 22 (1) (b) of the Act for an area of application providing all the conditions of a certificate process are met, including agreement between the appropriate custodians of sites and the proponent.

DRAFT

## 2.0. THE PROJECT AREA

The project area is located to the north and south of the Arnhem Highway near the current crossing of the Mary River, approx 120 km south east of Darwin. The total area of the survey was 101 hectares in 29 separate areas corresponding to the exploration plan for the area. The exploration plan included cutting drill pads within the survey areas and sometimes new access tracks to each drill location.



Figure 1: Project area location SE of Darwin

## 2.1. Land interests:

The project area extended over a number of property boundaries and Exploration Leases. The interests in the land are:

1. Pastoral Leases Old Mt Bunday, McKinlay River and Marrakai Stations, plus Lot 000-0142;
2. Exploration Leases EL23791 and EL23921, owned by Territory Resources Ltd and Rum Jungle Uranium Ltd; and,
3. Native Title Claim NTD 6033/00 on Old Mt Bunday registered on 15/2/2001 yet to be determined.

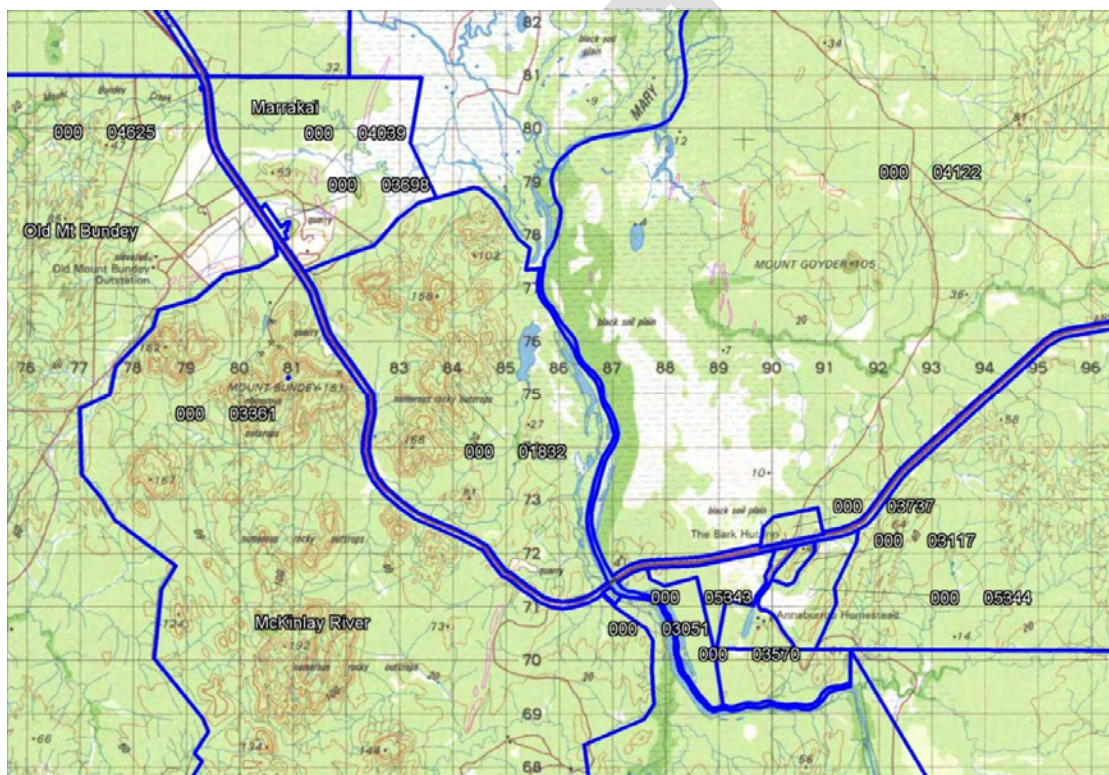


Figure 2: Cadastre map on 1:100,000 Topographic 5272 Mary River.



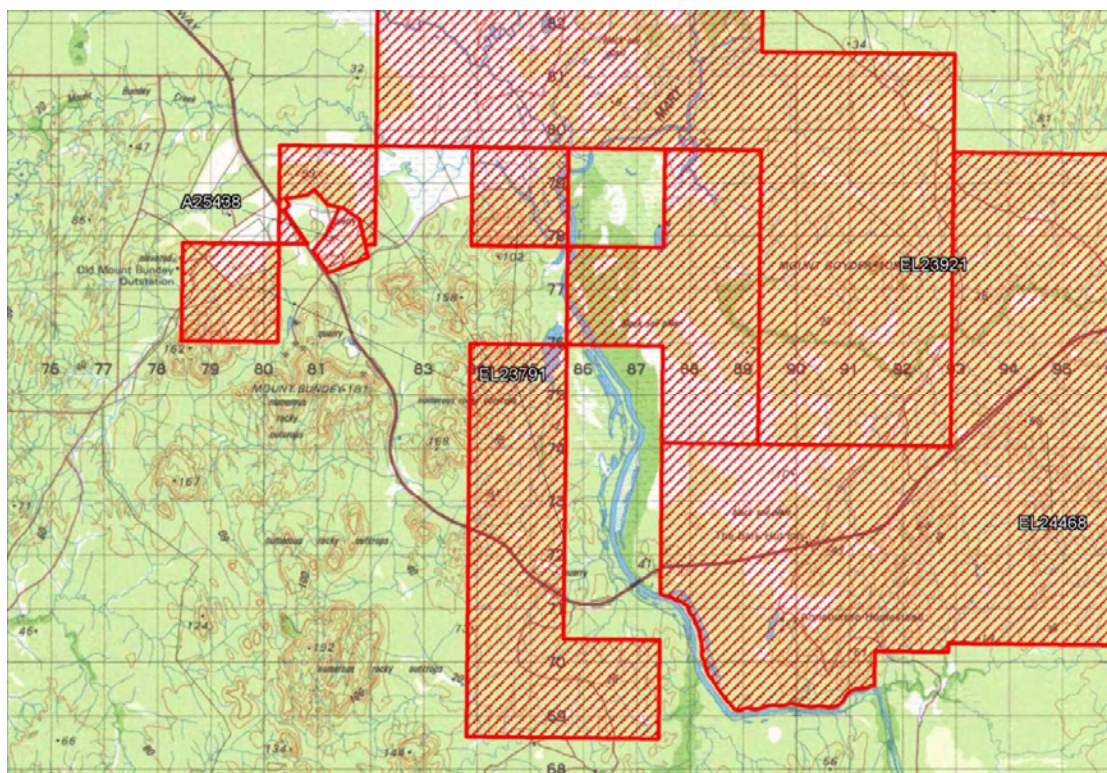


Figure 3: Exploration Lease Map on Topographic 1:100,000 5272 Mary River.

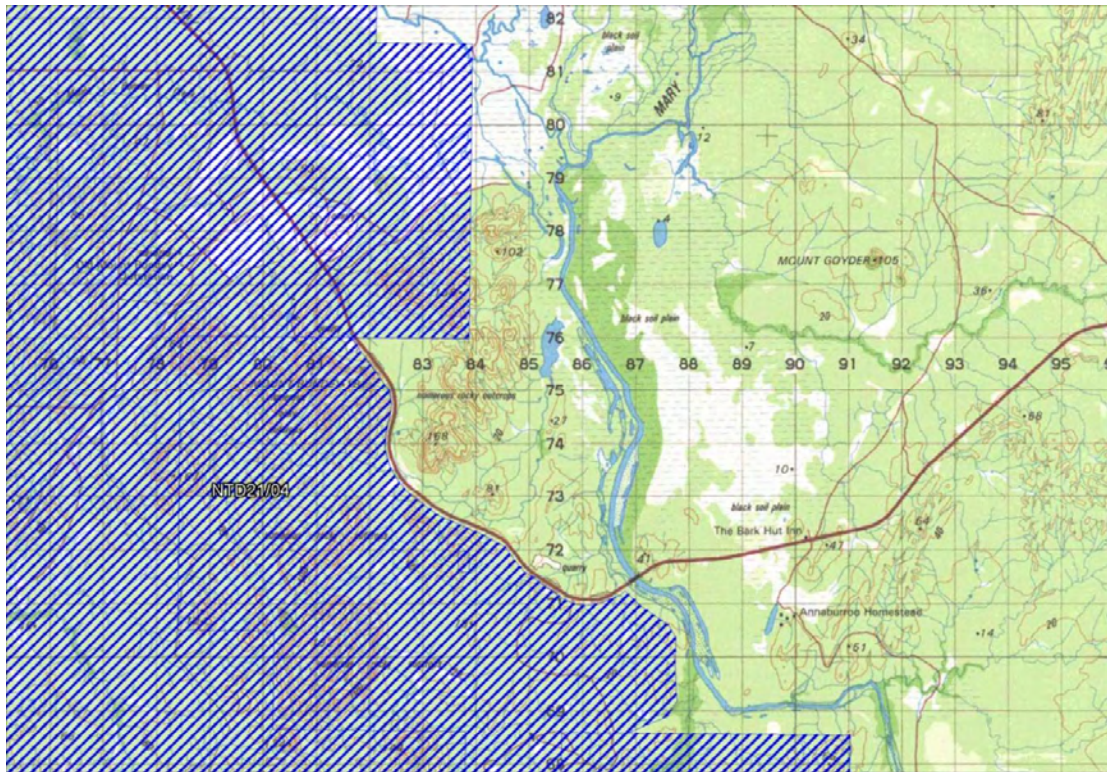


Figure 4: Native Title Claim Area NTD 6033/00 Old Mt Bunday on Topographic 1:100,00 5272 Mary River.

### 2.3. Work Program

The work program consisted of x drill holes and approx xx of tracks across the Project Area. The total survey area totalled 101 hectares over 29 small parcels.



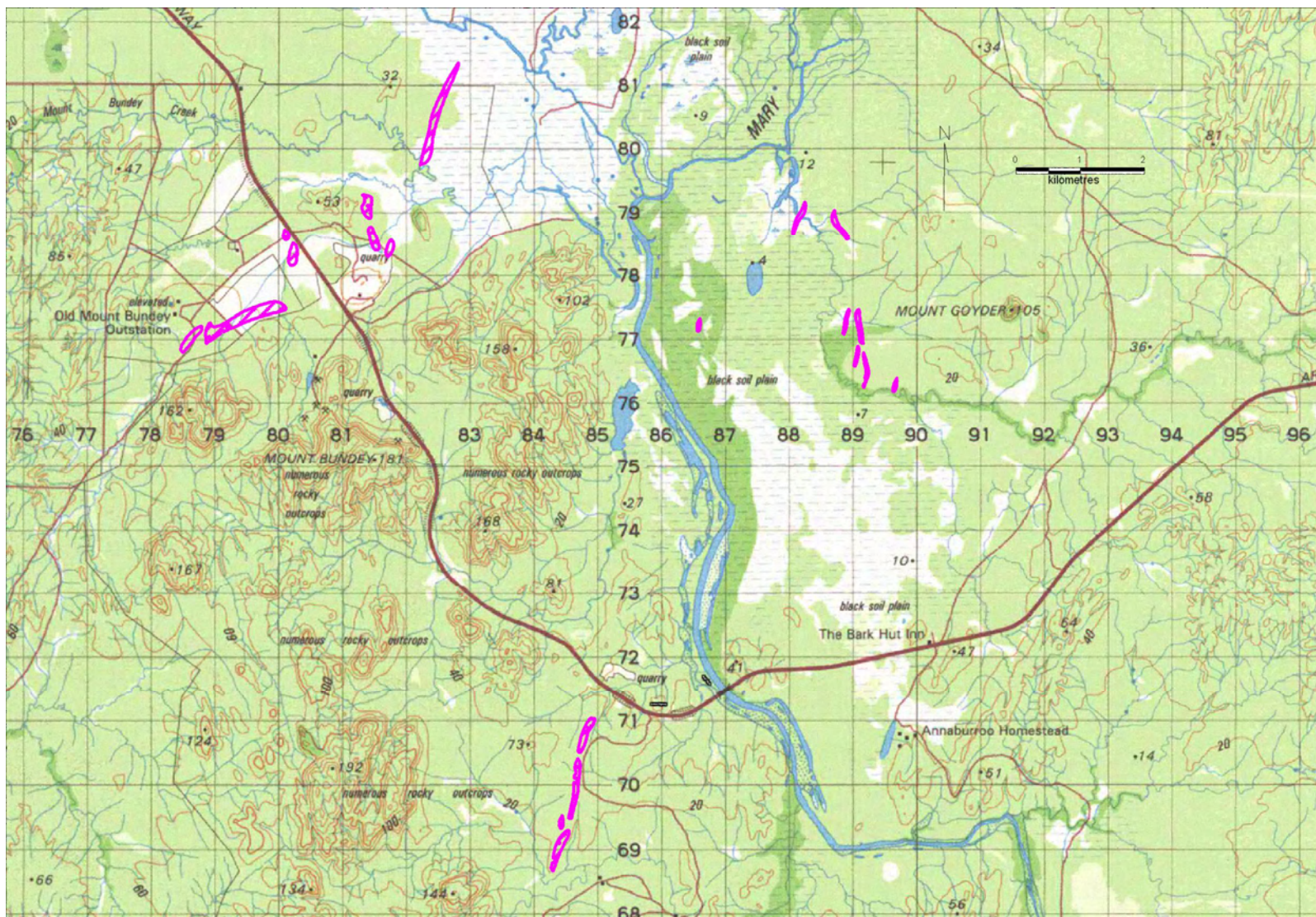


Figure 5: Location Map of Survey Areas for 2008 Work Program

## 2.4. Heritage Register Search

Searches of the following heritage registers was undertaken to identify any places that are nominated, under assessment or declared as having cultural heritage value under the Acts discussed in this section.

- Northern Territory Archaeological Database (maintained by NTRETA);
- Northern Territory Heritage Register (statutory register maintained by NTRETA);
- Commonwealth Heritage Database (formerly the Register of the National Estate);
- National Heritage List; and,
- Commonwealth Heritage List.

There are numbers of archaeological places and or objects within the Mt Bunday and Mary River region. A search of the register for the project area found 12 entries including a number of stone artefact scatters, a stone arrangement, an Indigenous quarry and the stone buildings of Old Mt Bunday Station. One artefact scatter on the Mary River near the bridge was collected in 1999.



Site Identifier	Name	Easting	Northing	Sacred Site Status	Site condition	Materials	Notes
52720013	Mt Bunday; MB1 000	782200	8581800	Unknown	Unknown	Unknown	
52720023	MR2011	784900	8582500	Unknown	Unknown	Stone Quarry	
52720024	MR2012 Clarke's Crossing	788500	8583000	Unknown	Unknown	Stone Artefact Scatter	
52720025	MR2013	788500	8582100	Unknown	Unknown	Unknown	
52720028	Mount Bunday 1	789600	8570500	Unrestricted	Unknown	Unknown	
52720029	Mount Bunday 2	793400	8569200	Unrestricted	Unknown	Stone Artefact Scatter	
52720035	Mount Bunday 8	796700	8568600	Unrestricted	Unknown	Unknown	
52720036	Mount Bunday 9	797100	8569700	Unrestricted	Unknown	Unknown	
52720068	Annaburro Hill Site 1	790100	8571700	Unknown	Unknown	Stone	437 - Stone Arrangements of the Adelaide Alligator Rivers Region, NT Interim Report(AAPA - 1997)
52720073	Mary River 1 (A)	782484	8574705	Unrestricted	Salvage collection of stone artefacts	Stone	ID000724 - A report on the salvage collection of Mary River 1. Collection #: 1999.01(Daryl Guse - 1999)
52720074	Old Mt Bunday Station	779289	8580571	Unrestricted	Unknown	Buildings	ID000725 - Additional Archaeological Survey of proposed Marrakai to Jabiru Optic Fibre Cable(Daryl Guse - 1999)
52720075	My Bunday Creek 1	779890	8578943	Unrestricted	Unknown	Stone	ID000725 - Additional Archaeological Survey of proposed Marrakai to Jabiru Optic Fibre Cable(Daryl Guse - 1999)

**Table 2: Extract of NRETAS archaeological site database for the Project Area and immediate surrounds.**

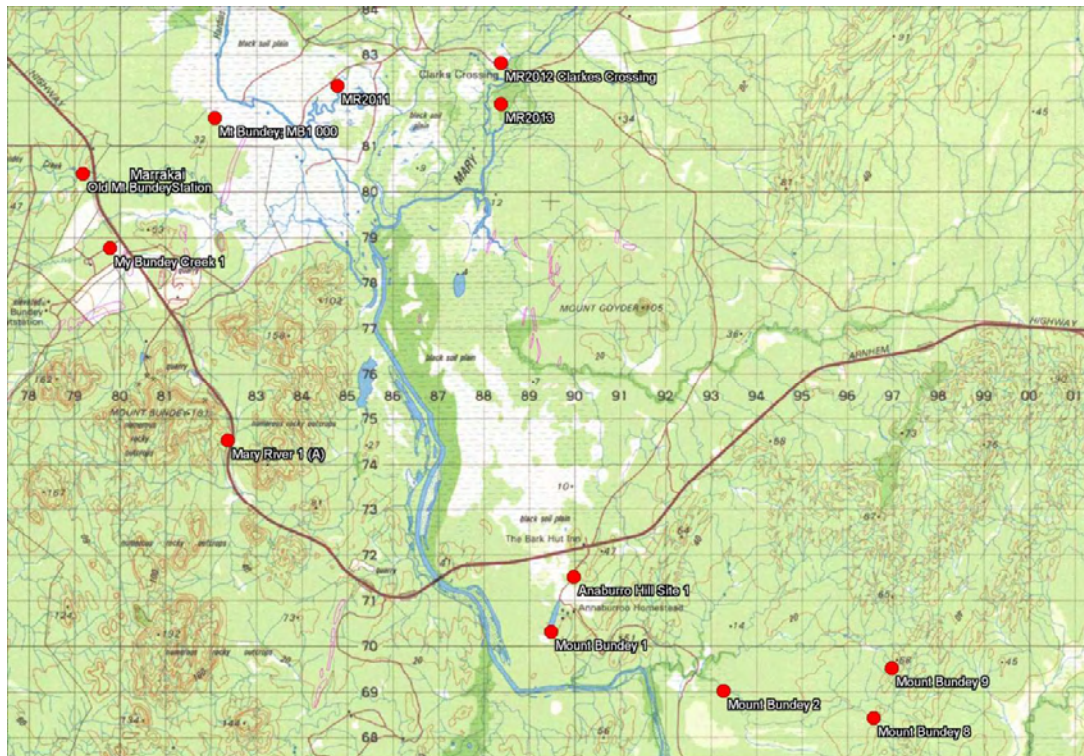


Figure 6: Location map of sites listed on the NRETA archaeological site database.

## 2.5. Survey Personnel

The project was supervised and managed by Daryl Guse. Archaeological surveys were undertaken by Ben Keys and Tim Maloney of Earthsea Heritage Surveys (Earthsea Pty Ltd). The report and mapping were completed by Richard Woolfe. Site mapping has been prepared in MapInfo and is presented in the GDA94 datum. Site location grid references in this report are also quoted in GDA94.

### 3.0. ENVIRONMENT, GEOLOGY and GEOMORPHOLOGY

#### 3.1. Geology.

The Project area is part of the Pine Creek Geosyncline expressed in the Mt Bonnie Formation, Gerowie Tuff, the Mt Bunday Granites and Mt Goyder Syenite. In archaeological terms the underlying geology indicates:

1. The Gerowie Tuffs are likely to be present in and near the Project Area. Some of the component rocks of this formation include siliceous siltstones, glassy black spotted crystal tuff and tuffaceous cherts. These rocks occur in nodules and outcrops in the western part of the Project Area. They are all isotropic rocks with well developed conchoidal fracture properties. As a group these rocks are often described as 'Tuff' or 'Gerowie Tuff'. They are among the most prominent raw material in most stone artefact assemblages in the Top End.
2. Granites outcrop across the Project Area, especially around Mt Bunday. In most parts of the Top End the presence of outcropping granite will indicate the high likelihood of grinding grooves. Indigenous people's used these outcrops to grind seeds, vegetables and fruits plus to sharpen various stone and wooden implements. In the Darwin River Dam area for example, Earthsea consultants recorded more than 20 granite outcrops with a range of grinding surfaces (Guse and Woolfe 2007).

For a detailed analysis of the geology of the Project Area see 1:250,000 Geological Map Series Darwin SD52-4.

#### 3.2. Geomorphology and Vegetation.

Pietsch and Stuart Smith (1987:4) describe three geomorphological units relevant to the Project Area:

1. Dissected Foothills: Skeletal gravely and lateritic soils on rubbly rises and low hills dissected by small perennial watercourses. The vegetation on these units is generally mixed stunted woodland grading to open eucalypt woodland dominated by *C miniata* and *E tetradonta*.
2. Dissected Uplands: Shallow gravely and rocky skeletal soils on prominent strike ridges and boulder strewn hills. The vegetation is generally mixed open eucalypt woodland.
3. Alluvial Plains: Black soil and sand plains often fill between strike ridges, hills and rises. These enlarge toward the north of the project area and toward the larger estuarine and coastal plains. Alluvial plains aggrade over time covering artefacts and sites. Hence it is unlikely to find many archaeological sites in these areas, however some do exist. Vegetation dominated by mixed eucalypt woodlands, grassland among stands of *Pandanus spiralis* and *Livistona humilis*.

#### **4.0. CONSULTATION WITH TRADITIONAL OWNERS.**

The survey methodology used a participative resource management strategy to engage Traditional Owner representatives in the physical survey process and the cultural heritage assessment of sites located during the survey. The survey team included senior Traditional Owner Graham Keynon. Graham worked with the team on each day of the survey and added valuable information on cultural heritage matters including the location of Sacred Site boundaries. Graham has been involved in numerous anthropological surveys in the Mt Bunday and Mt Goyder areas.

DRAFT

## 5.0. HISTORY AND LAND USE

### 5.1. Limilngan, Wulna and Warai Territories

Historical accounts of Indigenous land ownership were riddled with inconsistencies (Ritchie 1980:38). Ritchie (1980:41) questions whether ‘definite tracks of land’ or specific tribal boundaries ever really existed. He suggests that broad geographical areas subject to cultural flexibilities and adaptation is a more realistic way of viewing traditional tribal lands, and this is discussed in more detail by the author in ‘We All Bin Mixed in Together’ (Ritchie 1980:41). Detailed ethnographies of the groups under discussion were never carried out and it is only through piecing together historical accounts that a picture of what these groups might have been like at contact can be sought. Spencer (1914) does provide some patchy information about the Warai but as both he and Ritchie (1980:36-37) point out, by the time records were being made, European colonisation was well under way and traditional lifestyles had already undergone change and adaptation (see also Spencer 1914:53,193). Certainly Aboriginal lands have been inhabited in the north of Australia for many thousands of years and both Keen (1980:17) and Toohey (1981:4) point out that in the Alligator Rivers region at least, archaeological records clearly indicate Indigenous occupations spanning 25000 years or more. There is no doubt that at contact sizeable bands of up to 750 members in good health populated the regions described below (see Dahl 1926:13,16; Keen 1980:31-34; Ritchie 1980:12). The following provides some indication of the broad geographical areas held by the Limilngan, Wulna and Warai:

#### Limilngan

In 1981 Limilngan (or Minidja as it is sometimes known) country was written as extending from Annaburoo Station to the coast and taking in ‘the middle and lower reaches of the Mary River’ (Toohey 1981:34). Northern areas span from Sampson Creek to the West Alligator River, and in the east include the Banana and Alligator Creeks’ watersheds and the Wildman River. South-eastern country encompasses the upper Wildman River and its tributaries, and southern boundaries are marked by Kawirdi Lagoon and Wura:ki Hill, and include White Stone Billabong (Toohey 1981:34). Ten years later Ritchie and Bauman (1991:11) situate ‘Limilngan country between the Adelaide River to the west, Lake Finnis to the north, the Marrakai Crossing to the south and the Wildman River area to the east’.

#### Wulna

An early (1884-1885) account of Wulna territory locates it between the Adelaide and Mary Rivers (Dahl 1926:15). Ritchie and Bauman (1991:13) write that it includes ‘the coastal plains east of the Adelaide River from Lake Finnis to Chambers Bay and Cape Hotham..., the drainage system east of the Adelaide River, and the high ground west of the Adelaide River which separates the drainage systems of the Howard and Adelaide Rivers and extends south to include the Larakeah Reserve’.

## Warai

Dahl's (1926:15) records taken from 1884-85 show the Warai as occupying lands between Mount Shoebridge and the Central Tableland. In 1914 Spencer (1914:53) places the Warai between Rum Jungle and Brock's Creek on the railway. More recently Warai country is written as beginning at Batchelor and extending to the eastern side of the Margaret River with a northern boundary lying within the Rum Jungle district and the western boundary found to the west of the North Australian Railway (Layton&Williams 1980:52-53). A similar area is described by Toohey (1981:35-36) but here the landmark used for the northern boundary is the Darwin River Dam or just south of, and the western boundary is said to be the 'eastern section of Wagait Reserve' (Toohey 1981:35).

## 5.2. Limilngan, Wulna and Warai Territories: Contact History

### Seafarers

The first non-Aboriginal people to penetrate the worldviews of the Limilngan, Wulna and Warai were early mariners attracted to the north Australian coast for exploration and fishing. The Dutch navigators Pieter Pieters-Zoon (1636), Abel Tasman (1644) and Martin van Delft (1700) came for the purpose of mapping the Australian coast line (Keen 1980:20). Later English sailors began surveying the coast: Mathew Flinders in 1801 and Captain Philip King in 1818 (Keen 1980:20). Visitors from Makassar in the Celebes were making substantial contact from at least the early 18<sup>th</sup> century onwards. They were drawn to Australia to source trepang, and anywhere up to 1500 fishermen made seasonal trips for periods of four to five months of the year. Makassan visits, however, were eventually curtailed by the British who began applying pressure from as early as 1872 when licence fees were introduced and then in 1886 when duties on imported rice were enforced (Keen 1980:20). Grassroot accounts on the implementation of the new legislation can be found in Searcy (1912).

### Early Land Exploration

Land explorations began in the mid 1800s and the first to enter the region was Ludwig Leichhardt who arrived at Port Essington by way of the Alligator Rivers region in 1844. Gregory, a year later, followed Leichhardt in 1885 (Keen 1980:21). John McDouall Stuart, after several attempts, was the first European to reach the Mary River area. This he accomplished on route to Point Stuart in 1862 (Ritchie&Bauman 1991:16, Keen 1980:21). In 1866 John McKinlay began investigations of land lying between the Adelaide and East Alligator Rivers for the South Australian Government which was keen to secure settlement localities. More investigations occurred in 1867. Francis Cadell's surveys of Arnhem rivers and inlets took him well up the Liverpool River system and beyond, and in 1869 Goyder scanned areas in the vicinity of the Darwin harbour (Harris 1984:3; Keen 1980:20-22).

### Settlement

The first half of the 1800s marked a time when more substantial contact with Europeans began. In 1824 British ships were dispatched to the north coast to function as a security and provision post for passing ships and traders en route to the east coast and New Zealand, and for overseeing British possessions (Keen 1980:20). Ritchie and Bauman (1991:16) write that the first attempts of settlement were short-lived military posts which were all disbanded by 1850. In 1824 a settlement,



Fort Dundas, was established on Meville Island but abandoned in 1827 (Keen 1980:20). Dahl (1926:156) refers to Fort Dundas as a convict settlement which was eventually transferred to the mainland because of local hostility towards the newcomers. Herds of imported water buffalo were left behind. The mainland settlement was established at Raffles Bay in 1827 and abandoned in 1829 (Keen 1980:20).

The first civilian settlement to establish in the north was at a site at the mouth of the Adelaide River called Escape Cliffs (Ritchie&Bauman 1991:16-18). The settlement was to be known as Palmerston and plans were that it would be the regional capital (Keen 1980:21). The South Australian Government appointed Colonel Boyle Finniss to the position of Government Resident with disastrous consequences. Finniss was apparently incompetent, short of people skills and aggressive, and relations with local Aboriginal people deteriorated during his appointment (Harris 1984:1; Keen 1980:21; Ritchie&Bauman 1991:18). He was recalled in 1865 and the settlement, which was also experiencing other problems (water shortages and poor anchorage), eventually disbanded in 1867 (Bradshaw 1906:11; Daly 1984:7-8; Ritchie&Bauman 1991:18).

### Early development

By the 1880s development was well underway. The Overland Telegraph Line had been completed in 1872 and over the twenty years following that time mining; towns; a railway; stations; and plantations patterned the Darwin hinterland and beyond. The discovery of gold and other metals saw a dramatic increase in the non-Aboriginal community and by 1880, 4358 Chinese and 713 Europeans had been attracted to the region (Keen 1980:22). In 1884 the township of Burrundie was officially surveyed, and towns had sprung up at Batchelor and Adelaide River by 1889. A railway was built to Pine Creek in 1887 bringing more Chinese labour to the area (Keen 1980:22-23). Despite difficulties in the mid 1880s when European exploitation of the region was being hampered by the unfamiliar climatic conditions as well as mining and pastoral disappointments, development continued and the pastoral industry expanded to meet the needs of the mining community (Dahl 1926:5; Keen 1980:23). Marrakai Station, on the east bank of the Adelaide River, was stocked in 1885 by Fisher and Lyons who had secured leases from Fogg Bay to the Alligator Rivers (Keen 1980:23; Ritchie&Bauman 1991:21). Later in the 1890s Umdidu (Humpty Doo) was established on the Adelaide River as were a number of other stations in the Shoal Bay area (Morris 1965:3; Ritchie 1980:2). Plantations also appeared in this region at the same time (Morris 1965:3). The Adelaide River was the site of a number of earlier attempts at growing tropical crops, and later in the early 1900s a twenty acre site was fenced and ten acres cleared to grow vegetables (Layton&Williams 1980:113; Ritchie&Bauman 1991:21). Over a decade later in 1914 property owner, Verberg, established a farm along the river (Layton&Williams 1980:113). Keen (1980:22) writes that by 1890 'virtually the whole of the Northern Territory... was divided and taken over by land speculators'.

### The Buffalo Industry

Asian water buffalo were introduced to the mainland in 1827 when Fort Dundas was abandoned and a new replacement settlement was established unsuccessfully at Raffles Bay (Dahl 1926:156; Ritchie 1980:37). After the abandonment of the Raffles Bay settlement the buffalo left behind multiplied exponentially leaving, in Dahl's (1926:156) description, parts of Arnhemland literally swarming with

the animals. He writes '[t]hey were distributed from towards the mouth of the Victoria River to the Gulf of Carpentaria. In certain places, as at the mouth of the Adelaide River and South and East Alligator Rivers, they were so numerous that a few men were exclusively occupied in hunting them for their hides and horns' (Dahl 1926:156). As is indicated here, by the time of Dahl's (1926) visit to the Territory in the mid 1980s, Limilngan, Wulna and Warai country were all areas exploited by buffalo shooters and a thriving buffalo industry was firmly established. Ritchie and Bauman (1991:21) write that in 1885 E. O. Robinson was shooting in the Adelaide River region, and elsewhere, Keen (1980:23) points out that by 1889 buffalo enterprise in the Alligator Rivers region was flourishing and mobile camps were numerous and widespread. By 1900 shooters operating in the coastal plains were exporting over 5000 hides a year and in 1909 the primary economic activity of the Koolpinyah, Humpty Doo and Marrakai stations came from buffalo hunting (Ritchie&Bauman 1991:21-23). Later in the mid 1950s, a proliferation of shooters and camps transpired along the Adelaide and Mary Rivers systems (Ritchie&Bauman 1991:26).

### Reserves and Missions

Four reserves gazetted by the South Australian Government in 1892 for the Alligator-Adelaide Rivers region set aside land to house Aboriginal people who were deemed problematic in settler towns (Keen 1980:46-47; Ritchie 1980:44). Two of the reserves fell within the Adelaide and Mary Rivers area: the Larakeah Reserve, or what is now known as Acacia, located on the Adelaide River at Acacia Gap; and the Woolner Reserve located around the Cape Hotham/Escape Cliffs area and taking in the black soil plains near Chambers Bay (Ritchie&Bauman 1991:21). According to Spencer (see Keen 1980:47) in 1914 none were substantially used and all were better abolished. He apparently recommended an Alligator Rivers reserve be established instead. This eventuated at Oenpelli Station in 1914 and was managed by Paddy Cahill who later, in 1917, was appointed Protector of Aborigines (Keen 1980:50). The reserve was eventually taken over in 1925 by a CMS mission which operated until 1963 (Keen 1980:51-52). Keen (1980:25) notes that '[m]ission interest in the north began in earnest around 1914'. Later in 1931 the Arnhem Land Reserve was gazetted (Keen 1980:51).

### The War and Post War Years

Administration of the north was taken over by the Australian Army during World War II. Mass civilian evacuations followed fears of a Japanese invasion and military camps were set up for Aboriginal people at Mataranka, Adelaide River and Koolpinyah. Aboriginal people residing in the Adelaide and Mary Rivers area were taken to Adelaide River and Koolpinyah. By 1943, 140 people were camped at Adelaide River and 1157 at Mataranka (Keen 1980:54; Layton&Williams 1980:114; Ritchie&Bauman 1991:25). The post war period saw the resumption of the buffalo industry in the Alligator Rivers region. Crocodiles were also hunted in the area during this period (Keen 1980:54,56).

### Some Recent History

Regional mining until the early 70s had been concentrated in the south at sites like El Sherana and Slesback. By 1971, however, exploration was under way further north, and Oenpelli and its



neighbouring areas were also beginning to feel mining generated impacts. New infrastructure such as the extension of the Arnhem Highway to support the needs of the mining, buffalo and cattle industries was being put into place (Keen 1980:58). Stage One of Kakadu National Park was gazetted in 1979, and dramatic increases in the numbers of non-Aboriginal people to the area experienced (Keen 1980:58-59,62). By the early 1980s Ranger was under construction and exploration licences had been granted for areas in Wulna and Limilngan territories (Keen 1980:58; Ritchie&Bauman 1991:55).

### 5.3. Impacts of Colonisation

#### Early Introductions

Sickness was no doubt the earliest impact of non-Aboriginal contact for the Limilngan, Wulna and Warai and their territories (see Keen 1980:17). People perished from exotic diseases and their ecologies suffered from the damage incurred by introduced species. The first of these impacts seem to have come from Makassan sources, and Dahl (1926:157-158) speculates that signs of leprosy and smallpox amongst the Aboriginal people he met were of 'Malay' origin. Ritchie (1980:37) cites Foelsche in noting an 1860 epidemic of small pox which left so many dead not all could be buried. Ritchie and Bauman (1991:37) refer to the same event, as well as a 'plague' in 1910 which greatly reduced Limilngan and Wulna numbers. European and Chinese settlement brought with it disease and Dahl's (1926:147) accounts of Aboriginal people camped in and around mines in the mid 1880s highlight widespread sickness amongst these people. The introduction of new flora and fauna species similarly impacted on Indigenous lifeways and this is noted by Ritchie and Bauman (1991:16). Both Keen (1980:17) and Ritchie (1980:37) mention buffalo damaged ecologies, and Dahl (1926:157) talks about large numbers of pigs in the Adelaide River region and the damage incurred by them to local waterways. Elsewhere Ritchie (1980:43-44) raises the issue of landscape damage coming from early mining (see also Layton& Williams 1980:111). He argues that it is possible that physical changes caused by mining weakened traditional attachments to land.

#### Aboriginal Death

By far the greatest post-contact impact for the Limilngan, Wulna and Warai peoples has been the massive reduction of their pre-contact numbers. Along with the sickness and shrinking hunting grounds factored into this scenario by various authors is the loss of life coming from violent clashes between Aborigines and settlers. For the Wulna it seems early settlement was indeed tragic. Harris (1984:1-2) talks about the known death of a Wulna member which was directed by the Government Resident of the first Palmerston at Escape Cliffs. Unofficially, however, the instruction is said to have involved a massacre and the destruction of two hundred Wulna camps. Ritchie (1980:43,104) also notes the unnoticed carnage of Aboriginal people and provides some discussion on massacres (see also Layton& Williams 1980:104). Accounts of Aboriginal death can be found in Searcy (1912), and Layton and Williams (1980:111-112) point to violent conflicts triggered by Aboriginal people as they realised their hunting grounds were being taken from them (see also Keen 1980:31).

### Tension

Tension between Aboriginal people and the settlers continued as settlements increasingly sprang up on Aboriginal lands. A record of Wulna resistance to European occupation can be found in Daly (1984:184-186). Tensions also grew between Aboriginal groups who traditionally maintained interdependent relations. Harris (1984:3-4) argues that traditional systems of interaction were strained as groups sort coping mechanisms to address the settler presence. In reference to Wulna/Larakia relations he argues that more frequent visitation of the Darwin region by the Wulna would have not only been for Western goods, but also to have some understanding and control of the new intruder situation (Harris 1984:3). 'This forced the Larakia and Wulna into the kind of regular interaction with which their traditional system had not previously had to cope, and tension certainly increased between them' (Harris 1984:3). Ritchie and Bauman (1991:18) say they were told that fighting amongst the Larakia and Wulna reduced Wulna numbers, and Daly (1984:70) notes tension between these groups. Certainly declining Wulna numbers was a phenomenon noticed by Warner (1933:73) who states that Wulna 'tribes were destroyed by white settlement'. There is no doubt that as white settlement expanded Aboriginal lives were disrupted in multiple ways and their numbers continued to diminish. This is also pointed out by Ritchie and Bauman (1991:37) who show that Limilngan numbers, like the Wulna's, were as much under threat.

### More Disruptions; Migrations

The proliferation of development accelerated disruptions to Limilngan, Wulna and Warai lives. Early accounts of life around the mines paint dismal pictures of dependencies and prostitution amongst Aboriginal people. Dahl (1926:146) writes:

On the whole the blacks who frequented the vicinity of the Chinese mines seemed absolutely demoralised, indulgence in opium and grog and all other abominations of the Chinese camp exercising a very unhappy influence on the character of the aboriginal [sic].

And,

Tobacco, spirits and disease in a very few years had apparently reduced the natives to mere phantoms of the warlike people who inhabited the remoter parts of the continent. About these mines one could plainly note the initial stages of the inevitable ruin to which an intimate contact with white or Asiatic people appears to condemn the Australian aboriginal [sic] (Dahl 1926:147).

Ritchie (1980:43) mentions that Aboriginal women were exchanged for opium and alcohol. This was the case for Warai women as Layton and Williams (1980:112-113) point out. Early mining in part explains low Warai numbers according to these authors, and mining, as they show, continued to impact on Warai lives well into the 1950s when gold, tin and uranium mining brought large numbers of non-Aboriginal employees into the Rum Jungle region. It was during this time that the Warai moved off their land to settle further north on unfamiliar country (Layton & Williams 1980:31,102-106). People were both repelled from and attracted to the mines, and perhaps one of the biggest impacts of mining was the migrations it triggered amongst Aboriginal people as they were drawn to them for a variety of reasons including curiosity and Western food (see Dahl

1926:146; Toohey 1981:7). Toohey (1981:7) talks about the westward drift towards the mines (and other early enterprises) amongst Western Arnhemland groups, and similar movements are discussed by Keen (1980:34) and Ritchie (1980:43).

### Displacement and Dispossession

The drift towards other early enterprise such as stations, plantations and buffalo camps offered, unlike the mines, a place of sanctuary for many Limilngan, Wulna and Warai. Stations became major Aboriginal centres away from the perils of bush life where people were exposed to predation by transient settler communities and the danger of warring Aboriginal groups (Ritchie 1980:32,45). Farms provided sources of employment and food, and for Aboriginal people based in the Adelaide, Mary and Alligator Rivers regions buffalo hunting became a primary source of stability (Keen 1980:51; Ritchie&Bauman 1991:23). Keen (1980:34) notes that during buffalo hunting seasons the Oenpelli Reserve was deserted, and elsewhere in Davis (1994:36) Limilngan Elder, Felix Holmes Iyanuk, recalls fondly his years as an employee in the buffalo industry. Life on the stations, however, was not completely void of discrimination or exploitation for Aboriginal people and in Bradshaw (1906: 11-12) examples of wage discrimination in the buffalo industry can be found (see also Ritchie&Bauman 1991:28). Nor did the relative sanctuary of stations and farms entirely ensure the safety of Aboriginal women. Keen (1980:34) notions that Aboriginal women were subject to theft by European men at Oenpelli Reserve.

Further displacement for Aboriginal people emerged with the onset of World War II. During this time people were moved to army camps where they provided labour pools for the Services (Layton&Williams 1980:110; Ritchie&Bauman 1991:25). People worked in a variety of areas including on military farms and in military gardens and canteens, and while many people returned to station life at the close of war, many also remained on at these settlements (Keen 1980:54; Layton &Williams 1980:115; Ritchie&Bauman 1991:25-26). The war years had a serious impact on the religious life of hinterland Aborigines as traditional movement was heavily restricted and as a consequence the continuity of ceremonial activity became virtually impossible (Ritchie 1980:12).

The imposition of new settlement patterns on top of existing traditions not only resulted in mass displacement and dispossession, but also extraordinary disruptions to traditional life and in some cases the extinction of groups (Toohey 1981:7). Away from the dangers homelands increasingly posed, people were forced into permanent and semi permanent living arrangements that introduced new stresses and further removed traditional life. Layton and Williams (1890:32) talk about the Warai seeking refuge in Limilngan country where they were considered virtual strangers after being 'hunted off their lands' by mining interests. Semi-sedentary living circumstances brought together different landowning groups in traditionally irregular ways. Ritchie (1980:28) notes a large group of Limilngan and Wulna people based at the Old Humpty Doo Station. In the 1950s, Humpty Doo too was where Warai people were eventually to settle (Layton&Williams 1980:32,106). Ritchie and Bauman (1991:23) write that after World War I, neighbouring Aboriginal people from the Alligator Rivers, Daly River, north-east Arnhem Land and Brocks Creek areas were brought into the Adelaide and Mary Rivers' plains country by non-Aboriginal development interests. Elsewhere they write:

In time, the station settlements became the focus of Wulna and Limilngan communities with much intermixing between the Limilngan and Wulna people. Footwalking between

Koolpinyah, Humpty Doo and Marrakai was common. Country in the vicinity of these communities began to be perceived as the heartlands of Limilngan and Wulna country (Ritchie&Bauman 1991:28).

In the 1970s Aboriginal people based at the Koolpinyah Station were moved to Bagot Reserve after the death of the station owners. Following the cyclone, however, many of these families relocated to Humpty Doo. Some hinterland Aborigines found government housing in Palmerston (Ritchie&Bauman 1991:30). Patterns of dispossession and displacement continued into the 1980s and Limilngan, Wulna and Warai based at Humpty Doo at the time Ritchie and Bauman (1991:30) were writing still lacked secure tenure. Similar shifts on the eastern borders of Limilngan country were also taking place as Keen (1980:52) and Toohey (1981:7) illustrate. Oenpelli's history as a reserve and then mission attracted people from the south and east and its current population are descendents of a group who gained dominance in the area in the 1920s.

### Diminishment

Today the Limilngan, Wulna and Warai are a small percentage of their pre contact numbers. Ritchie (1980:12) suggests, based on Tindale's data, that the Warai traditionally numbered between 250 and 750, but now, he writes, less the ten recall regular dry season ceremonies. Similarly, Keen (1980:36-37), writing in reference to the Alligator Rivers Aborigines and their western neighbours, proposes a contact figure of more than 2000 people. This figure has been reduced to just 4 percent of its pre contact strengths. Such devastating loss has unfolded for all the reasons above as well as from a multiplicity of other circumstances. Different authors refer to Warai accounts regarding an accidental poisoning (poison confused with flour) at Stapleton Creek that resulted in the death of a large group of Warai (Ritchie 1980:26-27,35; Layton&Williams 1980:79). Keen (1980:39,43) lists poor diet and widespread infertility as factors contributing to number decline, and both Keen (1980:39) and Ritchie (1980:33) point to the abortion of unborn children regarded as having white descent as another significant cause.

### Problem Solving Colonisation

The onus has been on the Limilngan, Wulna and Warai to adjust to the considerable pressures placed on them by colonisation for the preservation of themselves and their cultural traditions. These groups have literally problem solved themselves through the processes of colonisation to have arrived at their present day strengths. Some authors note a circa 1910-20 Warai decision to begin keeping their children of part European descent as a way of addressing critically low group numbers (Ritchie 1980:27,32-33; Layton& Williams 1980:24). Amalgamation was used as another method to address low numbers. Ritchie (1980:45) writes:

Intergroup relationships were often formalized by alliances and there is evidence that, as a means of group survival, it was possible for groups to amalgamate if populations fell below critical levels.

Elsewhere he points out that the 'mixing' of groups was an established practice by the turn of the century' (Ritchie 1980:41). As mentioned above, Ritchie and Bauman (1991:28) show that the intermixing of Limilngan and Wulna groups through station life led to country lying between Humpty Doo, Koolpinyah and Marrakai eventually being recognised as 'the heartlands of Limilngan and

Wulna country' (see also Ritchie 1980:28). Many non-aligned groups forged links through the cattle industry and Ritchie (1980:12) was told that Limilngan, Wulna, Warai, Kungarakany and Larakia people began 'mixing' for ceremonial purposes (see also Ritchie 1980:27). An amalgamation between the Warai and Kungarakany, however, was formalised long before any involvement in station life and Ritchie (1980:29-30; see also p.34) differentiates this amalgamation from other patterns of hinterland intermixing. In reference to Wulna post-cattle industry intermixing he writes the group 'tended to follow [a] pattern... of fragmentation and re-alignment with non-traditionally orientated groups' which differed from the continuity maintained in the Warai/Kungarakany union (Ritchie 1980:29-30).

Amalgamation was something groups traditionally had available to them when solving issues such as number decline and became useful in the case of the Warai. It seems less formal intermixing, on the other hand, provided some groups with innovative means to develop alliances that would ensure the maintenance, to some extent, of religious life and connectedness to country. Certainly electing the safety and stability of station life over and above the dangers and uncertainties of life elsewhere worked towards safekeeping people and culture, and Ritchie (1980:32,35,46) talks about this in relation to the Warai. Dhal (1926:158) notes the supplies of bullock meat accessible to Aboriginal people camped in and around Arenbarra Station. In discussing the role of the buffalo industry in Limilngan/Wulna lives, Ritchie and Bauman (1991:21) turn to the benefits if offered for cultural maintenance. They point out that the industry allowed people to work seasonal buffalo camps during the dry and return to more traditional lifestyles during the wet. Many returned to the higher grounds permanent camps such as Koolpinyah, Humpty Doo or Marrakai offered (Ritchie & Bauman 1991:23,26). Layton and Williams (1980:115) show that even despite military restraints during the war years, cultural practices such as foraging for bush foods were not abolished. The cultural retention the Limilngan, Wulna and Warai achieved through group adjustment and decision making rapid change left them with strong links to their tribal lands, but more recent change has resulted in the deskilling of many of these people and even further displacements.

### More Recently

Becoming skilled in the variety of employment opportunities historically offered by farms, plantations, cattle stations and buffalo camps and the relative cultural autonomy this choice achieved by the 60s began to waver. With the introduction of award wages and a growing reliance on vehicles, cattle stations were less inclined to sustain large labour pools and the stability the cattle station once offered ceased to exist. While short term employment remained available, deskilling on the whole led to large scale dependencies on welfare payments and a new wave of displacement (Ritchie & Bauman 1991:28-30). Warai people by the 1980s were spread between Adelaide River, Humpty Doo and Darwin (see Ritchie 1980 and Toohey 1981:16). Limilngan Elder, Felix Holmes Iyanuk, eventually settled at Tree Point, a Tiwi camp, where he could continue to foster traditional Limilngan associations with the islanders (Keen 1980:217). At the same time, Limilngan and Wulna people began raising concern over a new threat to important dreaming sites. Licences had been granted for the exploration of minerals on their land (Ritchie & Bauman 1991:55). Keen (1980:57) writes that the new era of mining interest the 70s brought in had serious impacts on Aboriginal people in the Alligator Rivers region and alcohol consumption had become a concern at Oenpelli. The passing of Aboriginal Land Rights in 1976 triggered the outstation movement and



decentralisation from major centres. In 1975 self administration was birthed in Oenpelli with the establishment of the Gunbulanya Council (Keen 1980:57-59). The Wulna/Warai camp at Humpty Doo institutionalised their social alliance with the formation of the Wairuk Association which includes Kungarakany, Malak Malak and Larakia members. Here the two groups have come to be known as the Humpty Doo Mob (Ritchie 1980:20,22). Today Limilngan, Wulna and Warai numbers remain low but the strengths of their connections and obligations to their respective tribal lands, as various authors clearly demonstrate, have not waned (Layton&Williams 1980:119; Ritchie 1980:48; Ritchie&Bauman 1991:37).

#### 5.4. The Limilngan, Wulna and Warai: Who They Are

##### Limilngan

The Limilngan are a language group who, as such, share a common language which names them as a group as well as the land that, as a group, they own (Keen 1980:67,73,78). The group is, as a whole, descended from a distinct set of ancestors and membership is gained primarily through patrilineal descent although matrilineal exceptions are made (Toohey 1981:10,35). Marriage formalities are exogamous making marriage preferably with individuals from neighbouring language groups, however, again here exception is apparently made (Toohey 1981:9-10). The Limilngan are divided into landowning subgroups which consist of one or more lineages. Subgroup members have common rights in the parcel of land belonging to their group and are responsible to a specific set of dreaming sites pertaining to that land (Toohey 1981:35). Social organising structures such as subsections, semi moieties and clans are not used (Keen 1980:78). Limilngan individuals can possess a number of different identities via overlapping spheres with neighbouring language groups with whom they affiliate (for example, their mother's group) (Keen 1980:78; Toohey 1981:11).

##### Wulna

Strong similarities exist between Wulna and Limilngan social organisation and in Ritchie and Bauman (1991:31-37) the solidarity existing between the two groups can be traced. Like the Limilngan, the Wulna are descended from a distinct set of ancestors and membership to the group is primarily but not always via patrilineal descent. Ritchie and Bauman (1991:32) write that both Wulna and Limilngan systems will under certain circumstances accept membership through adoption and in this sense can not be considered strictly unilineal. According to Warner (1933:73,75), the Wulna had exogamous totemic groupings and, not unlike the Limilngan, employed organising structures with no attached moieties or sections. He writes that Spencer referred to Wulna kinship as an 'un-Australian type' and notes 'a man marries his mother's brother's daughter but not his father's sister's daughter, and a woman her father's sister's son but not her mother's brother's son' (Warner 1933:73).

##### Warai

The Warai share a common tribal language and while membership to the group was traditionally through patrilineal descent, matrilineal concessions are now made (Ritchie 1980:8,48). Spiritual affiliation to a specific set of sites is automatically inherited through group membership (Toohey 1981:23). Spencer (1914:53) notes that the Warai were known as the Wolwonga by early Europeans, but Layton and Williams (1980:53) point out that the label was actually used by three groups, the Awinmul, Aggrakundi and the Warai. The term often masked the separate identities of

the three groups. Unlike the Limilngan and Wulna, the Warai as a group were not exogamous and intra group marriage was preferred as the following four-classed, unnamed moiety system Spencer (1914:53) attaches to them indicates:

The organisation is as follows, the names of women's groups, corresponding to those of the men, being placed in brackets:-

Moiety 1.	Moiety 2.	Children.	Children.
Adjumbitj (Alljambitj)	Appungerti (Allpungerti)	Appularan (Allpularan)	Auinmitj (Allimitj)
Appularan (Allpularan)	Auinmitj (Allinmitj)	Adjumbitj (Alljambitj)	Appungerti (Allpungerti)

An Adjumbitj man marries an Allpungerti woman, and the children are Appularan (males) and Allpularan (females).

An Appularan man marries an Allinmitj woman, and the children are Adjumbitj (males) and Alljambitj (females).

An Appungerti man marries an Alljambitj woman, and the children are Auinmitj (males) and Allimitj (females).

An Auinmitj man marries an Allpularan woman, and the children are Appungerti (males) and Allpungerti (females).

Spencer (1914:54) draws a similarity between the Warai and Arrernte systems of social organisation because they differed to the eight class norm found elsewhere. He speculates over a possible link between the two an Arrernte story seems to suggest regarding a never-to-return break away group of uncircumcised Arrernte men who were led north to the sea by a prominent Elder. Interestingly, Ritchie (1980:23) mentions that while the Warai performed circumcision, the Wulna and Limilngan did not. Attached to the four classes are mumulbuk or totems. A set of mumulbuk is shared by Ajumbitj and Appularan, and another set by Appungerti and Auinmitj as the following shows:

...Ajumbitj-Appularan have the following, Bulta (eagle-hawk), Kinnimill (a yam), Gunbelli (small crocodile), Norquipito (red ochre), Bulp (pipe clay), Doito (stone axe), Deiurnu (kangaroo), Wairdo (fire stick), Jin (leech), Gunnigunni (flying fox).

Appungerti-Auinmitj have Murdukul (a fish), Yilli (swamp lily), Tji (a snake), Wit (water), Bera (large crocodile), Kuala (turtle), Niri (dog), Gani (night time), Wordjal (black plover), Ngurin (emu) (Spencer 1914:192-193).

As with Warai moieties, mumulbuk are exogamous and Spencer (1914:193) gives the following examples:

[A] leech man marries a fish woman and their children are yam. A fish man marries a flying fox woman and their children are leech.

Children belong to their father's totemic set or group but not to his actual mumulbuk (Spencer 1914:193).

There is some evidence suggesting that the Warai also used named, estate owning clans to structure society, but information regarding this is apparently scant (Layton&Williams 1980:60-61).

### Today

Today the term 'local descent group' is generally used in reference to the Limilngan, Wulna and Warai (see Layton&Williams 1980:60 and Ritchie&Bauman 1991:37). The term is explained by Layton and Williams (1980:60) as 'a group of people united by ties with a specified locality, in which membership is normally transmitted from parent to child'. In reference to the Warai they write the 'group is composed of one or more families, and the families are groups of people related to each other consanguineally through either or both parents and comprising two or more generations' (Layton&Williams 1980:60).

### Limilngan People

Current library records of Limilngan, Wulna and Warai membership lists are not available and the information provided here dates back to the early 1980s and 1990s. The following lists nevertheless are indicative of the people who are and have been responsible for the continuity of Limilngan, Wulna and Warai traditions and connections to country.

In the early 80s Toohey (1981:34) examined information holding that the Limilngan consisted of two subgroups which had responsibility for two different tracts of Limilngan country. At the time Felix Holmes Iyanuk assumed responsibility for country around the Annaburroo region, and Captain Bishop Ngardenba and his family held responsibility for country closer to the Mary River. Keen (1980:131-132) in 1980 supplied the following data:

#### Bottom group (Cape Stuart and Marrabi:bi area)

Captain Bishop Ngardenba	
Jeanie Bishop Midbinal	} children of Captain Bishop
Joseph Bishop Linman	
Tania	daughter to Joseph

#### Top Group (A[n]naburroo area)

Felix Holmes (Mister Holmes) Iyanuk

#### Others with ties to Limilngan land:

#### People whose mothers are or were Limilngan

Neville	
Linda	} children of Jeanie Bishop
Samantha Campbell	
Victor Campbell	

#### Felix Holmes' sister, sister's children and sister's daughter's child

Lena Puralka



Victor Cooper  
Eileen Henry  
Robert Henry  
William Henry  
Samson Henry  
Irene Henry  
David  
Rhonda

*Nawinjmil language-group of Mt Bundey area*

Roger Wardidi  
Tony Lowanbi } sons and daughters of the late Tommy Murrku and the late  
Barbara Kindjulk Polly Nedey  
Queenie Ningkardi

Nawinjmil language-group is adjacent to Limilngan.

Others associated with the Limilngan language-group...

John Baird  
Joy Baird } members of the Tree Point Association  
Bridget Baird  
Leanne Baird  
Tamlin Baird  
Agnes  
Margaret Maniwi

## Wulna People

The Wulna are descended from a group of ancestors whose fathers' are believed to be brothers. They include Jack Wandi, Hilda Gunmunga, Old Roger Adiyit, Wulna Robert and Topsy Drysdale Garramanak. When senior Wulna man, Jack Wandi, passed away Limilngan Elder, Felix Holmes Iyanuk, assumed prominence as the senior male authority for the Limilngan and Wulna (Ritchie&Bauman 1991:36-37). At the time Ritchie and Bauman (1991:37) were writing, Felix Holmes's authority was increasingly being assumed by Tony Kenyon Luwanbi. The following has not been taken from a list of Wulna people as such but has been pieced together from information provided by Ritchie and Bauman (1991:36-37). It is possibly short of detail.

Tony Kenyon Luwanbi, Joan Kenyon Meniyen and children  
Caroline Wandi  
Lorna Lee  
Richard Rankin  
The Browne family  
Gregory Durrkmul Fejo  
Sammy Beretmi Fejo  
Linda Gunayn Fejo  
Flora Menabirrinna's descendents

### Warai People

The Warai consist of two single extended families which are linked by common ancestry. The families are both descendents of a couple known as Miniling and Ayulnyul. One group, the Hazelbanes, are descended from a daughter of Miniling and Ayulnyul, Ngatkali, and the other from Ngatkali's younger brother, Ganwardak (Toohey 1981:14). The Warai listed below have been sourced from Toohey (1981:45).

Lidawi Doris White  
Barrambim Sammy Wright  
Ganwardak Roger Yates  
Angudjin Philip Yates  
Priscilla Yates  
Kurrwak David Yates  
Ammilil Cathy Yates  
Georgina Yates  
Danyamil Esther Rose Yates  
Ivy Yates (*adopted by Roger Yates*)  
Susie Yates  
Annabel Yates (*adopted by Roger Yates*)  
Charmain Yates (*adopted by Roger Yates*)  
Purmirri Christine Yates (*adopted by Roger Yates*)  
Waltjarr Keith Yates (*adopted by Roger Yates*)  
Ngurrminh Mark John Yates (*adopted by Roger Yates*)  
Mabul Dolly Fejo  
Pulen Elizabeth Thompson Yates  
Purrnali Michael Madjunga  
Gunany Linda Fejo  
Malarra Gregory Fejo  
Paradami Sammy Fejo  
Luwanbi Tony Kenyon  
Brian Kenyon  
David Kenyon  
Dubmul Graham Kenyon  
Steven Kenyon (*adopted by Tony Kenyon*)  
Linda Campbell (*adopted by Tony Kenyon*)  
Henry Yates (*adopted by Tony Kenyon*)  
Adjibak Ada Goodman  
Neville Goodman  
Marburra Helen Goodman  
Nelson  
Ginny Farah  
Waranga Dorothy Goodman  
Justin

Wanirr Harold Goodman  
Mugul Philip Goodman  
Mimirri Jacqueline Goodman  
Midada Selena Goodman  
Djalkut Denise Goodman  
Kalmarr Barbara Tambling  
Djarrngatjpi Ronnie Yates  
Ngalmatju Queenie Yates

## 5.5. Ties to Country

### Religious and Spiritual Bonds

Keen (1980:192) writes:

Certain activities such as storytelling, singing, performing ceremonies and painting are directed towards and describe spiritual beings. The relationship between the spiritual being (the object of the activity), the person performing it, and ownership of the stories, ceremonies etc., indicates spiritual affiliation to a site or sites on the land. Songs and stories often refer to localities, and designs are located at sites. The spiritual beings referred to in the activities pertain to sites on the land, and people regard these sites as transformations of the spiritual beings, endowed with their powers.

Early documentary evidence is not only indicative of the rich ceremonial life pertaining to the Limilngan, Wulna and Warai historically, but also a gauge for the ceremonial modification that came with continued incursions into Indigenous lifeways as settler communities established (see Dahl 1926:261; Ritchie 1980:30,38-39; Ritchie&Bauman 1991:23). Circumstance allowed the Limilngan and Wulna to maintain close physical contact with their country (Ritchie&Bauman 1991:51). The same, however, has not been so for the bulk of the Warai (Ritchie 1980:21). Ritchie (1980:30) writes that the last Warai/Kungarakany ceremonies took place in the 1970s. Despite this, Warai connectedness to country has been kept alive through the education of their young who are made aware of important sites through storytelling (Ritchie 1980:30). By combining with neighbouring groups for ceremonial purposes contemporary Humpty Doo Warai have resolved issues of low numbers that were hampering the continuity of ceremonial life (Ritchie 1980:20). The close physical contact the Limilngan and Wulna have maintained with country has resulted in knowledge retention about country, and spiritual and emotional attachment to it (Ritchie&Bauman 1991:51,59).

Both the Limilngan and Wulna are descendents of the Travelling Women ancestors whose formation period travels from the east involved the birth of children and the creation of important land forms. These cosmological identities and the sites they are responsible for are for the Limilngan and Wulna their most significant. Through these identities the two groups are interdependently bound, and obligated to the caring and protection of sites created by the Women (Ritchie&Bauman 1991:41-42). Common ancestry through creator beings links many groups together and Keen (1980:89,175-179) discusses the Marerlma and Kulida ceremonies which tie the Limilngan and Wulna to Larakia people. Similarly, the Limilngan have dreaming ties with Marrkanala and Oenpelli groups (Keen 1980:202). Mythology enriched landscapes are discussed in detail by Ritchie and Bauman (1991:44-46) and they

provide information on a site, the Mudak ceremony grounds, that unites the Limilngan, Wulna and Warai (as well as other groups) (Ritchie&Bauman 1991:47). The Warai have sites uniting them to the Kungarakany. Both groups share songs for Wulinggi and the Miniling dreaming track which gives them rights to live and forage on one another's countries (Layton&Williams 1980:70-71). Limilngan dreaming sites listed by Keen (1980: 175-177) and Toohey (1981:35) include Shooting Star or Devil dreaming; Smoke dreaming; Kulida ceremony stone circle; Laminjanbarr or Djurrbiyurrk (Whistle Duck); Bikanini ('Piccaninny', child); Paperbark Raft; Nganginganjirr (Emu); Sun dreaming; Red Ochre Woman at White Stone Billabong (Malwayin); Dingo at Black Felllow Island or Bulman; Diarrhoea dreaming; Monster; Aykunidjin; Melanjal; Karriyilyi; Bilyingki; Miminbalya; Lawuteringa; and Lalikili.

The Limilngan, Wulna and Warai relationship to country is a profoundly spiritual one which is reflected in their interactions with the landscape through land use and ceremonial life, as well as the social bonding shown above. A number of authors illustrate the different personalities of different sites and the various ways people address and approach sites. Mudak ceremony grounds, for example, are considered dangerous and access to them is restricted to only authorised people (Ritchie&Bauman 1991:47). The Warai have a number of sites they refer to as poison places which are said to have potentially harmful qualities and must be approached with care. Layton and Williams (1980:69) were told that loss of life in spring water at Miniling was not unusual and that Warai and Kungarakany use of the springs was only safe if people called out in language first. Ritchie and Bauman (1991:52,55) talk about the importance placed on imparting knowledge about sites by the Limilngan and Wulna who regard inappropriate behaviour in certain places dangerous, sometimes to the whole group. They point out also that the observation of correct procedures at particular hunting and foraging grounds aids successful exploitation of the area (Ritchie&Bauman 1991:54). This is also true for the Warai who must call out to kurduk (spirits in the land) before foraging if they wish to be successful (Layton&Williams 1980:66-67). The mythological significance of a site can determine what food source is to be found there. For example, Minmayal (round yams) are found at Jukpin and were put there by the Rainbow Serpent, and Bitjununu (file snakes) are found in abundance at Dumayki, a file snake dreaming site (Ritchie&Bauman 1991:61). A successful hunting or foraging experience for the Limilngan and Wulna is symbolic of the spiritual unity existing between them and their ancestor endowed landscapes (Ritchie&Bauman 1991:59).

The Limilngan, Wulna and Warai depend on appropriate communication with the landscape for safekeeping and to source nourishment. For the Limilngan and Wulna such associations to the landscape are integral to the continuity of the groups themselves. It is through close physical contact with country that new generations of Limilngan and Wulna unfold (Ritchie&Bauman 1991:49). Limilngan and Wulna children are 'found from the country' (Ritchie&Bauman 1991:38). The spirit of an unborn child is transferred to its mother's womb via the spirit of a natural feature or species. The event is made known to relatives who have been enabled to make the connection and determine the child's conception dreaming which can also become the child's name (Ritchie&Bauman 1991:47-48). Amongst the Warai, it is the responsibility of the women to name their children and commonly children are given the name of their birthplace (Layton&Williams 1980:65; Ritchie 1980:14). A child is bound spiritually to its birthplace and so is the group the child belongs to. Conception sites and spirits are also significant in Warai belief and at some time during a women's pregnancy she and her husband are made aware of a place that their unborn child is spiritually affiliated with (Layton&Williams 1980:64-65). Death, likewise, connects people to place and Layton

and Williams (1980:62-63,65-66) write that Warai burials sites give those surviving the deceased powerful rights to the sites and the country surrounding them. A person's burial place also bestows relatives of the person with a set of spiritual responsibilities that must be exercised. Layton and Williams (1980:72-73), and Ritchie (1980:16-17) provide details on Warai shade-laying ceremonies which are performed for the death of their members, and are now the only ceremony still maintained by Humpty Doo Warai. The mortuary ceremony performed by the Limilngan and Wulna is commonly referred to as the 'rag burning' ceremony and details of this are provided by Ritchie and Bauman (1991:59, see also p.48). For the Limilngan and Wulna places where both mortuary ceremonies and burials take place have strong spiritual and emotional significance. They are sites where Limilngan and Wulna deceased become part of the landscape itself (Ritchie&Bauman 1991:49,59). Communion is maintained between the living and their ancestors and in at least one instance Ritchie and Bauman (1991:61) were told that an informant's deceased father functioned as a guide on hunting expeditions.

### Land Use

The importance of land use to the Limilngan and Wulna is highlighted in their desire to maintain close physical contact to their ancestors which translates directly as close physical contact to their country. Land use too is essential to the passing on of knowledge, and hunting and foraging on country provides the vehicle by which knowledge about country can be transmitted (Keen 1980:205; Ritchie&Bauman 1991:57). Regular hunting trips provide the means whereby these relationships and traditions can be maintained, and whereby the responsibilities and obligations accorded by Aboriginal Law for the caring and protecting of sites can be lived out (Ritchie&Bauman 1991:50). Ritchie and Bauman (1991:57) explore in some depth contemporary patterns of Limilngan and Wulna land use and the economic wealth of their territories. Activities such as burning inaccessible areas, clearing debris from fishing spots and removing sorcery objects from the landscape are still commonly practiced by these groups. Limilngan and Wulna territories span various ecologies including the fertile alluvial plains of the Adelaide and Mary Rivers and the resource rich coastal plains to the north. A great variety of foods and materials are sourced in these regions not only by the Limilngan and Wulna but also by other groups who are attracted into the region for seasonal hunting and foraging (Ritchie&Bauman 1991:57,61). Keen (1980:209-210) talks about neighbouring groups who regularly cooperate to exploit resources the differing countries offer. Amongst the available resources found in Limilngan and Wulna territories are barramundi, lulek (turtle), lamayi (wild fowl/magpie geese), goose eggs, limitjitanban (goanna), wallabies, buffalo, sugarbag (wild honey), mirnyinluk (lilies), linbi (long yams), laluk (cane grass), yimiman (white ochre) and milaning (bamboo) (Ritchie&Bauman 1991:57,59,61).

Dahl (1926:17,149,153,158) provides early records of resources available to and sourced by the Warai. Ritchie (1980:38-40) also turns to Dahl as a reference for accounts on Warai land use and notes their early seasonal subsistence and land management activities. Throughout Layton and Williams (1980:74,117) reference is made to past hunting and foraging practices held by the Warai and more recent land use is also touched upon. Certainly in the 1980s Warai people were still using parts of their country to supplement their diets with kangaroo and porcupine (Layton&Williams 1980:117). Layton and Williams (1980:20,32-33) place a lot of focus on the lack of access many Warai people now have to a 'major portion of their traditional country' but point to the attachments

that have been maintained through storytelling. Ritchie (1980:13,18) similarly acknowledges the cultural maintenance achieved by the Warai despite all and lists language retention as an equally important component in this relative success.

DRAFT

## 6.0. BACKGROUND ARCHAEOLOGICAL INFORMATION

Kinhill (1992) consultants Peter Hiscock and Daryl Guse conducted a through survey of the Mt Bunday Training Area for the Australian Defence Forces in 1992. The survey divided the MBTA into four environmental zones roughly based on the three geomorphological zones used in this report:

1. Alluvial floodplains;
2. Central spine of hills;
3. Undulating east plain; and,
4. Isolated hills.

According to Hiscock and Guse (Kinhill 1992:10-1), 85% of the recorded sites occurred in zone 2. These sites demonstrated both high density and high diversity of artefacts. The site types recorded included artefacts scatters, stone arrangements, knapping floors and quarries, sometimes in combination. Raw materials included Tuff, chert, quartzite, quartz and an 'indurated fine grained rock', probably a silicified siltstone from the Gerowie Tuff member.

In 1998, Guse and Niemoller conducted a survey over proposed quarries within the MBTA. These surveys located a number of stone artefact scatters. The raw materials included tuff and siltstone (Guse et al. 1998:9).

A number of other surveys have been conducted in the region in the MBTA, along Point Stuart Road (Earthsea 2005) and along the Arnhem Highway for the layout of the Telstra Optical Fibre cable (Guse 1999). In 2007, Earthsea consultants Guse and Woolfe (Earthsea 2008) conducted a archaeological and heritage survey in the Darwin River Dam Power Water catchment. This survey located numbers of stone artefact scatters dominated by tuff and quartz plus a number of grinding surfaces in granite outcrops similar to those found in our Project Area.

All these surveys supported the following predictive model:

1. Stone artefact scatters are by far the most common site in the area;
2. Low granite outcrops may have evidence of grinding surfaces, particularly when located close to wetlands or creeks;
3. Artefact scatters area most likely in the dissected hill environment;
4. The aggrading geomorphology of sand and silt alluvial plains makes it difficult to locate surface artefact scatters.



## 7.0. METHODOLOGY

Heritage conservation is based on a number of social and economic principles, including the recognition of competing interests in society and the requirement to maintain a level economic 'playing field'. This section outlines a methodological approach to heritage conservation based on the Burra Charter, defines 'heritage' in the project area and finally describes a survey methodology to locate, describe and assess the significance of potential heritage places within the project area. A full discussion on why heritage places are conserved, and how decisions can be made can be found in the Burra Charter (Mauis-Kyle and Walker 1992 and 2002).

### 7.1 Site definition

It has been widely recognised that a strictly site based approach to the documentation of archaeological materials does not adequately reflect the nature of hunter-gatherer land use strategies and mobility patterns. Off-site archaeology is a methodological approach designed to address this issue.

Off-site archaeology was originally defined by Foley (1981:10) as the study of the archaeological record on a regional scale, based on an assumption of underlying spatial continuity of archaeological materials, in the context of both behavioural and geomorphological properties. Foley (1981:10) states that there are four structural components essential to the analysis of off-site archaeology. These consist of behaviour, discard, accumulation and post-depositional factors (Foley 1981:10). The off-site archaeological approach uses a behaviour-discard approach in which the ecology, geology, and geomorphology are considered to influence the patterns of artefact discard by hunter-gatherers. Foley's (1981) study of Amboseli archaeology in Africa diagrammatically highlighted areas of high artefact density that were more intensively utilised and inhabited and other areas that had lower and intermediate artefact densities, which indicated less frequent occupation and specific utilisation of land resources.

Recording the density of artefacts in a systematic way may reveal more about the utilisation of an area than through the distribution of sites. This approach is particularly useful in examining the spatial density of midden deposits and shell scatters.

Following the above methodology it was necessary to define site boundaries for the description sites and the mitigation of impacts upon these places. Indigenous archaeological sites can contain a wide variety of cultural materials and features. Boundaries of sites that are based on geographical features, such as a rock shelter and shell middens, can be easily defined. Other sites, such as shell scatters are more difficult to define.

According to Burke and Smith (2004:220) the decision on defining the extent of a site depends largely on the research and survey objectives. For this survey, it is important to define site boundaries for the purpose of site management and mitigation of impacts on sites. In this project area, stone artefact scatters are the most common feature. In archaeological terms, groups of stone



artefacts in clusters can be defined as a focus of past activity, especially when this activity is associated with foraging or camping activity (Burke and Smith 2004:66). Therefore distinct clusters of stone artefacts are considered sites. Stone artefacts that are in smaller clusters of up to five in one square metre, but overall less than 20 are termed 'background scatters'. Individual artefacts that do not seem related to a site are termed 'isolated artefacts'. These occur in large numbers across the NT landscape. As noted above, they are important in investigating past land use strategies but are difficult to manage due to their numbers and spatial diffusion across the landscape.

Aboriginal cultural heritage also has a range of sites known as Dreaming, Story or sometimes Sacred Sites (usually in the NT under the *Sacred Sites Act* 1989). These are heritage places that do not necessarily contain archaeological remains (although some do). Therefore, verbal testimony and historical records may be the only means of verification of their status as a heritage place. In Australian jurisdictions, the testimony of Aboriginal persons with appropriate links to a place and the requisite status within the community has legal recognition through the *Native Title Act* 1993.

## 7.2. Artefact Identification.

Identifying artefacts correctly is obviously important step in mapping and assessing cultural heritage features.

*Artefact scatters* may contain flaked or ground artefacts and hearthstones. Artefact scatters may occur as surface scatters of material or as stratified deposits where there have been repeated occupations. These scatters do not necessarily imply that prehistoric people actually camped on the site; rather, they may only indicate that some type of activity was performed there. Figure 1 shows a typical artefact scatter from a Frances Creek Mine survey area.



Figure 7 Typical artefact scatter from a Frances Creek Mine survey area.

*Stone Quarry* is a site where stones used for making flaked or edge-ground artefacts have been extracted from an outcropping source of stone. This is a broad definition of a stone quarry and there are further subdivisions of this site type (Hiscock and Mitchell 1993). According to Hiscock and Mitchell (1993) most surface hard stone quarries have associated reduction sites. Figure two shows a typical stone quarry from a Frances Creek Mine survey area.



**Figure 8 Typical stone quarry site from a Frances Creek Mine survey area**

*Knapping locations*, consisting of one or more knapping floors, are discrete scatters of artefacts, anywhere in the landscape, resulting from stone being worked or reduced at that spot. The criteria for a knapping floor are that the original block of stone can be at least partially reconstructed from scattered flaked stone pieces (Hiscock and Mitchell 1993). A knapping floor can exist as a feature within the context of an open site or archaeological deposit. However there are certain methodological problems in identifying such features arising from post-depositional processes. Figure three shows a typical knapping location site from a Frances Creek Mine survey area.



**Figure 9 A typical knapping location in the Frances Creek Mine survey area.**

*Rock Art sites*, include two main types of rock art, engravings and pounding's where the pattern is one of relief and the pictures were apparently produced by removing material from the rock surface and drawings, stencils and paintings where the material was added to the rock surface (Clegg: 1983). Can also include wax designs. No rock art sites have yet been identified in any of the Mt Bunday or Mt Goyder areas.

*Rockshelter occupation sites*, which contain deposits of cultural material that has built up over time. These sites contain flaked or ground stone artefacts, faunal material and other various items of Aboriginal material culture including at times human skeletal remains, wax and rock art designs.





**Figure 10 Example of a simple rockshelter in the Frances Creek Mineral Lease.**

*Grinding hollows, grooves, and patches* are the physical evidence of grinding and processing materials on basement rock. Grinding hollows and patches were utilised to grind food and plant materials (i.e. wild rice, seeds, nuts, tubers, bulbs) as well as ochre for painting. Grinding patches and grooves may also have been utilised to prepare edge ground axes during production and maintenance.



**Figure 11 Grinding hollow on quartz outcrop along the Frances Creek Railway Haul Road**

*Scar trees* are physical evidence of cultural activities on trees. In the Frances Creek region such trees have been identified as having scar associated with sugarbag (natural honey) extraction. Figure 6 shows a scar tree from the Frances Creek Mine area.



**Figure 12** An example of a scarred tree found in the Frances Creek Mine area.

*Contact and Historic sites* within the Frances Creek region contain foreign materials, such as glass, ceramics or metal that exhibit modification by Aboriginal people. Alternatively in this region a contact site may be identified by the presence of Chinese or European objects which may be unmodified but are the result of transportation to that locality by Aboriginal people. Contact sites represent the interface between Aboriginal, European and Chinese peoples during early forays into the Northern Territory. Figure seven shows a contact site from a Frances Creek Mine survey area.



**Figure 7.** Chinese pottery on a site within the Frances Creek Mine survey area.



Artefact morphologies will be described by using the four types of artefacts as defined by Hiscock (1984:128-129):

- **Flake:** Flakes exhibits a set of characteristics that indicate they have been struck off a core. The most indicative characteristics are ring-cracks, which show where the hammer hit the core. The ventral surface may also be deformed in particular ways, for example a bulb or erailure scar. Figure eight shows a typical flake found in the Frances Creek Mine area.



Figure 8. Tuff flakes found together in the Frances Creek Mine area.

- **Core:** A piece of stone with one or more negative flake scars, but no positive flake scars. Figure nine illustrates a typical core from the Frances Creek Mine area.



Figure 9. An example of a tuff core found in the Frances Creek Mine area.

- Retouched Flake: A flake that has had flakes removed from it, identified by flake scars on or deriving from the ventral surface. Figure ten shows a typical retouched flake from the Frances Creek Mine area.



Figure 10. An example of a retouched flake found in the Frances Creek Mine area.

Other artefacts and implement types that have been identified in the Northern Territory are listed below following characteristics as outlined by McCarthy (1976), Cundy (1989), Kamminga (1982) and Holdaway and Stern (2004).

*Unifacial Points* are flakes that have been retouched along the margins from one surface (either dorsal or ventral) to give or enhance its pointed shape. These unifacial points are sometimes symmetrical or leaf shaped. Figure eleven shows a unifacial point from the Frances Creek Mine area.



Figure 11. An example of a tuff unifacial point found in the Frances Creek Mine area.

*Bifacial Points* are retouched on both the ventral and dorsal surfaces of a flake to enhance or give the artefact its pointed shape. These points may have the platform removed and the proximal end rounded. Figure twelve shows a typical bifacial point from the Frances Creek Mine area.



Figure 12. An example of a bifacial point found in the Frances Creek Mine area.

*Serrated Points* are bifacial flaked points that have serrated margins.

*Edge ground axes* are classified primarily by the shaping process of flaking, pecking and polishing. These generally have only one working edge that has been ground to a sharp margin but there are also examples with two leading edges. Figure thirteen shows a typical edge ground axe from the Frances Creek Mine area.



Figure 13. An example of an edge ground axe found in the Frances Creek Mine area.



*Grindstones* are characterised by a worn and abraded surface(s). The surface may either have concave depression or a convex surface. Figure fourteen shows a typical grindstone from the Frances Creek Mine area.



Figure14. Example of a sandstone grindstone found in the Frances Creek Mine area.

*Hammerstones* show use wear on the surface in the forms of abrasion, pitting and edge fracturing with some negative scarring from the process of producing stone tools. Figure fifteen shows a typical hammerstone from the Frances Creek Mine area.



Figure15. A grindstone and a hammer stone found in the Frances Creek Mine area.

### 7.3 Survey Strategy

Following the methodological approaches outlined above, the following survey strategy was adopted:

1. Assess the likelihood of locating cultural features within each land unit based on previous surveys in the region. This information then feed into a sampling strategy for the impact zones.
2. Map the proposed survey area to GIS, then create blocks and transects to inspect while in the ML. Upload the UTM coordinates of these blocks and transects to a hand held GPS unit.
3. Transect these areas using a team of three people at approx 20 metres separation. See below for detailed analysis of the survey coverage and constraints.
4. The survey team was composed of two archaeologist/ surveyors (Ben Keys and Tim Maloney from Earthsea) who located and recorded sites, and a representative of the Traditional Owning group (Graham Keynon) who located sites and provided details information on fauna, flora and cultural heritage where possible.
5. Archaeological and other cultural heritage features were recorded according to the above methodologies, using either a standard recording form or PDA.
6. The location of all sites was recorded using a hand held GPS, using datum GDA94.
7. The tracks of all transects were recorded using the tracking feature on the GPS.
8. Most of the located features were flagged with flagging tape to assist others relocating the places.

The results of this survey, along with a map of transects completed are presented in the next section.



#### 7.4. Survey coverage

The survey nominally covered 100% of the impact areas, plus some areas associated with the impact areas. In total, 101 hectares of land were surveyed using the above methodology. There were some issues that impacted on the overall survey efficiency:

1. The ground visibility ranged from near 100% in burned areas to less than 10% in unburned areas. Approx 50% of the ground area was burned at the time of the survey.
2. Low ground visibility in areas that were highly likely to contain archaeological materials were designated conservation zones with appropriate buffers.
3. The transect width of approx 50 metres was close enough to locate almost all sites. Small scatters and isolated artefacts may have been missed in areas that have medium to low visibility. To survey at 100% sampling rate for stone artefacts, it is estimated that the team spacing should be approx. 5 metres apart hence multiplying the survey time by five.

## 8.0. Results

A total of 14 sites were recorded in the survey, plus an additional four areas that are highly prospective of archaeological materials. The abridged results of the survey are present in the next table. The full site descriptions are included electronically with the report, including the grid coordinates of the site centroids.

Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
MB001	Artefact scatters, grinding groves	TRL Exploration Zone 29.	Flat granite outcrop and isolated boulders within sand plain ~400m east of large granite outcrop/hill. High density stone artefact scatters/clusters (>1000 artefacts), grinding groves and flaked glass. Diverse tool range including contact period items. Possible subsurface deposit. Majority of site remains in good condition with minimal areas of disturbance.	The site falls within the proposed exploration drill zones issued by TRL.	Medium. (This site may be able to inform studies on the regions archaeology, particularly its potential trade routes, chronologies of occupation and contact period).	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Additionally any subsurface deposits should be excavated and cultural material analysed and dated if possible. Artefacts to be relocated or returned to Traditional Owners.
MB002	Stone artefact scatter	TRL Exploration Zone 20.	Artefact scatter, diverse artefact types and materials. Located on a black soil plain. No evidence of subsurface deposit. Some portions of the site have been disturbed.	The site falls within the proposed exploration drill zones issued by TRL.	Low- medium. (There are a number of similar sites in the Mt Bundy region; however these sites may be able to inform the record when conserved as site complexes.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB003	Stone artefact scatter	TRL Exploration Zone 20.	Artefact scatter, diverse artefact types and materials. Located on a black soil plain with small seasonal creek bordering southern end of site. No evidence of subsurface deposit. Some portions of the site have been disturbed.	The site falls within the proposed exploration drill zones issued by TRL.	Low- medium. (There are a number of similar sites in the Mt Bundy region, however these sites may be able to inform the record when conserved as site complexes.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.

Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
MB004	Stone artefact scatter	TRL Exploration Zone 15.	Low density artefact scatter, diverse artefact types and materials. Located on top of ridge line. No evidence of subsurface deposit. Some portions of the site have been disturbed.	The site falls within the proposed exploration drill zones issued by TRL.	Low (Highly disturbed portions of site. There are a number of similar and better preserved sites in the Mt Bundy region.	Conserve in situ until decision on mining potential reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB005	Stone artefact scatter	TRL Exploration Zone 15.	High density artefact scatter, diverse artefact types and materials. Located on lower slopes of ridge line, adjacent sand plain and seasonal creek. Possible subsurface deposit. Some portions of the site have been disturbed.	Eastern portion of site falls within the proposed exploration drill zones issued by TRL.	Medium. (This site may be able to inform studies on the regions archaeology, particularly its potential trade routes and chronologies of occupation.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Additionally any subsurface deposits should be excavated and cultural material analysed and dated if possible. Artefacts to be relocated or returned to Traditional Owners.
MB006	Stone artefact scatter	TRL Exploration Zone 13.	Artefact scatter, diverse artefact types and materials. Located on top of ridge line. No evidence of subsurface deposit. Some portions of the site have been disturbed.	The site falls within and extends beyond the proposed exploration drill zones issued by TRL.	Low- medium. (There are a number of similar sites in the Mt Bundy region; however these sites may be able to inform the record when conserved as site complexes.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB007	Stone artefact scatter	TRL Exploration Zone 22.	Low density artefact scatter, diverse artefact types and materials. Located on top of knoll. No evidence of subsurface deposit.	The site falls within the proposed exploration drill zones issued by TRL.	Low- medium. (There are a number of similar sites in the Mt Bundy region; however these sites may be able to inform the record when conserved as site complexes.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.

Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
MB008	Stone artefact scatter	TRL Exploration Zone 22.	Medium density artefact scatter, diverse artefact types and materials. Located on top of knoll. No evidence of subsurface deposit.	The site falls within the proposed exploration drill zones issued by TRL.	Low- medium. (There are a number of similar sites in the Mt Bundy region; however these sites may be able to inform the record when conserved as site complexes.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB009	Stone artefact scatter	Adjacent to TRL Exploration Zone 22.	Low density artefact scatter, diverse artefact types. Located between two fence lines in lane way. No evidence of subsurface deposit. High levels of disturbance.	The site falls outside the proposed exploration drill zones issued by TRL.	Low (Highly disturbed portions of site. There are a number of similar and better preserved sites in the Mt Bundy region.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB010	Stone artefact scatter	Within land area A25438	Low density artefact scatters confined to outcropping granite boulders. Highly disturbed location from previous mining.	The site falls within the proposed exploration drill zones issued by TRL.	Low (Highly disturbed portions of site. There are a number of similar and better preserved sites in the Mt Bundy region.	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.

Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
MB011	Stone artefact scatter	TRL Exploration Zone 34.	High density artefact scatters, diverse artefact types and materials. Primarily small artefacts. Open grass plain and deflated iron stone surface. No evidence of sub-surface deposits.	The site falls within and extends beyond the proposed exploration drill zones issued by TRL.	Medium (Few large artefact scatters have been recorded in this region. The high diversity of raw material may inform studies on the regions archaeology, particularly its potential trade routes).	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this site should be collected, accurately mapped and fully recorded. Artefacts to be relocated or returned to Traditional Owners.
MB012	Stone artefact scatter, ground/pecked artefacts, grinding groves.	~ 800m north of TRL Exploration zones 30 & 31.	High density artefact scatters, grinding groves, granite cylinder stones and fragments of a ground axe. Cylinder stones are entangled within roots of large Fig Tree at southern end of site. Site is confined to the small knoll and rock outcrops on the northern slopes. Potential subsurface deposit on crest of knoll, around grinding stones and fig tree. Site is located 200m north from large permanent billabong.	Site falls outside proposed exploration drill zones issued by TRL. However is situated 40m west of main exploration zone access road.	High. (This site may be able to inform studies on the regions archaeology, particularly its potential trade routes, and chronologies of occupation. Additionally this site has high densities of artefacts & types. Including two extremely rare granite cylinder stones which have rarely been recorded in context and functions remain little understood.	Due to the assessed archaeological and Aboriginal significance this site should remain free from the impacts of any proposed mining or developments. An exclusion zone of 100m for any further developments should be enforced. At the request of Traditional Owners this site will be added to the official register of recorded sites.

Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
MB013	Scar Tree	TRL Exploration Zone 20.	Iron wood scar tree (living).	The site falls within the proposed exploration drill zones issued by TRL.	Medium. (Few scar trees have been recorded in the Mt. Bunday region. May be able to inform the record on dimensions and shape of wooden artefacts. General lack of preserved wooden material in Australian archaeological sites).	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this tree should be removed and conserved to an appropriate level, ensuring the archaeological significance is preserved.
MB014	Scar Tree	50m North of TRL Exploration Zone 20.	Iron wood scar tree (living).	The site falls 50m outside of the proposed exploration drill zones issued by TRL.	Medium. (Few scar trees have been recorded in the Mt. Bunday region. May be able to inform the record on dimensions and shape of wooden artefacts. General lack of preserved wooden material in Australian archaeological sites).	Conserve in situ until decision on mining potential is reached. Negotiation on ultimate fate of the site should await this decision. If mining is to continue this tree should be removed and conserved to an appropriate level, ensuring the archaeological significance is preserved.



Site ID	Site Features	Site Location	Description	Relationship to proposed works	Archaeological significance	Management recommendation
BD001	Granite Boulders	TRL Exploration Zone 29.	Granite boulder complex. High potential for archaeological sites. 0%ground visibility restricted surveys.	The site falls within the proposed exploration drill zones issued by TRL.	Not tested. Site highly prospective of archaeological materials.	No ground disturbance works should to be conducted at this site until the extent of archaeological material is ascertained.
BD002	Granite Boulders	TRL Exploration Zone 29.	Granite boulder complex. High potential for archaeological sites. 0%ground visibility restricted surveys to ascertain this.	The site falls within the proposed exploration drill zones issued by TRL.	Not tested. Site highly prospective of archaeological materials	No ground disturbance works should to be conducted at this site until the extent of archaeological material is ascertained.
BD003	Granite Boulders	Between TRL Exploration Zone 16 & 29.	Granite boulder complex. High potential for archaeological sites. 0%ground visibility restricted surveys to ascertain this.	The site falls between the proposed exploration drill zones issued by TRL.	Not tested. Site highly prospective of archaeological materials	No ground disturbance works should to be conducted at this site until the extent of archaeological material is ascertained.
BD004	Granite Boulders	TRL Exploration Zone 29.	Granite boulder complex. High potential for archaeological sites. 0%ground visibility restricted surveys to ascertain this.	The site falls within the proposed exploration drill zones issued by TRL.	Not tested. Site highly prospective of archaeological materials	No ground disturbance works should to be conducted at this site until the extent of archaeological material is ascertained.

## 8.1. Site Distribution Maps

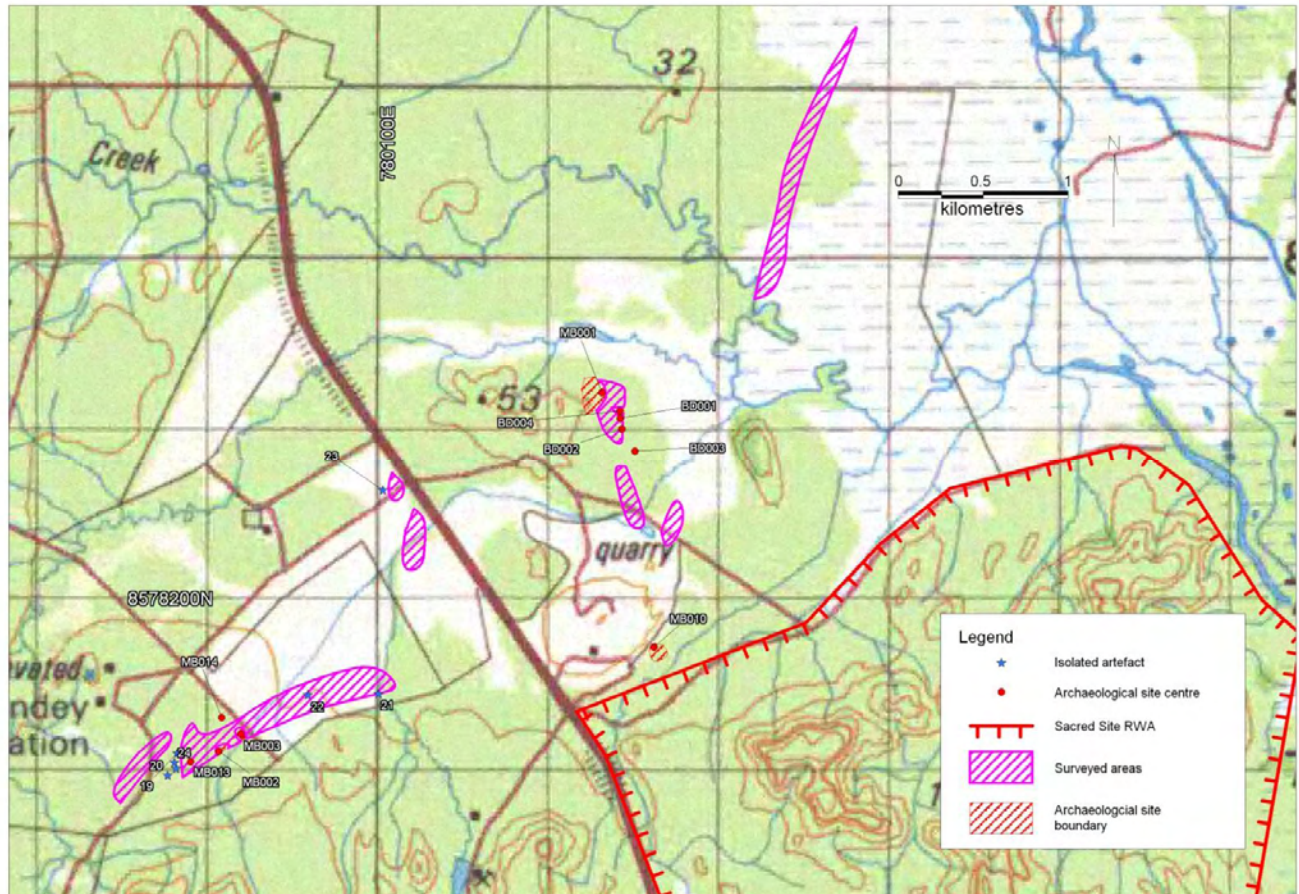


Figure 13: Site distribution Map showing survey areas, archaeological sites and Sacred Site restricted work areas in Northern Section of the Project Area



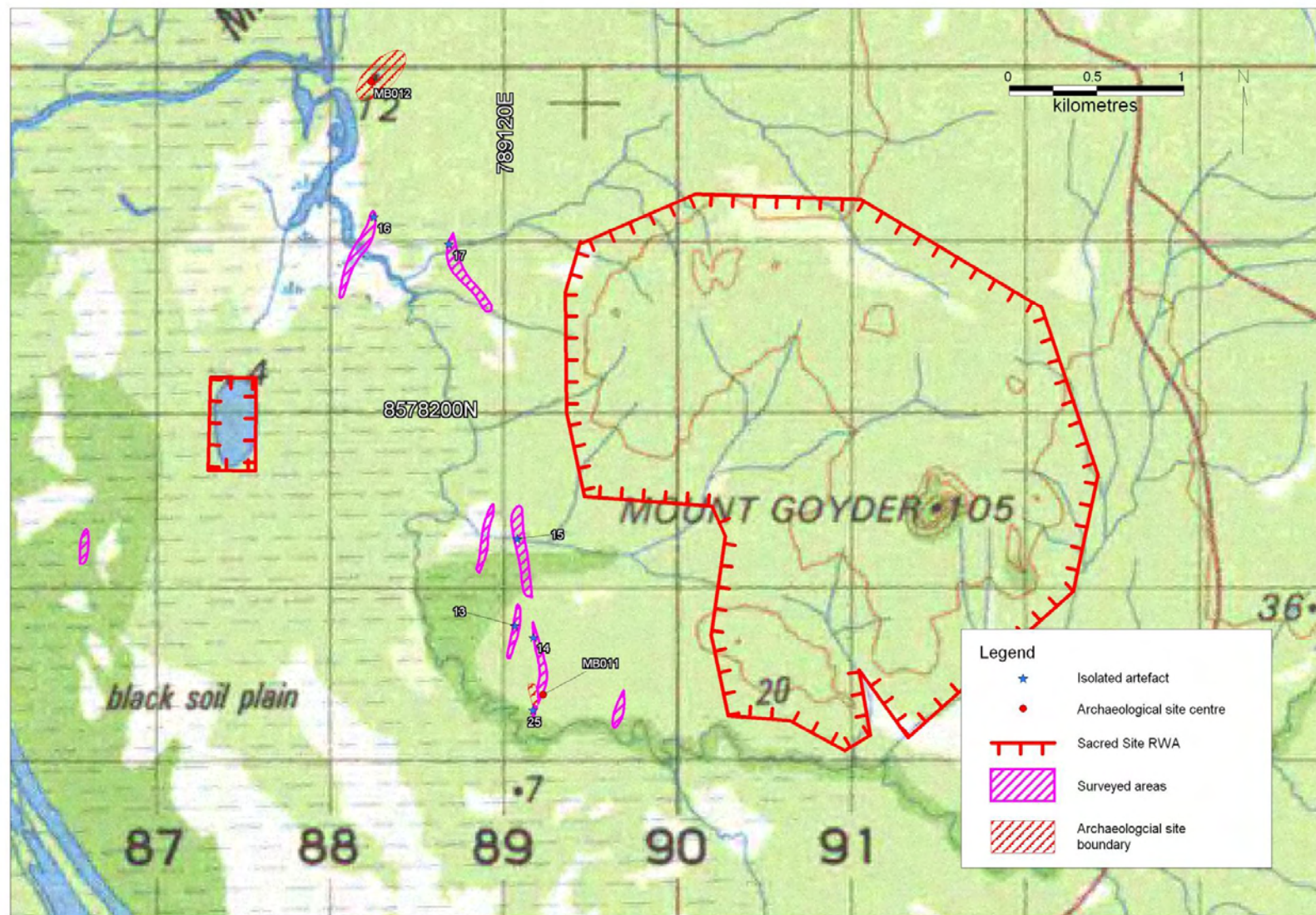


Figure 14: Site distribution map North East Section



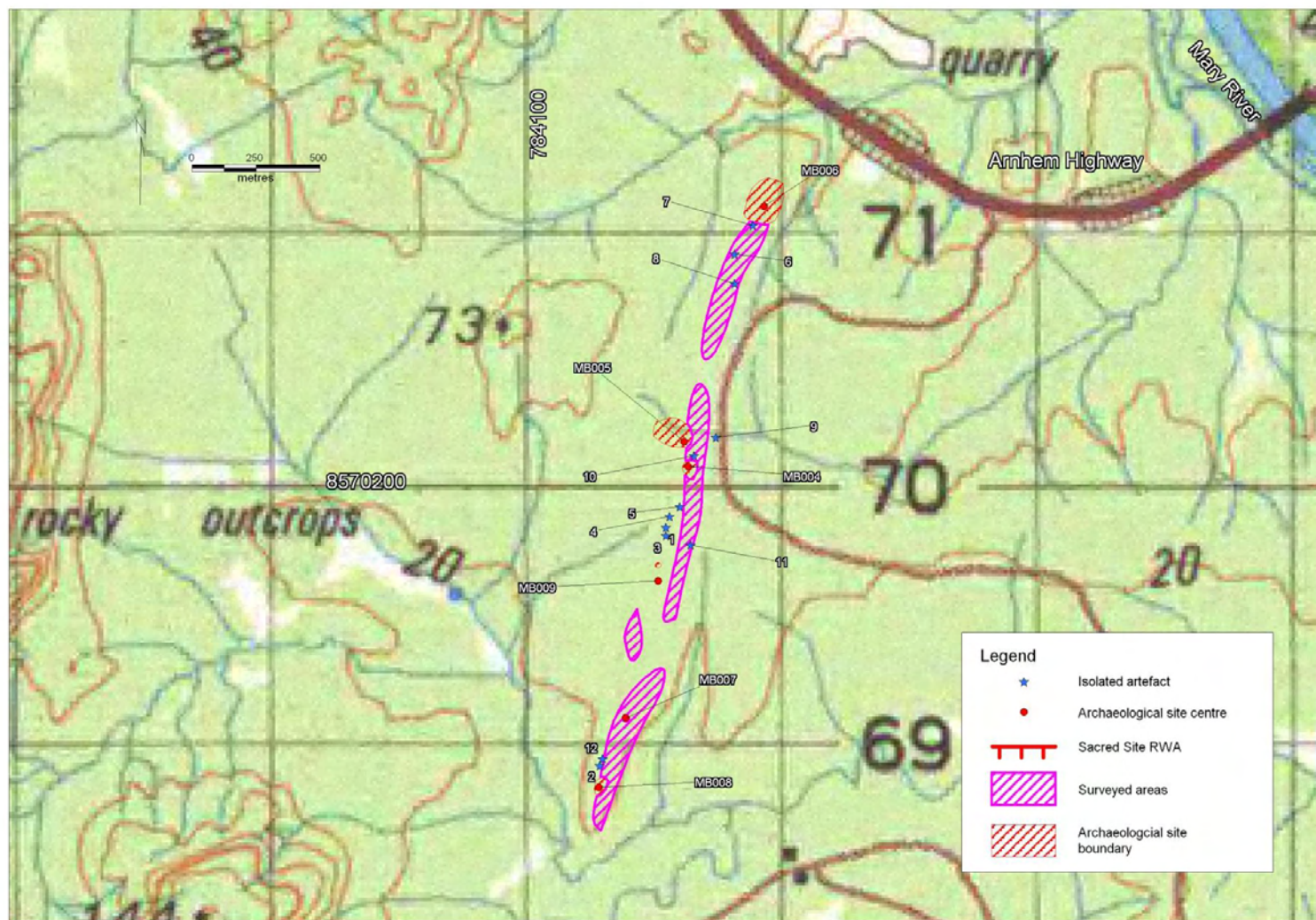


Figure 15: Site distribution map southern section

## 8.2. Site Images



Figure 16: Site MB001



Figure 17: Site MB004





Figure 18: Shaped cylindro-conical objects MB012



Figure 18: Typical minor outcrop with grinding hollows.



## 9.0. HERITAGE SIGNIFICANCE ASSESSMENT

### 9.1. Heritage Assessment Processes.

Archaeological and historic sites can be significant in a number of ways:

1. Significant to a group or many groups of people due to their connection to the past;
2. Sites that are significant to a specific group of people because they have religious or spiritual significance to those people (dreaming sites or story places for example);
3. Sites that are significant because of their research potential: their importance of the site in answering questions about past human behaviours;
4. Sites that are significant due to their representativeness or uniqueness: sites or places that are rare or unique and are therefore conserved as a representative sample.

It follows from this that the significance of sites is assessed using methodologies appropriate to the type of significance concerned:

1. The significance of Aboriginal sacred sites, and other important sites, should be assessed by the relevant Aboriginal custodians or owners. This principle is enacted into the Commonwealth *Native Title Act* and the *Land Rights (Northern Territory) Act*;
2. The significance of historic sites is decided by the wider community through the mechanism of a Heritage Council or other community represented group. These councils often set up significance criteria and benchmarking to answer the question 'is it significant enough?'<sup>2</sup>; and,
3. Sites that may be of scientific significance are assessed by the same process, however often after considering specialist recommendations.

Following the assessment of significance, the future conservation of a heritage place is decided by weighing up the level of assigned significance against the practicality of conserving the place. To assess the practicality of conserving a heritage site, regulatory mechanisms are usually used to assess the condition of the place (whether it will survive for much longer) and the economic implications of deciding to apply heritage registration. In most States and Territories, these decisions are made by a Heritage Council or the Minister.

In the mining industry, there are two practical stages of significance assessment. The first is at the exploration stage, where sites of any type are often avoided by exploration as there are other

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<sup>2</sup> See the Burra Charter Article 1 for a definition of cultural significance. Most Australian heritage acts use the Burra Charter as the guiding principles for their heritage assessment criteria (Marquis-Kyle et.al 2002:103)

options in terms of track and drill hole placement. In addition, the results of the exploration may show no minable resource; therefore it would not be considered wise to damage heritage sites for no tangible economic benefit.

In the mining stage, there are often larger economic issues to consider alongside the significance of heritage sites. In this case, a full heritage significance assessment and decision may be completed by the relevant authority, or using a process set up by regulation (in this case the process of Sections 29 and 39 of the *Heritage Conservation Act*). In these cases, it may be that the site is of such significance that it is quarantined from mining, or it may be decided that the site can be moved or disturbed by the mining process.

## 9.2. Assessment of scientific and research significance

Scientific and research significance, including archaeological significance, is decided by assessing the ability of a site or area to add to the scientific knowledge of history or pre-history. Areas or sites so judged are often recorded in detail or conserved in situ because they may add to our understanding of the past. In practice, this may involve conserving a place as a heritage site even if it does not hold much aesthetic value. It also may involve conserving a place until all practical scientific observations can be made, for example, in the collection of artefact scatters before a development commences.

## 9.3. Assessment of Aboriginal cultural heritage

Cultural heritage significance is held for locations divided into these categories (taken in part from Duke 2005:20):

1. Dreamtime or creation sites where places were created before the presence of humans on the earth. These places are named and fit into the spiritual and physical framework of the traditional belief system;
2. Places where the 'old people' did things: such as camp sites, hunting grounds, routes and tracks to other areas, ceremonial grounds etc. These places relate to the traditional life pre- and post- contact with Europeans.
3. Historic places, including fishing and hunting areas, settlement areas, burial sites, massacre and conflict sites. These places often overlap with traditional places and the archaeological record may reflect this.

4. Places that are used today: these places are significant as places to hunt, fish, camp etc. For example, the camping sites for modern 'bush' holidays are often considered significant to traditional owners.

Assessment of Aboriginal cultural heritage significance is largely dependant on the information given to the consultant during the survey, as well as that gained in similar surveys across the region. The consultant generally accepts the opinion of the Aboriginal traditional owner representative or site custodian if that person is qualified to talk for country and or the sites. Information can be crossed referenced against information given by other informants, for example, the significance of a particular story place may be different according to the information held by the person and their relationship to a particular place.

In addition, cultural heritage significance is assessed from the opinions of groups of senior people, often after discussion of sites, contents and the people's associations with an area. A group or community meeting discussing the work program can be useful in gaining a community perspective on the importance or otherwise of a group of sites.

## 9.2. Significance of Aboriginal sites located in the survey.

In a broad sense, the archaeological sites documented in the Mt Bunday Project Area have the potential to contribute to further understanding the now largely extinct economy and land use system in the following areas:

- Settlement and mobility of Indigenous people through time and space
- Nature and distribution of archaeological sites
- Technological change and variability in artefact assemblage
- Adaptation to changing environments and social conditions through time

This study is particularly important given the disruption of traditional life by colonisation as outlined in the ethnohistory for the region. Archaeological sites become more significant in these conditions because the traditional memory of place has been displaced with people moving into communities, towns and Darwin. See Territory Resource Cultural Heritage Annual Report 2008 Section 4.1 for an analysis of the significance of stone artefact scatters and raw material usage in the area.

### 9.3. Sacred Sites and Restricted Work Area Boundaries.

Senior Traditional Custodian of site Graham Keynon accompanied the Earthsea consultants on the survey as part of the participative resource mapping strategy. Graham's presence was important in ensuring that the survey team did not enter into any Sacred Site area. Part of the planned survey area intersected with the boundary of the Restricted Work Area associated with Mt Goyder. Graham told the survey team that there were, to his knowledge, no archaeological sites within the existing boundary of the Sacred Site (Mt Goyder).

Graham stated that the Mt Goyder site was a dreaming site that consisted of the rock formation of the Mount itself and the continuation of that rock formation under ground. Therefore, to drill into this rock formation, even where it dipped under the sand sheet would damage the site. Graham stated that Mt Goyder was a significance site, and that if it was damaged someone would get sick. Earthsea consultants believe that this is a very significant site and the RWA boundaries should not be breached in any way.

Graham stated that he thought the boundary of the RWA on the north and west side of the Mt Goyder site was situated incorrectly; it should be further to the north and west than currently is the case. It is recommended that this boundary be re-surveyed and mapped by a professional anthropologist/ surveyor in consultation with the senior site custodians. This mapping should be sent to all sections of Territory Resources that may inadvertently enter this site<sup>3</sup>.

Graham stated he believed that the other AAPA boundaries were correct.

While on the survey Graham and the team noted that there had been some drilling within the boundary of both the Mt Goyder and Mt Bunday Restricted Work Areas not associated with the work program in this report. It was apparent that there were at least two phases of past drilling, one some years ago and some in the recent few months. It is unsure which party was responsible for this drilling. Graham Keynon stated that he would approach the AAPA with a complaint on this matter.

### 9.4. The significance of archaeological sites located in the survey.

Most of the sites located in this survey proved to be of low to medium archaeological and cultural heritage significance. It is recommended that the sites be avoided during the exploration phase, and no damage be done to any part of the listed site or within 50 metres of the site (the boundaries of each site were surveyed to approx 5 metre accuracy. This data has been sent to Territory Resources Ltd in digital form).

Site MB012 contained a high density stone artefact scatter, two granite 'cylinder stones' and fragments of a stone axe. These artefacts were unknown to the custodian of the sites Graham Keynon. The cylinder stones had been shaped by pecking, but do not appear to be of a sacred nature. However, they're function and traditional importance is as yet unknown. These stones should not be disturbed in any way. It is recommended that a conservation zone of 100 metres be

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<sup>3</sup> An alternative to this recommendation is to seek a further Authority Certificate for works in the area.

established around the site. It is not considered necessary at this stage for the site to be fenced, however it may prove to be so in the future.

**Table 3: Conservation Zone recommendations for sites located in the survey.**

Site ID	UTM Easting Centeriod	UTM Northing Centeriod	Site Features	Management recommendation Exploration Phase	Conservation zone radius (m)
MB001	781440	8579382	Artefact scatters, grinding groves	Conserve in situ.	50
MB002	779190	8577274	Stone artefact scatter	Conserve in situ.	50
MB003	779322	8577373	Stone artefact scatter	Conserve in situ.	50
MB004	784761	8570256	Stone artefact scatter	Conserve in situ.	50
MB005	784746	8570354	Stone artefact scatter	Conserve in situ.	50
MB006	785058	8571275	Stone artefact scatter	Conserve in situ.	50
MB007	784517	8569271	Stone artefact scatter	Conserve in situ.	50
MB008	784412	8569000	Stone artefact scatter	Conserve in situ.	50
MB009	784644	8569809	Stone artefact scatter	Conserve in situ.	50
MB010	781747	8577885	Stone artefact scatter	Conserve in situ.	50
MB011	789348	8576551	Stone artefact scatter	Conserve in situ.	50
MB012	788358	8580083	Stone artefact scatter, ground/pecked artefacts, grinding groves.	Conserve in situ.	100
MB013	779024	8577213	Scar Tree	Conserve in situ.	50
MB014	779207	8577472	Scar Tree	Conserve in situ.	50
BD001	781547	8579230	Granite Boulders	Conserve in situ, resurvey when ground visibility improves.	50
BD002	781557	8579167	Granite Boulders	Conserve in situ, resurvey when ground visibility improves.	50
BD003	781634	8579037	Granite Boulders	Conserve in situ, resurvey when ground visibility improves.	50
BD004	781545	8579272	Granite Boulders	Conserve in situ, resurvey when ground visibility improves.	50



## 10.0. RECOMMENDATIONS

It has been demonstrated through archaeological and anthropological research that a rich and diverse suite of Indigenous cultural heritage places exist in the Mt Bunday and Mt Goyder areas. These places have high levels of cultural heritage significance not only to the Traditional Owners, but also possibly to the Northern Territory as a community (although this has not been tested at time of writing). Therefore it should be considered mandatory that adequate levels of cultural heritage management occur prior to, and during any proposed development projects.

Currently, the Indigenous archaeological sites documented in this study are protected under either the NT Sacred Site Act or the NT *Heritage Conservation Act* 1991. To ensure that these sites remain protected, it is recommended that the following be adopted:

1. Development of a cultural heritage management plan in consultation with the traditional owners or site custodians of the land. This may be part of a future ILUA in areas under current Native Title claim;
2. Avoid currently mapped sites by adherence to the conservation zone recommended in Section 9 of this report;
3. Avoid entering into or ground disturbance works in the known Sacred Sites (use the maps provided by AAPA as these are legal documents);
4. In relation to areas not subject land under a current Authority Certificate, there are two options:
  - a. Make an application for an Authority Certificate under the NT *Aboriginal Sacred Sites Act*, and operate in compliance with its provisions; or,
  - b. Ensure that no person from Territory Resources or its contractors enters land that may be a Sacred Site. Mapping of these sites should be done in consultation with the relevant site custodians with a professional anthropologist. See Section 9.3 for details.
5. Continue to conduct cultural heritage surveys in advance of work programs. These surveys should always include consultations with the relevant traditional owners/ site custodians;
6. Where work cannot avoid an archaeological site, use the permit process under Section 29 and 39 of the *Heritage Conservation Act* to assess the significance of a site and obtain a permit to disturb if the site proves to be of low heritage significance. Note that a separate review process is in place in the *Sacred Sites Act*. This can only be started after the issue, or refusal of, an Authority Certificate.

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## **Attachment 1. Mt Bunday Archaeological Site Database**

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**APPENDIX 2      EXPENDITURE STATEMENT**