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APPENDICES
1.0 INTRODUCTION

Parks and Wildlife Commission of the Northern Territory commissioned the Office of Environment and Heritage (OEH) to conduct an archaeological survey of the proposed expansion of the car park and camping grounds at Wangi Falls in Litchfield National Park. The survey was conducted on 28 October 2004 by Gerard Niemoeller and Dianne Bensley.

This survey was conducted in response to concerns raised by Werat Traditional Owner Daisy Marjar over the proposed expansion. The current survey follows a preliminary inspection conducted by OEH in February 2004 that recommended a more detailed assessment of the area be conducted once a higher level of visibility was available (Appendix 1).

Three aims were identified for this study:

1. Identify cultural heritage values through consultation with Werat Traditional Owners
2. Identify previously recorded heritage places on relevant Territory and Commonwealth registers
3. Conduct a survey of the proposed expansion to identify archaeological places and objects protected under the Northern Territory Heritage Conservation Act 1991 and provide management options.

This report has been prepared for Northern Territory Parks and Wildlife Commission of the Northern Territory Government.

1.1 Location of the study area and development proposal

The study area is located at Wangi Falls within Litchfield National Park. The northern boundary of Litchfield National Park is situated approximately 60 kilometres south of Darwin. Wangi Falls is one of the major tourist attractions at the park and contains a sealed road entrance and car park, camp grounds, walkways and grass picnic areas.
As part of the capital works program Parks and Wildlife Commission is proposing to expand the existing car park and campground areas to cater for the growing number of tourists visiting Wangi Falls. Location of the study area and proposed expansion is shown in Figure 1.

2.0 ABORIGINAL CONSULTATION

2.1 Consultation with the Werat Traditional owners
On the day of the survey (28 October 2004), archaeologists from OEH consulted with Werat Traditional Owners and Aboriginal custodians of the Wangi Falls area, Daisy Marjar and Tom Petherick, about the proposed expansion of the car park and camping facilities and about the archaeological survey strategy.

Proposed Expansion of facilities at Wangi Falls
Daisy Marjar and Tom Petherick both expressed considerable concern about increasing the tourist capacity at Wangi Falls. Whilst they recognise that the current car park facilities cannot handle the amount of tourists during the peak tourist season, they suggest that expanding the car park will only enable more tourists to visit the site and further increase overcrowding at Wangi Falls. Wangi Falls is a registered sacred site (5071-5), *Nundjurr Yangarrmada*, with the Aboriginal Areas Protection Authority and of considerable cultural significance to the Werat (Marjar *et al* 1995: Appendix 1):

Collectively owned by the Werat tribal group. Said to be the ‘starting up’ place for Werat original groups.
Associated with Water Lubras’ who later spread out to occupy the wetlands of the Wagait and Reynolds.

The boundaries of the scared site area 5071-5 is shown in the figure issued by the AAPA (Appendix 2).
During the peak tourist season it is not uncommon for 100 people to be swimming in the Wangi Falls pool. Daisy expressed specific concerns about people clambering over and jumping from the rock face.

Daisy seem to express greater concern about the car park expansion than the camping ground because she felt the new car park would impact upon stone artefacts. Daisy and Tom said there used to be lots of artefacts located in the area adjacent to the car park including an axe and grindstone. Daisy said they were no longer there and feared they had been collected by tourists.

Daisy and Tom submitted a proposal regarding the road between Cox Peninsular Road and Litchfield Park and the proposed expansion of the Wangi Falls area (Appendix 3).

The proposals relating to the Wangi Falls expansion suggest:

- More swimming holes within Litchfield Park be opened to the public to alleviate overcrowding at Wangi Falls.
- Camping should no longer be permitted at Wangi Falls and shifted to existing and proposed camping areas elsewhere in the area.
- The existing camp grounds at Wangi Falls be utilised as an overflow car park if required.

**Proposed Archaeological Survey at Wangi Falls**

OEH archaeologists explained to Daisy and Tom that the proposed survey would concentrate on those areas that would be directly impacted, the areas proposed for the new car park and camping area.

The survey would involve two stages, an intensive pedestrian survey to detect surface materials and some subsurface sampling employing small shovel test pits. Recovered sediments would be sieved to ascertain if archaeological materials existed in a subsurface context either because artefacts may have been obscured by the sands or moved vertically down through the sediments.
Daisy expressed her agreement with the survey strategy except subsurface sampling in the area proposed for the new car park. Both Daisy and Tom said they did not want any digging in that area. Daisy and Tom were happy for OEH archaeologists to undertake the survey without them being present.

3.0 ABORIGINAL HERITAGE LEGISLATION AND DATABASES

3.1 Protection of Aboriginal Cultural Heritage in the Northern Territory:
Aboriginal cultural heritage places in the Northern Territory may be protected under both Commonwealth and Northern Territory legislation.

At the Territory level Aboriginal cultural heritage places are protected under a legislative framework consisting of the Northern Territory Aboriginal Sacred Sites Act and Northern Territory Heritage Conservation Act. These Acts essentially define two types of Aboriginal cultural heritage places, ‘sacred sites’ and ‘non-sacred sites’.

3.1.1 Northern Territory Aboriginal Sacred Sites Act
An Aboriginal ‘sacred site’ protected under the Northern Territory Aboriginal Sacred Sites Act refers to a site within the meaning of the Aboriginal Land Rights (Northern Territory) Act 1976 and,

means a site that is sacred to Aboriginals or is otherwise of significance according to Aboriginal tradition, and includes any land that, under a law of the Northern Territory is declared to be sacred to Aboriginals or of significance according to Aboriginal tradition.

The Northern Territory Aboriginal Sacred Sites Act and all places protected under that Act are administered by the Aboriginal Areas Protection Authority.
3.1.2 Northern Territory Heritage Conservation Act 1991

A ‘non-sacred site’ of Aboriginal tradition essentially equates to a ‘prescribed archaeological place or object’ (archaeological sites) within the meaning of the Northern Territory Heritage Conservation Act. Regulation (3) of the Heritage Conservation Regulations identifies the following places as prescribed archaeological places:

1. Places containing painting or rock carvings;
2. Prehistoric or proto-historic occupation places;
3. Places containing human remains or burial artefacts (not being cemeteries as defined by the Cemeteries Act).

Prescribed archaeological places (or sites) are places containing archaeological materials or evidence resulting from Aboriginal occupation, activities or visitation in the past.

The Northern Territory Heritage Conservation Act and all places protected under that Act are administered by the Office of Environment and Heritage.

Prescribed archaeological places or objects are protected under sections 29 and 39 of the Act. These sections effectively provide a ‘blanket’ form of protection for all archaeological places or objects regardless of whether these places have been recorded or not. Under the Act, it is an offence to alter, disturb, damage, destroy or carry out works of any kind to a prescribed archaeological place without the written consent of the Minister for the Environment and Heritage.

3.1.3 Application of Northern Territory legislation

A ‘site’ or ‘place’ may contain features or objects relating to the Aboriginal tradition within the meaning of both a ‘sacred site’ and ‘prescribed archaeological place or object’ and therefore may be protected under the Northern Territory Aboriginal Sacred Sites Act and the Heritage Conservation Act. Many ‘prescribed archaeological places or objects’ afforded statutory protection under the Heritage Conservation Act are, however, not ‘sacred
sites’ within the meaning of the *Northern Territory Aboriginal Sacred Sites Act* and vice versa.

It is important to note then, that consideration of places within the meaning of one *Act* does not, therefore, constitute compliance with the statutory obligations for places within the meaning of the other *Act*. Further, consideration of sites or places within the meaning of one *Act* does not indemnify a party against prosecution under the other *Act* should they knowingly or unknowingly disturb or destroy a sacred site or prescribed archaeological place without the appropriate consent.

### 3.2 Cultural Heritage Registers

#### 3.2.1 Aboriginal Sacred Sites Register

Pursuant with Section 10(d) of the *Northern Territory Aboriginal Sacred Sites Act*, the Aboriginal Areas Protection Authority (AAPA) maintains a Register of Sacred Sites.

Wangi Falls is a registered sacred site (5071-5). A figure showing the boundaries of the scared site area is shown in the figure issued by the AAPA (Appendix 2).

The proposed car park expansion area and camping area does not infringe upon the sacred site boundaries.

#### 3.2.2 Northern Territory Archaeological Site Register

In accordance with Section 16(1) of the *Heritage Conservation Act* and pursuant to Regulation 4(1) of the *Heritage Conservation Regulations*, The Office of Environment and Heritage of DIPE establishes and maintains an archaeological sites register. This register records the location and details of prescribed archaeological places and objects throughout the entire Northern Territory.

A search of the NT archaeological site register revealed a total of 12 Aboriginal archaeological places recorded within a 5 kilometre radius of
Wangi Falls. **Table 3.1** below shows the grid coordinates for the NT archaeological site register search.

**Table 3.1 - Minimum and maximum grid references employed for NT archaeological site register search**

5071 Reynolds River 1:100,000 map sheet

<table>
<thead>
<tr>
<th>Easting</th>
<th>Northing</th>
</tr>
</thead>
<tbody>
<tr>
<td>52 677500</td>
<td>8539000</td>
</tr>
<tr>
<td>52 687500</td>
<td>8549000</td>
</tr>
</tbody>
</table>

The 12 archaeological sites identified by the NT site register search are listed in **Table 3.2**. The distribution of archaeological sites listed in **Table 3.2** is shown in **Figure 2**. **Table 3.2** shows that the majority of sites previously recorded within 5 kilometres of the Wangi Falls represent rock art sites. All of these sites are situated on top of the Tabletop Range and nearly all reflect the use of suitable sandstone surfaces for the application of rock art.

**Table 3.2 - Distribution of sites within the Wangi Falls area according to NT site register**

5071 Reynolds River 1:100,000 map sheet

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site no:</th>
<th>Easting</th>
<th>Northing</th>
<th>Site type</th>
<th>Report *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djingu 2</td>
<td>50710015</td>
<td>52 684761</td>
<td>8540758</td>
<td>Unknown</td>
<td>-</td>
</tr>
<tr>
<td>Djingu 1</td>
<td>50710016</td>
<td>52 684761</td>
<td>8540758</td>
<td>Paintings</td>
<td>Guse 1997</td>
</tr>
<tr>
<td>Djugorda 2</td>
<td>50710036</td>
<td>52 686028</td>
<td>8540501</td>
<td>Paintings</td>
<td>Guse 1997</td>
</tr>
<tr>
<td>Majar 1</td>
<td>50710045</td>
<td>52 683449</td>
<td>8542212</td>
<td>Wax resin</td>
<td>Guse 1997</td>
</tr>
<tr>
<td>Djugorda 1</td>
<td>50710046</td>
<td>52 685806</td>
<td>8540299</td>
<td>Stone Artefact Scatter</td>
<td>-</td>
</tr>
<tr>
<td>Nundjurr 1</td>
<td>50710057</td>
<td>52 685500</td>
<td>8546500</td>
<td>Ochre</td>
<td>Marjar et al 1995</td>
</tr>
<tr>
<td>Majar 2</td>
<td>50710058</td>
<td>52 683700</td>
<td>8542400</td>
<td>Ochre</td>
<td>Marjar et al 1995</td>
</tr>
<tr>
<td>Djingu 2</td>
<td>50710059</td>
<td>52 684700</td>
<td>8541100</td>
<td>Ochre</td>
<td>Marjar et al 1995</td>
</tr>
<tr>
<td>Jagorda 5</td>
<td>50710060</td>
<td>52 686400</td>
<td>8540400</td>
<td>Ochre</td>
<td>Marjar et al 1995</td>
</tr>
<tr>
<td>Jagorda 6</td>
<td>50710061</td>
<td>52 686500</td>
<td>8540300</td>
<td>Ochre</td>
<td>Marjar et al 1995</td>
</tr>
<tr>
<td>Ngalawonga 1</td>
<td>50710106</td>
<td>52 685492</td>
<td>8539320</td>
<td>Paintings</td>
<td>-</td>
</tr>
<tr>
<td>Ngalawonga 3</td>
<td>50710107</td>
<td>52 685544</td>
<td>8539312</td>
<td>Paintings</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 2: Distribution of previously recorded sites (5071 Reynolds River 1:100,000 map sheet)
3.2.3 Australian Heritage Database

The Australian Heritage Database contains information about natural, historic and Indigenous places of national significance to Australia.

The database includes places listed on the:

- World Heritage List
- National Heritage List
- Commonwealth Heritage list
- Register of the National Estate

These lists are established and maintained under an international and national legislative framework for the conservation of cultural and natural heritage places.

A search of the Australian Heritage Database for all lists utilising the search term of ‘Wangi Falls’ shows that the Wangi Falls Area is listed on the Register of the National Estate for natural values as an indicative place. According to the Commonwealth Department of Environment and Heritage the legal status of an indicative place is:

Data provided to or obtained by the Australian Heritage Council or the former Australian Heritage Commission has been entered into the database and the place is at some stage in the assessment process. A decision on whether the place should be entered in the Register has not been made.

A copy of the place details of Wangi Falls captured within the Register of the National Estate is shown in Appendix 4.
4.0 EXISTING ENVIRONMENT AT WANGI FALLS

4.1 Geomorphology
The study area is situated in the area immediately at the base of Wangi Falls on the edge of the Tabletop Range. According to the only major archaeological study of the wider region (Guse 1997) the study area is situated within the lowlands geomorphic unit. Pietsch (1989:1) provides a brief description of the lowlands unit as:

- **Lowlands:** The undulating lowlands of low to moderate relief have developed over granitic, metamorphic and flat lying Cambro-Ordovician sedimentary rocks. A thin veneer of sandy soil covers the granitic and metamorphic rocks. Red and calcareous soils are well developed over the sedimentary rocks.

4.2 Geology
The study area is located within the Pine Creek Geosyncline which consists of Early Proterozoic geological formations. The underlying geology of the study area is part of the Burrell Creek Formation of the Finniss River Group. The Burrell Creek Formation generally contains greywacke, siltstone, shale, minor conglomerate and occasional felsic volcanics. Some of these lithic materials may be suitable for the manufacture of stone tools.

In this part of the landscape the Burrell Creek Formation occurs as a narrow band between the massive outcrops of younger Depot Creek sandstone that form the Tabletop Range to the east and Cainozoic colluvial sediments of sand, gravel and laterite to the west grading to Quaternary alluvium of the Reynolds River catchment.

The Depot Creek sandstone unit is part of the Tolmer Group formed in the Middle Proterozoic period and is comprised of massive cross-bedded quartz sandstone with pebble bands.

Two Sisters Granite formations occur several kilometres to the west and contain granite and granodiorite lithics, whilst the Well Tree Schist formation...
adjoins the Burrell Creek formation to the north west of Wangi Falls. Lithics of the Well Tree Schist formation are comprised of hard slates containing mica, quartz and feldspars (Needham and Stuart-Smith 1984).

4.3 Vegetation
The study area is located within Vegetation unit 9 and regionally characterised by eucalypt woodland containing Stringybarks (E. tetradonta), Darwin Woolly Butt (E. miniata), Smooth stemmed bloodwood (E. bleeseri) with Sorghum grassland understorey.

The area around Wangi Falls also contains dense Monsoon vine forest that occurs in association with the falls and creek lines. The area proposed for the car park expansion and new camp ground is dominated by eucalypt woodland. Disturbance in the area proposed for the car park expansion has, however, facilitated the intrusion of some exotic species, especially Hyptis weed (Hyptis suaveolens).

5.0 PREVIOUS ARCHAEOLOGICAL RESEARCH

Two archaeological studies relevant to the current study area have been conducted in the past and are reviewed below.

5.1 Office of Environment and Heritage (February 2004)
The Office of Environment and Heritage conducted a preliminary inspection of the Wangi Falls area in February 2004. The inspection followed concern by Traditional Owner Daisy Marjar that the proposed capital works for Wangi Falls would impact upon archaeological materials protected under the Heritage Conservation Act 1991.

This inspection located two quartz artefacts within the proposed car park expansion area. Given the heavy vegetation resulting from the wet season it was recommended that a more comprehensive survey was undertaken during the dry season. A copy of the letter sent to Parks and Wildlife is included as Appendix 1.
5.2 Guse (1997)

Guse (1997) undertook research concerning archaeological sites in the Finniss and Reynolds River region. The study was undertaken in cooperation with Werat traditional owners and was aimed at documenting an archaeological chronology for the region, developing a synthesis of the regions prehistory through ecological and site variation in the environment.

Through review of geomorphology, geology and vegetation data for the region Guse (1997:10) differentiated three broad environmental zones, Alluvial Plains, Lowlands and Tabletop Range. Table 5.1 reviews data from Guse (1997:10) and describes attributes for each of the differentiated environmental zones.

**Table 5.1: review environmental data from Guse (1997:10)**

<table>
<thead>
<tr>
<th>Environmental Zones (after Guse 1997)</th>
<th>Geomorphic units</th>
<th>Geology</th>
<th>Vegetation units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alluvial Plains</td>
<td>Alluvial Plains</td>
<td>Cainozoic Sediments</td>
<td>53, 54</td>
</tr>
<tr>
<td>Lowlands</td>
<td>Lowlands</td>
<td>Tertiary-Quaternary, Two Sisters granite, Wangi basics, Sweets Member, Welltree Metamorphic</td>
<td>48, 9</td>
</tr>
<tr>
<td>Tabletop Range</td>
<td>Sandstone Plateau</td>
<td>Depot Creek Sandstone, Tertiary-Quaternary</td>
<td>32, 4</td>
</tr>
<tr>
<td></td>
<td>Dissected Foothills</td>
<td>Burrell Creek Formation</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Dissected Uplands</td>
<td>Burrell Creek Formation, Two Sisters granite, Tertiary-Quaternary</td>
<td>11</td>
</tr>
</tbody>
</table>

Guse (1997) employed a purposeful survey strategy involving relocation of previously known sites by Werat Traditional owners for further recording and, depending on the sites archaeological research potential, archaeological excavation.

A total of 55 sites were recorded during the survey representing six distinct archaeological site attributes including rock shelters, art sites, earth mounds, quarry, artefact scatters and grinding hollows. Many of these sites contained more than one of these attributes. Accounting for the multiple
components present at some sites, Guse (1997) divided site types into eight categories.

Some of the site characteristics recorded were closely associated with a particular environmental zone, such as rock shelters and art sites which were only found in the Tabletop Range zone. Mounds were only located on the alluvial plains and lowlands, whilst stone artefacts were distributed across all three environmental zones (Guse 1997:69). In some cases the sample of a particular site type was too small to assert whether distribution within one environmental zone was indicative of an environmental correlation.

Guse (1997:69) also showed a trend of decreasing site size between the large open sites on the Alluvial Plains to the small discrete sites on the Tabletop Range. Artefact densities were highest in sites located within Lowlands zone, followed by the Alluvial Plains and Tabletop Range zones. Stone artefact assemblages on the Alluvial Plains displayed the most diversity of artefact types. Sites within the Tabletop Range zone exhibited the lowest diversity. Stone raw material types were evenly distributed across the three zones (Guse 1997:72). Quartz was the most common raw material recorded across all three environmental zones. According to Guse (1997:72) this quartz is only available in the lowlands of Finnis River Region and distribution of this quartz reflects the movement of people across the three environmental zones.

The following table provides averages for site attributes recorded within the three different environmental zones.

<table>
<thead>
<tr>
<th>Environmental Zones (after Guse 1997:70-71)</th>
<th>Mean site size (m²)</th>
<th>Mean Artefact density/m²</th>
<th>Mean Artefact Diversity/per site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alluvial Plains (n=14)</td>
<td>9619</td>
<td>8.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Lowlands (n=14)</td>
<td>7436</td>
<td>12.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Tabletop Range (n=14)</td>
<td>80</td>
<td>6.5</td>
<td>4.8</td>
</tr>
</tbody>
</table>

From this evidence Guse (1997:75-76) proposed a model of prehistoric occupation from the Pleistocene (40,000bp) to the present in three phases.
The majority of data presented by Guse (1997:75) is used to discuss the nature of occupation during the most recent phase from 3000bp to the present from which much of it seems to date.

During this most recent period Guse (1997:75) posits that the nature of occupation was year round in all environments and shifted largely in response to annual weather patterns. The major focus of occupation occurred on the wetlands. Wet season occupation of the wetlands (Alluvial Plains and areas of Lowlands) would be restricted to the wetlands margins. The targeting of different resources shifted in response to the receding waters of the floodplains. As the floodplains dried up people would increasingly move between the wetlands and open woodlands to exploit raw materials and diverse ecological resources. Guse (1997:76) suggests that the Tabletop Range environment would provide a certain amount of resources but not in the same quantities as the wetlands.

Guse (1997:76) asserts this pattern is reflected archaeologically in several ways. Lowland sites would occur in the same frequency as sites within the Alluvial Plains. These sites would generally be smaller than the Alluvial Plains sites reflecting shorter periods of occupation, contain a higher density of artefacts but less diverse artefact assemblage reflecting more task specific activities (such as raw material procurement). Sites within the Tabletop Range zone will reflect the exploitation of diverse ecological resources found in the open woodland and monsoonal vine forests.

5.3 Predictive Model for Wangi Falls

Prior to undertaking an archaeological survey it is useful to assess the archaeological potential of an area. The archaeological potential of an area is related to the probability of Aboriginal occupation in the past and associated deposition of tangible remains and the actual probability of detecting those remains.

The probability of Aboriginal occupation in the past may be influenced by availability and access to resources such as food, water, stone, suitable
campsites and shelter. Aboriginal occupation or visitation of an area may also be influenced by other factors such as spiritual or ceremonial reasons where tangible evidence may not remain.

The probability of detecting those remains is influenced by a variety of post deposition factors including weathering, visibility, previous and current land use and the amount of undisturbed land retaining remnant vegetation.

As discussed in Section 4 the study area is located within the geomorphic lowland zone. Archaeological sites within the lowlands occur in similar frequency to that of the Alluvial Plains zone. These sites will on average be more dense and smaller reflecting task specific occupation.

The study area occurs in association with a permanent water source that supports stands of monsoon vine forest. Expanding on the model proposed by Guse (1997) it is probable that water sources around the edge of the Tabletop (such as Wangi Falls) may have been occupied for periods toward the end of the dry when water may have become scarce, or during unusually dry years. The monsoon vine forest in these areas would have afforded a diverse range of food resources. Similarly rock shelters may have been utilised intensively for short periods during the continuous heavy rains associated with the wet season.

The study area is situated on the margin of two environmental zones (Lowlands and Tabletop Range). Previous archaeological studies at a regional scale for the Northern Territory have demonstrated that the highest frequency of archaeological sites often occurs on the boundary between environmental zones. The high frequency of sites along boundaries reflects availability to resources bases from two or more environmental zones (Gregory 1998, Mitchell 1997 et al). Given the study area occurs within the Lowlands zone, on the border of two environmental zones and near a permanent water source the probability for Aboriginal occupation in the past is considered to be high.
Although the geology of the area (Burrell Creek Formation) may contain materials suitable for the manufacture of stone tools, the dominance of quartz on sites across all zones suggests that these materials do not commonly crop out or are of poor quality where they do crop out. This assertion is also supported by the secondary use of exotic lithics. These include siltstones and cherts from the Daly River to the south and Gerowie Tuff sourced from near Batchelor (Guse 1997:72). The closest quartz outcrops are most likely to occur several kilometres to the west of the study area within the Two Sisters Granite formations. Sandstone is also widely available from the adjacent Tabletop Range and may have been utilised or sourced for grinding activities.

Although the potential for occupation in the past may be considered high, the potential for stone artefacts is considered to be low to moderate. The study area is some kilometres away from stone suitable for flaking of stone tools. The use of sandstone for grinding activities cannot be precluded.

In terms of sampling, the probability of locating archaeological materials is also influenced by the size of the study areas. The study area consists of two areas approximately totalling 15,000m$^2$ or 1.5 hectares. Given the relatively small size of the study area the probability of the study area containing sites might be considered low. Given the context of the study area, near a permanent source of water that supports stands of monsoon vine forest, this potential should be considered moderate.

A number of post depositional processes may have also acted upon archaeological materials located within the study area. The area at times is likely to have become inundated many times during annual wet season rains. Depending on the ferocity of that inundation, artefacts may either be washed away or obscured. This is also dependant on the nature of the archaeological materials. Light shell remains may be washed away where as heavier stone artefacts may remain and become obscured by sediments. Archaeological materials may have also been disturbed by development of tourist facilities and manicuring of the area. Tourism impacts such as
camping, treadage, casual collection of artefacts are also likely to have acted upon the archaeological record. All of these agents diminish the potential to detect ‘in situ’ archaeological materials within the study area.

Considering the available information, it is possible to make some predictions concerning the archaeological potential of the current study area.

1. Given the study is associated with a permanent fresh water source and occurs on the boundary of two environmental zones the probability for Aboriginal occupation in the past is considered to be high.

2. The archaeological potential for knapped stone artefacts to occur within the study area is considered to be low to moderate due to the absence of suitable stone raw materials and dominance of sandstone within the area.

3. Given the small size of the study area, some of which may be disturbed, the study area is considered to possess a low to moderate potential to contain archaeological sites or materials.

4. A number of post deposition agents are likely to have acted upon the study areas and diminish the potential for archaeological materials.

Although the probability of Aboriginal occupation in the past is considered to be high due to association with permanent freshwater and moderate abundance of resources afforded by the monsoon vine forest, the archaeological potential of the area is considered low to moderate. The archaeological potential of the study area is therefore considered in overall terms to be moderate.
6.0 METHODOLOGY

6.1 Archaeological Site Recording Procedures

Archaeologists draw distinctions between dense concentrations of archaeological material and the sparsely distributed materials that often surround them. A site is a relatively dense and localised concentration of archaeological material. The sparsely distributed and often continuous archaeological material across the landscape and usually surrounding sites is termed the ‘background scatter’ or ‘off site archaeological material’.

For the purposes of these surveys an archaeological ‘site’ consisted of more than five artefacts located over a minimum area of 5m² with an artefact density of greater than 1/m² in at least one square metre.

Archaeological sites can be categorised into nine broad types. An archaeological site may however represent one or more of the following definitions. Archaeological site types are broadly categorised and defined below:

- **Stone quarry** is a location where stone has been extracted for the manufacture of flaked or ground stone artefacts.

- **Artefact scatters** may contain material representing a wide variety of activities. They may contain flaked stone artefacts, ground stone artefacts and hearths. A wide variety of stone raw materials may be represented within an assemblage. This site type usually occurs as surface scatters of concentrated materials or as a stratified deposit where there have been repeated occupations. Artefact scatters represent prehistoric places where people either camped or performed some type of activity associated with hunting and gathering.

- **Knapping floors** occur as a concentration of stone artefacts that represent an episode of stone artefact manufacture.
- **Axe grinding grooves** usually occur as elongated depressions in granular rock such as sandstone and less commonly in granite.

- **Art sites** include two main types of rock art. Engravings and poundings occur as a pattern that is one of relief and with pictures produced by removing material from the rock. Paintings, drawings and stencils were produced by the application of material to a rock surface.

- **Rock shelter occupation sites** occur at rock outcrops and contain a deposit of cultural material built up over time. These site types represent places of repeated occupation and commonly contain flaked or ground stone artefacts and faunal material. They may also contain rock art and grinding hollows, skeletal remains and other associated artefacts.

- **Stone arrangements** can range from simple piles of rocks (cairns) to more elaborate arrangements. Most stone arrangements are associated with ceremonial activities, whilst others may represent sacred or totemic sites. Stone features were also constructed by Aboriginal people as route and territory markers, the walls of huts, fish and animal traps, hides and seed traps.

- **Contact sites** represent the interface between Aboriginal and European or Chinese people during the early expansion into the Northern Territory. Contact sites often contain materials such as glass, ceramics or metal that exhibit signs of modification by Aboriginal people. A contact site may also be identified by the presence of foreign objects that may be unmodified but are the result of transportation to that locality by Aboriginal people.

- **Historic sites** generally contain concentrations of metal, glass and pottery artefacts. Historic structures or their remains are also designated sites. For the purposes of this study, only places or materials dating to the Second World War were deemed to be historic sites.
6.2 Artefact identification
Stone artefacts resulting from Aboriginal knapping activity were identified if they exhibited one or more of the following characteristics (after Hiscock 1984: 128):

1. A positive or negative ring crack.
2. A distinct negative or positive bulb of percussion.
3. A definite eraillure scar beneath a striking platform.
4. Definite remnants of flake scars (e.g. dorsal scars and ridges)

Three types of stone artefacts, flakes, retouched flakes and cores, were identified (after Hiscock 1984: 129). A flake exhibited one or more of the following characteristics:

1. A ring crack where the percussor struck the core.
2. A positive bulb of percussion.
3. An eraillure scar beneath a striking platform.

A retouched flake exhibits flake scars on the ventral surface and/or deriving from the ventral surface. A core has one or more negative flake scars but no positive flake scars. A flaked piece is a knapped artefact which cannot be classified as a flake, core or retouched flake. This category is used only when an artefact was definitely knapped but could not be placed in another group. A flake which has been retouched to produce a leaf shaped specimen was termed a point. Points were categorised into two categories, unifacial being those specimens retouched on one side, and bifacial being those specimens retouched on both sides.

6.3 Survey strategy for Wangi Falls area
Plans of the proposed expansion were provided by Parks and Wildlife and showed the extent of the proposed works in relation to natural topographic features and existing infrastructure at Wangi Falls. Plans supplied by Parks and Wildlife were shown in Figure 1.
The preliminary inspection of Wangi Falls by OEH in February 2004 located two quartz artefacts within the footprint of the proposed expansion area adjacent to the car park. The full extent of this scatter could not properly be assessed however due to thick vegetation. The inspection also highlighted the potential for subsurface materials to occur.

Recent fire through the area facilitated a high level of visibility for the current survey. Given that the proposed expansion represents small and definitive areas an intensive survey strategy was adopted for only those areas that would be directly impacted upon. A subsurface sampling strategy was also employed to test whether archaeological materials existed in a subsurface context.

In accordance with the wishes of Daisy Marjar and Tom Petherick, no subsurface testing was carried out in that area adjacent to the car park.

7.0 RESULTS

The survey was undertaken on 28 October 2004 over the period of half a day. An intensive series of transects was conducted across the proposed car park and camp ground extension areas as shown in Figure 3. Two archaeologists walked in parallel lines for each of these transects. A series of test pits were also excavated within the proposed camp ground to test for subsurface archaeological materials. A single isolated artefact protected under the *Heritage Conservation Act* was located during the survey.

**Proposed Car Park Expansion**

The pedestrian survey of the proposed car park located a single isolated quartz flake to the immediate east of the proposed car park area (WGS 84, 52 682371E 8544357N). Environment within the car park extension survey area was primarily open eucalypt woodland with a grass understorey. A stand of Monsoonal vine forest is situated to the north east of the car park area and is associated with a spring originating off the adjacent elevation.
Figure 3: Sampling methodology employed and isolated artefact
(base figure supplied by Parks and Wildlife Commission)
Sediment across this survey area consisted of loose to compacted yellow sands.

The proposed car park area also shows signs of disturbance likely to have been caused by unauthorised camping in the past. A possible result of this activity has been the infestation of the with Hyptus weed. Quantities of gravel fill were present within the proposed car park expansion, particularly along the existing fringes of the car park.

Visibility in this area was generally low, ranging between 0 - 60%, with an average of 10%. Although no subsurface sampling was undertaken within this area (in accordance with wishes of Aboriginal custodians) every chance was taken to inspect disturbed areas where subsurface sediments were revealed. These included numerous goanna burrows and remnant pits where trees had fallen. Some of these features revealed strata up to 30 centimetres deep. No cultural subsurface features were observed and sediments across the area were uniform.

**Proposed Campground Expansion**

The pedestrian survey and subsurface sampling of the proposed camp ground did not locate any archaeological sites or artefacts. Vegetation within the camp ground was dry open eucalypt woodland containing some iron bark species. Due to recent fire, visibility in this area was very high ranging between 70 - 100%, with an average of 80%.

A shovel test pit was conducted every 10 metres along a 100 metre tape running north south across the proposed camp ground area (11 pits in total) as shown in Figure 3. These shovel test pits ranged between 30-50 centimetres in depth. Sediments were sieved through a 3 millimetre mesh sieve. Sediments were relatively uniform, consisting of loose to compacted yellow sand containing very few rocks and some fine gravels. No cultural features were observed during the subsurface sampling.
Two concentrations of medium size cobbles of tuff and quartz were located close to existing camping bays. Although the stone appeared suitable for the manufacture of stone tools no evidence of knapping activity was observed. The absence of accreted sediments around or under these non-locally occurring cobbles, as will commonly result through successive wet seasons suggests that their deposition was relatively recent. The absence of associated flakes either on the surface or in a subsurface context also tends to indicate deposition through non-Aboriginal agents. Use of similar tuff cobbles is common along Litchfield roads in drainage channels and may have been recently transferred to the area by Parks and Wildlife or tourists.

8.0 DISCUSSION

The predictive model outlined in Section 5.3 assessed the archaeological probability of the study area to be moderate. This assessment was not confirmed by results of the survey which despite an intensive investigation only located one isolated artefact.

The paucity of Aboriginal artefacts may not necessarily reflect a paucity of Aboriginal occupation or visitation within the study area and may be largely explained by two factors outlined in the predictive model:

1. Limited access to resources which leave permanent traces within the archaeological record.

2. Post deposition agents acting upon archaeological materials.

Guse (1997) posited that sites within the lowlands reflected task specific sites and short term occupation. It was previously discussed that although the study area and immediate surrounds contained resources which may have been a focus for Aboriginal occupation, this occupation may have only been short term and left few, if any, traces for archaeologists to detect.
For instance limited access to stone resources suitable for the manufacture of stone tools may have precluded knapping activities within the study area. The impact on the findings of the survey needs be considered in light of the fact stone artefacts remain one of the most permanent traces left by Aboriginal people. Similarly, whilst the production of wooden implements may involve one or more stone tools, these tools were likely to have been transported to the site perhaps as part of a portable toolkit (given the absence of suitable replacement stone) and less likely to end up as part of the archaeological record.

The aquatic environment at Wangi Falls is unlikely to provide abundant shellfish resources that may have attracted Aboriginal gathering and subsequent deposition of another common enduring trace of the archaeological record. It may well be that occupation within the Wangi Falls involved activities that did not leave particularly enduring traces within the archaeological record, such as the gathering and consumption of the plant foods from the monsoon vine forest or consumption of fish.

Post deposition agents such as wet season inundation do not serve to preserve archaeological remains, particularly if these remains are less enduring than stone or shell. There is little doubt the Wangi Falls area has been inundated by torrents of water many times.

During consultation with Traditional Owners, Daisy noted the disappearance of a number of artefacts (particularly a grindstone and axe) she remembers were located in an area near the existing car park. As noted previously, the area proposed for the car park area exhibits disturbance that may have resulted from past camping or parking during times when the recreation area may have been less defined. Given the high tourist visitation at Wangi Falls it is highly likely that casual collection of stone artefacts has occurred.

It should also be noted that the preliminary investigation of Wangi Falls by OEH in February 2004, located two isolated quartz artefacts in the adjacent area north of the car park that were not relocated during this survey. The
failure of this survey to relocate these artefacts, or indeed a greater number despite being more intensive tends to indicate that:

- occupation of the area was generally limited and/or involved activities that did not leave tangible traces in the archaeological record
- the environment does not serve to preserve archaeological remains and/or significant post deposition agents have acted upon the archaeological record.

While these assertions may be plausible to explain the absence of archaeological materials, the fact remains that, in terms of protection and conservation of Aboriginal heritage under the framework of the Heritage Conservation Act only one prescribed archaeological object was located during this survey.

9.0 SIGNIFICANCE ASSESSMENT AND RECOMMENDATIONS

9.1 Identifying Significance

According to The Burra Charter (Australia ICOMOS Charter for Places of Cultural Significance) the cultural significance of a place means aesthetic, historic, scientific, social or spiritual value for past, present or future generations.

The cultural significance of a place is embodied in the place itself, and may include the fabric, setting, use, associations, meanings, records, related places and related objects.

In terms of prescribed archaeological places or objects resulting from Aboriginal activity and protected under the Heritage Conservation Act, the significance of a place is primarily assessed through ‘scientific’ significance. This essentially equates to archaeological significance.
This does not necessarily mean that a prescribed archaeological place or object cannot possess values other than scientific, but rather where aesthetic, social and spiritual values are not associated with tangible Aboriginal material evidence of the archaeological record as defined in the *Heritage Conservation Regulations*, then these values are not recognised under those sections of the *Heritage Conservation Act* that deal with prescribed archaeological places or objects.

In this case it is also relevant to consider the social and spiritual importance of the Wangi Falls area as expressed by the Traditional Owners.

**9.2 Aboriginal significance**

As discussed previously an area may have been visited by Aboriginal people in the past for spiritual or ceremonial reasons and this activity may not have necessarily left tangible traces in the archaeological record. Despite the paucity of archaeological materials in the study area, the proposed area may possess cultural significance to Aboriginal people.

Wangi Falls is registered as a sacred site under the NT *Sacred Sites Act*. Recognition of this place as a sacred sites indicates the area has been demonstrably visited for spiritual reasons in living memory and probably far into the past.

Although the proposed car park expansion area and new camping ground are not within the registered sacred site area, the Aboriginal custodians for Wangi Falls reiterated that these areas were of cultural significance to them.

**9.3 Archaeological significance**

The archaeological significance of a site is assessed according to two criteria, research potential and representativeness. These two criteria are interrelated.

- **Representativeness** refers to the frequency of a particular site type, or an activity at a site and the similarities between site types in the study area and the wider regional context. Rare or unique site types are
accorded higher archaeological significance than site types that are more common.

- **Archaeological research potential** refers to the degree to which a site can contribute data to answer specific research questions. The degree of a site’s research potential is related to factors such as size, structure and content reflecting the range and frequency of activities exhibited at the site, regional frequency and the state of preservation.

The survey of the proposed car park and camping ground located a single isolated quartz flake. Assessed against the criteria described above the archaeological materials located within proposed expansion areas at Wangi Falls (even when considered with those two artefacts previously located) cannot be considered significant. Quartz flakes are widely represented across the region and occur at many other locations within the landscape. This artefact also has a very limited research potential to contribute information on our understanding of Aboriginal occupation at a local level or within the wider region. This artefact is therefore considered to possess a low level of archaeological significance.

Following two pedestrian surveys in 2004 of the study area and subsurface sampling, both the proposed car park and camping ground are considered to possess a low level of archaeological potential to yield further archaeological information.

**9.4 Recommendations**

The study area has been identified as having cultural significance to the Aboriginal Traditional Owners of Wangi Falls. It is submitted that Parks and Wildlife Commission consider the proposal submitted by the Marinja Aboriginal Corporation and Traditional owners (Appendix 3), and seek a negotiated solution with Marinja Aboriginal Corporation and Traditional owners that may also involve consultation with the Aboriginal Areas Protection Authority.
This archaeological survey located a single quartz artefact approximately 10 metres to the east of the existing car park. Although this artefact is located outside of the proposed new car park, it is considered vulnerable to disturbance through associated activities should the development proceed.

Although the archaeological survey of the study area located a single artefact considered to possess a low level of archaeological significance and the study area has been attributed with a low level of archaeological potential, the Aboriginal Custodians consider this artefact an important part of the cultural heritage landscape at Wangi Falls. It is therefore recommended:

**Recommendation 1**
Should Parks and Wildlife proceed with the current proposal for the car park, management strategies be implemented to protect the surrounding area and values identified by Aboriginal Custodians including the single isolated artefact located during this survey. Such strategies may involve the fencing of the surrounding area and restriction of plant and construction activities to only that area defined for the new car park and the existing bitumised area;

**Recommendation 2**
Should Parks and Wildlife consider such strategies unfeasible then the proponent apply for consent from the Minister for Environment and Heritage to disturb a prescribed archaeological object protected under section 29 and 39 of the Heritage Conservation Act prior to undertaking any works that may disturb that prescribed archaeological object;

**Recommendation 3**
No further archaeological investigations are warranted regarding the proposed expansion of the Wangi Falls car park and camping facilities;
10.0 REFERENCES


Heritage Surveys, 1997. Archaeological investigations of the proposed Alice Springs to Darwin Railway: Howley Creek to Union Reefs, Pine Creek to Katherine and historic railway sites. Report for Department of Transport and Works.


APPENDIX 1
Dear David,

I am writing with regard to the 2003/04 Capital Works Program proposed for Wangi Falls within Litchfield National Park. This Office was recently contacted by Daisy Marjar, Traditional Owner for Werat Country, regarding the possible impact of these proposed works on cultural heritage values and archaeological materials at Wangi Falls.

An initial inspection of Wangi Falls by Heritage Conservation Services has identified a scatter of archaeological materials within the footprint of the proposed works. This material is protected under the Heritage Conservation Act and therefore cannot be disturbed in any way without the consent of the Minister.

The exact nature and extent of these materials could not be properly assessed, however, due to thick wet season vegetation and groundcover that may obscure archaeological materials from detection.

The area at Wangi Falls represents a place of cultural significance to the Werat people, and considering the abundant resource base available was likely to have been occupied intensively in the past. It is highly likely then that archaeological evidence of that occupation will also remain at Wangi Falls and the surrounding area.

In order to ascertain the extent and nature of archaeological materials within the Wangi Falls area it is recommended that a more comprehensive archaeological investigation be undertaken prior to the proposed expansion of the Wangi Falls amenities. It is also recommended that this investigation be undertaken during the dry
season, and preferably following a grass fire, when a higher level of visibility will be afforded.

Identification and documentation of archaeological materials will facilitate the development of options and management strategies for the 2003/04 Capital Works Program that will preserve the cultural heritage values of Wangi Falls and enhance the tourist experience at Wangi Falls and Litchfield National Park.

To assist with this process we attach a scope of works for an archaeological survey of the kind indicated and a list of suitable consultants that may be available to undertake the survey.

If you wish to discuss any of these issues please feel free to contact me on 89244142.

Yours sincerely

STEPHEN SUTTON
DIRECTOR HERITAGE CONSERVATION

27/2/2004
APPENDIX 2
APPENDIX 3
20 October 2004

Marinja Aboriginal
Proposal (Common Grounds N.T.) Corporation
by Marinja Aboriginal Corporation
and Traditional Owners

To The Aboriginal Community

N.T. Government
Conservation Commission
Parks and Wildlife
N.T. Heritage Commission
Aboriginal Areas Protection Authority (Sacred Sites)
Lands Planning and Environment (Transport Works)

We need a sealed road commencing from Coopernook, running along the freehold land of hundreds of hectares in line with Woolaving Community, as there is no hill this way, and on ridge country of the lowlands.

We need this road this way, as it will bypass the proposed dam area in the Finnis River and no hills for our trucks and long road trains.

As the hills are too steep commencing this old way, it will be a far better way to come and later you could cross the harbour at Channel Island.

1. Turn the camp ground at Wangi Falls into a car park.

2. Shift the campers and kiosk building to Drovers Rest, Dunrobin's Place, Cascade, and Woolaving Community. Will share the campers.

3. Other camp ground can go back to Batchelor, Banaban Tree Store, Linchfield Caravan Park.

4. Keep Sandy Creek, Surprise Falls open for camping.

5. Open more areas in the park for swimming.

6. Look at the table top for wet season swimming.

7. Get rid of the weed and new grasses out of the park, and feral pigs please thank you.

Our recommendation
No works to be done until Native Title's are heard in the area and land rights not for the park.

N.T. Heritage Commission

Attention: Gerard

28/10/2004
APPENDIX 4
Wangi Falls Area, Batchelor, NT

Photographs: None
List: Register of the National Estate
Class: Natural
Legal Status: Indicative Place
Place ID: 16431
Place File No: 7/03/008/0027
Statement of Significance: Not Available
Official Values: Not Available

Description:
Two waterfalls flowing over a sandstone escarpment of about 90m into a large pool at the base of the falls. The western edge of the pool is sandy and subject to erosion from human interference. The creek drains to the south-west and is fringed by PANDANUS and a riparian woodland of MELALEUCA LEUCADENDRON, ACACIA spp., LOPHOSTEMON sp., BUCHANANIA OBOVATA and other species. The foot slopes support a tall eucalyptus woodland. Rainforest trees grow on the waterfall cliffs including a large banyan tree and an umbrella tree. The latter is more representative of Queensland rainforests than Northern Territory monsoon forests. Above the waterfall, on the Tabletop Plateau are eucalypt open forest and woodland elements, with a swamplike area of PANDANUS SPIRALIS between the two creeks which feed the falls. The Tolmer Creek Valley is often swamplike and supports some tall paperbark trees.

History: Not Available

Condition and Integrity:
The development of Wangi Falls for increased recreational use is proceeding. Recreational use of the area has caused localised trampling, vegetation destruction and erosion, particularly of the poolside.

Location:
About 750ha, 39km west-south-west of Batchelor. AMG reference: 5071-825440.

Bibliography:
CCNT, (1987) DRAFT AREA STATEMENT FOR LITCHFIELD PARK.
LODER AND BAYLY PTY LTD. (1985). PROPOSED STAPLETON NATIONAL PARK DEVELOPMENT STUDY AND PRELIMINARY ENVIRONMENT REPORT.