# 1 INTRODUCTION

This report describes the results of an archaeological survey of the proposed Mount Grace Magnesium Metal Project. As indicated in Figure 1, the project area is situated approximately 2.5km east of the Batchelor township and on the southern side of the Batchelor Road.

The aim of the archaeological survey was to locate and record any archaeological objects or places as defined under the *Northern Territory of Australia Heritage Conservation Act 1991* and to assess the nature, distribution and significance of these materials. The brief also required recommendations regarding mitigative procedures where appropriate, and the formulation of long and short term management strategies for any archaeological materials located in the proposed development area.

This study was commissioned by URS Australia Pty Ltd and was carried out by Heritage Surveys. Scott Mitchell wrote this report.

# 2 ARCHAEOLOGICAL BACKGROUND

In order to determine whether any previously recorded archaeological sites are located within or adjacent to the study area, a search was initiated of four relevant heritage site databases:

- The Northern Territory archaeological sites register originally maintained by the Museums and Art Galleries of the Northern Territory (MAGNT) and now held by the Department of Lands Planning and Environment. This database contains extensive listings of historic and prehistoric archaeological sites across the Northern Territory.
- The Northern Territory Heritage Register held by the Heritage Conservation Branch, Department of Lands Planning and Environment. Archaeological and historical sites are incorporated on this register after being gazetted as Heritage Places under the *Northern Territory of Australia Heritage Conservation Act 1991*.

- The Register of the National Estate (maintained by the Australian Heritage Commission and available over the internet), which includes places of indigenous, historic and natural significance.
- The sites register held by the Northern Territory branch of the National Trust of Australia (a database which contains historic sites only and for which listing carries no legal implications).

The National Trust heritage register, the register of the National Estate and the Northern Territory Heritage Register contain no listings for the area within or immediately adjacent to the study area.

A search of the archaeological sites register maintained by the Department of Lands Planning and Environment revealed records of 104 prehistoric and historic archaeological sites on the Batchelor 1:100,000 mapsheet (Sheet 5171). The most frequent site types on the Batchelor mapsheet are stone artefact scatters (n=89, 68.5%). Quarries (n=26, 20.0%), historic sites (n=14, 10.8%) and rock paintings (n=1, 0.8%) have also been recorded in the region.
Note that an individual archaeological site can be represented within more than one site category.

None of the sites listed on the archaeological sites register are located within or adjacent to the study area. The closest recorded site to the Mt Grace project is Coomalie Waterhole, a historic site located on the Stuart Highway approximately 5km northeast of the project area.

## 3 HISTORICAL BACKGROUND

According to Tindale (1974) Batchelor falls within the traditional territory of the Ku?arakan people, whose estate extended from Batchelor in the northeast, across the Tabletop Range to the west and south to Tipperary Station. Numerous ethnohistorical accounts relating to Aboriginal activities in the region have been made from the late nineteenth century onwards (see e.g. Barrie 1982:238-244, Finnis River Land Claim report; Hiscock and Mitchell 1991).

The first major development within the Mt Grace project area took place in 1911 when the Commonwealth government established the Batchelor Experimental Farm. Covering an area of over 3000 acres east of the North Australia Railway line, the farm included what is now the Batchelor township, Batchelor Aerodrome and the study area. Houses, a blacksmith shop, wells, windmills and yards, and paddocks for the cultivation of crops such as melons, maize, rice and paspalum were constructed at the western side of the lease close to the railway line (Barrie 1982:80-83). 1918 photographs of farm include shots of the distinctive magnesite outcrops lining Coomalie Creek within the project area. These photographs suggest that vegetation within the study area had been cleared at this time, with the paddocks used for the grazing of horses, dairy cattle, cattle and possibly sheep (cf Barrie 1982).

In 1923 the Batchelor Experimental Farm was sold into private hands and it was cultivated intermittently until the Second World War. During Second World War an RAAF camp was established within the boundaries of the former experimental farm (Barrie 1982:127), but the location of this facility, and its relationship to the Mt Grace project is unknown. After the war the farm (later known as 'Batchelor' or 'Sundance' station), remained in private hands although it was subdivided during the development of Batchelor township. Subsequent owners included the former member of parliament Noel Padgham-Purich. Recently, a small open cut gold mine (Sundance) was operated in a 500m by 600m area at the western end of the project area (MLN 542 and MLN 543).

## 4 ENVIRONMENTAL BACKGROUND

Covering an area of up to 1900m north-south by 2600m east-west, most of the study area consists of flat to gently undulating black soil plains. Coomalie Creek, which extends through the northern end of the study area, contained running water at the time of the survey (June) and the creek contains at least one permanent waterhole.

Terrain within the study area is flat or gently undulating except in the southeastern portion where low hills and ridges have formed on outcrops of the

Wildman Siltstone Formation. Elsewhere the relatively gently undulating ground surface of the study area consists largely of Quaternary sediments with intermittent outcrops of basalt intrusives, stromatolitic magnesite and dolomite (Geology of the Rum Jungle Uranium Field 1984 1:100,000 mapsheet). On the northern margins of the study area magnesite crops out as discrete clusters of large boulders containing many low overhangs suitable for human occupation.

Vegetation in the survey area consists of stringybark, Darwin woolybutt and bloodwood woodland with sorghum understorey (Wilson *et al* 1991). Coomalie Creek and lowlying areas adjacent to the creek are lined with pandanus.

While a series of tracks extend through the study area, the majority of the ground surface which was inspected appeared to have been relatively unaffected by very recent land use activities. Notable exceptions are the ground surface within MLN542 and MLN543 at the western end of the study area, where the ground surface has been intensively altered during recent open cut mining. A small area has also been impacted by recent mineral exploration on the south bank of Coomalie Creek within the proposed open cut pit. It should be noted, however that the study area was cleared of vegetation during the time it formed part of the Batchelor experimental farm, and it is possible that the ground surface was subject to considerable alteration at this time.

## 5 METHODOLOGY

Fieldwork associated with this project was carried out over two days in June 2001 by Dr Scott Mitchell and Christine Crassweller. The whole of the survey area of approximately 4km$^2$ was surveyed in a series of parallel pedestrian transects at intervals of approximately 30m to 40m. Areas eroded by gullying, or where recent human activities had disturbed the ground surface were inspected particularly carefully regardless of whether or not they lay on the transects. This was because the density of vegetation cover was generally low in such places, and because it allowed the archaeologist to ascertain whether any subsurface artefact deposits were present.

On the basis of previous archaeological studies in the region, it was considered possible that at least six types of sites might be discovered during the survey:

*Earth mounds:* Artificial piles of sediment that may contain stone artefacts or organic material such as stone or bone.

*Midden*: Accumulations of organic material, usually shells, which represent human food refuse.

*Quarry*: A location from which stone used to manufacture flaked or ground stone artefacts has been extracted.

*Knapping floor*: A cluster of stone artefacts that represent the remains of an episode of stone artefact manufacture. Artefacts within a knapping floor can usually be conjoined back together.

*Artefact scatter*: These sites are locations where a range of activities has occurred such as the reduction of cores, the manufacture and maintenance of tools and the processing of plant foods. These sites will often contain a wider range of lithic materials than quarries and knapping floors.

*Stone arrangement*: These can range from simple cairns (piles of rocks) to more elaborate arrangements. Some stone arrangements were used by Aboriginal people in ceremonial activities whilst others may represent sacred or totemic sites. Other stone features were constructed for secular purposes. Such features may have acted as route markers, territory markers, hut walls, fish traps, hides, or seed traps.

A distinction is drawn between relatively dense, localised concentrations of archaeological materials and the sparsely distributed artefacts which often surround them. The relatively sparse scatter of artefactual materials is referred to as the "background scatter", while concentrations of such material are termed "sites". For the purposes of this survey an archaeological "site" was defined as a concentration of "...artefactual materials with a high density relative to the background scatter of

similar types of cultural debris at those or similar points in the landscape" (Hiscock 1995b:3). In particular, clusters of shell and/or stone were defined as “sites” if the following criteria could be met (after Hiscock 1995b:3):

1. More than ten shells or artefacts.
2. Area of at least 2m².
3. An average density of artefacts or shells at least five times that of the background scatter.

Note that all shell densities in this report are expressed in terms of MNI (minimum number of individuals) per square metre. In the case of bivalves MNI was determined by counting the number of hinges for each taxa and dividing by two. Minimum numbers of gastropods were calculated by counting the number of spires for each shell taxa.

Stone artefacts were identified as artefacts if one or more of the following characteristics were present (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, cores and retouched flakes, 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 *core* displayed one or more negative flake scars and no positive flake scars. A *retouched flake* exhibited flake scars extending onto the ventral surface and/or deriving from the ventral surface.

## 6 RESULTS

Ground surface visibility varied throughout the study area. Burning had been carried out early in the wet season leading to a patchy distribution of areas with high and low densities of vegetation cover. Ground surface visibility ranged between 20% and 80%. In general it was highest in relatively undulating ground at southern end of the study area, and lowest on the banks of Coomalie Creek at the northern margin of the study area.

Archaeological sites identified during the survey are listed in Table 1, with their position indicated in Figure 1. A total of six prehistoric sites were identified, consisting of a single open artefact scatter and five additional artefact scatters associated with overhangs and shelters in the magnesite outcrops lining Coomalie Creek. Each of these archaeological sites described in more detail below.

**Table 1**. Summary of archaeological sites identified in the study area

| Site name | Easting | Northing | Site type |
|---|---|---|---|
| Coomalie Creek 1 | 722528 | 8556439 | Artefact scatter, rockshelter |
| Coomalie Creek 2 | 722481 | 8556364 | Artefact scatter, rockshelter |
| Coomalie Creek 3 | 722743 | 8556346 | Artefact scatter, rockshelter |
| Coomalie Creek 4 | 723116 | 8556763 | Artefact scatter, rockshelter |
| Coomalie Creek 5 | 724249 | 8556952 | Artefact scatter, rockshelter |
| Coomalie Creek 6 | 723920 | 8557055 | Open artefact scatter |

In addition to the sites listed in Table 1, a cluster of isolated stone artefacts was identified around a magnesite outcrop at grid reference 724125E 8556900N. Present in densities between approximately 0.05/m² to 0.1/m², the isolated artefacts include a quartz bifacial point, quartz flakes and siltstone flakes and are spread over an area of approximately 100m by 100m.

A quantity of bottle glass and metal objects of relatively recent origin, both of no archaeological or historic significance, were observed in the immediate vicinity of Coomalie Creek. Only a single historically significant object, an iron pole from the

overland telegraph line was identified in the study area. The pole is located at the base of a small hill in the southwestern corner of the study area at grid reference 724234E 8555954N. It represents an “Oppenheimer Pole”: one of the iron poles used in the 1870s to replace the original wooden poles of the telegraph line (cf Taylor 1980:144).

No historic artefacts or structural remains were identified in the vicinity of the pole, which was presumably salvaged from the overland telegraph situated 5km to the west of the study area. While the function of the pole is not clear, it is possible that it was used as a boundary marker.

The paucity of historic archaeological materials within the study area is somewhat surprising given the historical significance of the Batchelor Experimental Farm and of military activities at Batchelor during the Second World War. However, this pattern is consistent with documentary evidence that the main focus of activities during both periods was close to the railway line in the vicinity of the present Batchelor township (Barrie 1982:83,111). In particular, no traces of the former RAAF camp known to have been built within the boundaries of the former experimental farm were located, and it is assumed that it was located to the west of the study area.

### 6.1 Coomalie Creek 1

Situated 200m south of the Batchelor Road, and 100m west of an access track, Coomalie Creek 1 is an artefact scatter located in a protruding outcrop of magnesite. The rock outcrop rises to a height of aproximately 4m above the surrounding black soil plain, which is vegetated by open eucalypt woodland. Low palms occur around the rock outcrop.

Several low overhangs have formed in the rock outcrop, particularly on its northern and eastern faces. The deposit on the floor of the shelters, which is formed from cracking black soils, is identical to the soils occurring in the general vicinity of the outcrop. Pigs or other digging animals have churned over the ground surface in several places around the outcrop, although no artefacts have been exposed in these disturbed areas.

The main concentration of artefacts at Coomalie Creek 1 is visible in a small (0.2m x 0.2m) area directly below the drip line under an overhang on the eastern face of the outcrop. More than 20 small quartz and dolerite flakes (less than 10mm in length), a 60mm long quartzite flake and a 40mm long quartz flake are visible in this area.

A second cluster of artefacts is visible on the northern side of the outcrop in front of and below an overhang dripline. This concentration of artefacts measures 1.0m by 0.3m and contains hornfels, tuff, quartz and slate flakes mostly less than 10mm in length.

Both clusters of artefacts visible on the ground surface at Coomalie Creek 1 occur where the ground surface has been slightly eroded by water action associated with a drip line. It is therefore possible that additional, subsurface deposits of artefacts which are not visible on the ground surface may be present at this site.

A corroded metal plate and a piece of burnt bone were also observed at Coomalie Creek 1, suggesting it has also been used relatively recently.

### 6.2 Coomalie Creek 2

Coomalie Creek 2 is an artefact scatter located at the northern end of a magnesite outcrop. It is situated 200m south of the Batchelor road and 150m north of the abandoned Sundance mine workings. Despite its close proximity to the open cut pit, there are no indications that the site has been impacted by recent land use practices.

Artefacts are visible on the ground surface in a concentrated cluster with relatively discrete boundaries. The artefact scatter covers an area of 10m north-south by 15m east-west and occurs in an area immediately north of, (and not directly at the base of), a rock overhang. Artefacts are present in densities of up to approximately 50/m² and averaging more than 10/m².

More than 90% of the artefacts visible on the ground surface are quartz. While the assemblage is dominated by quartz flakes, quartz bifacial points, hornfels flakes, hornfels retouched flakes, tuff flakes, a tuff bifacial point and a silcrete flake are also present. Flakes range in length from less than 10mm to more than 50mm in length.

### 6.3 Coomalie Creek 3

Coomalie Creek 3 occurs in a magnesite outcrop which is approximately 20m in diameter and 4m to 5m high. Numerous low overhangs are present around the margins of the outcrop, which is surrounded by a flat, cracking black soil plain. Sediment at the base of the outcrop is formed from reddy-brown soil high in clay content identical to the soil forming the surrounding plain.

Artefacts at this site are concentrated in two directly adjacent patches measuring 0.4m by 0.2m and 0.2m by 0.2m respectively. Both artefact exposures are located directly underneath the dripline on the western side of the outcrop, where fluvial action has caused minor erosion of the ground surface. The density of stone artefacts within these two small areas exceeds 100/m², and the clusters have very discrete boundaries. Small bone fragments are also visible on the ground surface within the artefact clusters. Given that artefacts are only visible where erosion has tangibly affected the ground surface, it is possible that there are additional subsurface deposits of archaeological material at this site.

The surface artefact assemblage includes quartz flakes, a quartz bifacial point, tuff flakes and hornfels flakes, with quartz flakes comprising more than 50% of the observed artefacts. While artefacts up to 30mm in length were observed, the great majority are less than 10mm in length suggesting that artefact manufacture was an important activity at this site.

Five metres to the west of the dripline and the main artefact concentrations are a hornfels ground edged axe and a single quartz bifacial point.

### 6.4 Coomalie Creek 4

Situated in a magnesite outcrop which is approximately 30m long and 4m high, Coomalie Creek 4 is an artefact scatter associated with a long, curved overhang on the southern side of the outcrop. Deposit at the base of the overhang consists of red brown clayey soil in which digging by pigs is evident. The deposit is similar or identical to the soil forming the surrounding plain.

Artefacts are visible on the ground surface in a band on the south side of the outcrop underneath the overhang dripline. It covers an area of approximately 15m east-west by 2m north-south and contains stone artefacts in densities of up to 20/m². While the assemblage is dominated by quartz flakes less than 10mm in length, it also includes silcrete flakes, tuff flakes, retouched flakes and cores, and quartz bifacial points.

While artefacts were observed only on the southeast face of the outcrop, it is again possible additional subsurface deposits of archaeological material, which have not yet been exposed by erosion, exist at the site.

### 6.5 Coomalie Creek 5

Coomalie Creek 5 is situated in a cluster of large boulders on the southern side of a waterhole in Coomalie Creek. The waterhole, which is a permanent source of freshwater, is known locally by the name of Janie Rocks while its Aboriginal name is *Tung'u* or "giant lizard" (Barrie 1982:24). Relatively flat, black soil plains vegetated by open eucalypt forest and grasses surround the waterhole, which is fringed with pandanus. The rock outcrop at this locality extends to a height of approximately 5m, with the largest boulder forming part of the southern edge of the waterhole.

Stone artefacts are visible on the ground surface in cleft between two sets of boulders. Approximately one dozen quartz flakes are visible on the ground surface in an area measuring 5m by 1.5m. Artefacts occur in densities ranging from less than 1/m² to 4/m², and range in length from less than 10mm to 40mm. Quartz flakes represent the only artefact type and lithology observed.

Quartz fragments occur in abundance in and around Coomalie Creek 5, but most of these fragments exhibit no artefactual attributes. Veins of quartz occur in the rock outcrop, and it is likely that the non-artefactual quartz represents shattered material eroded out of the rock. While the quartz artefacts within Coomalie Creek 5 may have been sourced in the immediate locality, there is no specific evidence to suggest the site was used as a quarry.

### 6.6 Coomalie Creek 6

This surface scatter of stone artefacts occurs on a black soil plain approximately 50m north of a small pandanus lined waterhole on Coomalie Creek. Approximately 20 stone artefacts are visible on the ground surface at this point within an area measuring 12m east-west by 5m north-south. The highest densities observed in the scatter were in the order of 4/m². The size of Coomalie Creek 6 was difficult to determine due to the low artefact densities (<1/10/m²) across most of the site.

Artefacts included a tuff flake, a quartz unifacial point, quartz flakes and a quartz bifacial point. Bottle glass also occurs at this locality but there was no indication that this material had been flaked by Aboriginal people.

Artefacts visible on the ground surface appear to have been exposed by the actions of digging animals. This pattern suggests there may be additional archaeological materials at this locality covered by a thin layer of sediment.

## 7 CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Significance assessment

The significance of archaeological materials within the project area is assessed in the following section, with particular reference to their scientific research value in a regional context. One of the reasons archaeological resources are regarded as significant is because "they constitute a unique, non renewable data base for the reconstructing the cultural past and for testing propositions about human behaviour" (Moratto and Kelly 1978:5). As such a site's scientific

significance depends on two characteristics, its representativeness and its research potential.

### 7.1.1 Representativeness.

This criterion concerns the extent to which the archaeological remains within a particular site are represented at other localities within the region. Unusual or unique sites are normally accorded a higher archaeological significance than sites that are very common. Given that all sites are in a sense unique (Bowdler 1984:2), they are normally considered in terms of categories (such as "quarry" or "knapping floor") when determining how common they are.

### 7.1.2 Archaeological research potential.

This criterion concerns the potential of a site to contribute to timely and specific research questions. A site's potential to contribute towards the resolution of research questions may depend on a number of factors such as its state of preservation and the range of past human activities reflected at that site.

### 7.1.3 Isolated artefacts

Isolated artefacts such those found within the study area are ubiquitous throughout the greater Darwin region (e.g. Hiscock 1995; Hiscock and Mitchell 1991,1992; Heritage Surveys 1995, 1997a, 1997b, 2000). While such materials could potentially make a minor contribution to the resolution of archaeological research questions such as the nature of prehistoric subsistence strategies, such information is likely to be available at many other localities. The archaeological significance of the isolated artefacts identified during this study is therefore regarded as minimal.

### 7.1.4 Overland telegraph pole

Any physical relic of the overland telegraph line holds significance through its historical associations with this extremely important development in Australian history. Nonetheless, the pole identified within the project area has been removed from its original context, and there is as yet no evidence to indicate its subsequent function. The pole is regarded as possessing a low level of archaeological significance.

### 7.1.5 Coomalie Creek 1-5

Coomalie Creek 1-5 are particularly of interest in this context due to their direct association with rockshelters. The physical context of these sites, and particular the nature of the deposit, (cracking clay soils similar or identical to soils on the surrounding plains) is relatively unusual. As such, they warrant further discussion in terms of the taphonomic processes likely to operate within them and the implications of these processes for assessing archaeological significance.

As noted above, in most of these sites artefacts are visible in clusters underneath driplines. It appears that artefacts have been exposed where the ground surface has been impacted by fluvial erosion and as a result it is possible that additional subsurface, stratified deposits of archaeological materials occur within Coomalie Creek 1-5.

Rockshelter deposits are relatively unusual in the local area, with none having previously been recorded on the Batchelor 1:100,000 mapsheet. If subsurface deposits are present in Coomalie Creek 1-5, it would not only make them unusual but would attribute them with high archaeological research potential. Such deposits would have the potential to reveal the chronology of human occupation of the Batchelor area, and may contain a wider range of archaeological materials (particularly organic materials) than open sites.

Coomalie Creek 1-5 vary greatly in terms of the quantity, density and diversity of archaeological material contained within them. For example, only a small number of quartz flakes were observed at Coomalie Creek 5. Coomalie Creek 3 by contrast, contains artefacts in densities exceeding 100/m$^2$, faunal remains and a range of stone artefact types and lithologies including points and stone axes. If subsurface deposits are present at these sites, however, then surface archaeological materials may be a poor indication of the total diversity and quantity of archaeological materials contained within them.

If subsurface archaeological deposits are present at Coomalie Creek 1-5, then these sites must be regarded as possessing a high level of archaeological significance. However it must be acknowledged that digging animals had disturbed the ground surface at various locations around the margins of the rock outcrops where the sites are located. No artefacts or other cultural materials had been brought to the surface in these areas, suggesting that if subsurface archaeological deposits do exist they may be relatively limited in distribution.

Secondly it should be noted that archaeological deposits in cracking clay soils are likely to be impacted by argilliturbation, or soil mixing caused by seasonal swelling and shrinkage of clays. This process causes artefacts to travel up and down the soil profile (cf Gregory 1998:111), and ensures that subsurface deposits in such a medium may have little or no stratigraphic integrity. If this was proved t be the case at Coomalie Creek 1-5, then any subsurface deposits would be of limited value in resolving questions regarding the chronology of human occupation.

Coomalie Creek 1-5 are currently regarded as possessing a high level of archaeological significance, due to the rarity of this type of site locally and due to their archaeological research potential. However, it must be acknowledged that further detailed research, in particular archaeological excavations, may require the perceived significance of these sites to be downgraded.

### 7.1.6 Coomalie Creek 6

Coomalie Creek 6 may provide information about prehistoric settlement patterns, raw material use and artefact manufacture. Nonetheless, the site is relatively small with limited diversity and quantities of archaeological materials. Stone artefact scatters represent a site type common across the Batchelor region and the type of information available from Coomalie Creek 6 is therefore likely to be repeated at many other localities. It is possible, however, that additional subsurface artefact deposits exist at this site and as a result it is regarded as possessing a moderate level of archaeological significance.

### 7.2 Statutory implications

Two kinds of heritage site are protected under the *Northern Territory of Australia Heritage Conservation Act (1991)*:

- declared heritage places and objects that are protected under section 33 of the Act, and
- prescribed archaeological places and objects that are protected under sections 29 and 39 of the Act.

It is an offense under the act to damage, destroy, alter or carry out work of any sort on these kinds of sites without the written consent of the Minister or Minister's delegate.

The Heritage Conservation Branch of the Department of Lands, Planning and Environment maintains a register of declared heritage places and objects in the NT. As noted above, there are no declared heritage places or objects within the proposed development area at Batchelor.

Under the *Northern Territory of Australia Heritage Conservation Act (1991)* a prescribed archaeological place is defined as a "...place pertaining to the past occupation by Aboriginal or Macassan people that has been modified by the activity of such people and in or on which the evidence of such activity exists...". The prehistoric archaeological sites Coomalie Creek 1 to 6 inclusive, together with the isolated artefacts identified within the project area, fall within this definition. As such the Minister's consent to disturb any of these archaeological materials would therefore be required under sections 29 and 39 of the Heritage Conservation Act.

The isolated overland telegraph pole found in the project area is not a prescribed archaeological place as defined in the act. Appendix One lists the criteria which a place or object must satisfy before it is listed as a declared heritage place or object under Section 33 of the act. In the consultant's opinion, the isolated overland telegraph pole found in the project area is unlikely to satisfy any of these criteria. Accordingly, the telegraph pole is not currently, and is unlikely to be, protected by the *Northern Territory of Australia Heritage Conservation Act (1991).*

### 7.3 Management recommendations

The relationship between archaeological sites and the proposed project facilities is illustrated in Figure 2. No archaeological sites or isolated artefacts are situated within the areas in which proposed project infrastructure will be constructed. Coomalie Creek 4 is situated 150m northwest of the proposed open cut pit, while the overland telegraph pole is located approximately 150m south of the proposed ROM pad. All other archaeological materials are located at least 400m from the closest proposed project facility.

Coomalie Creek 1-6 and the isolated artefacts are situated within or close to recorded Aboriginal sacred sites, restricting the range of activities possible in these areas. No archaeological sites are expected to be directly impacted as a result of mine construction, based on those plans currently available to the consultant. Given the existing plans for the mine, it is recommended that no further action will be required in terms of the *Northern Territory of Australia Heritage Conservation Act (1991).*

Nonetheless, it is possible that mine construction and operation will lead to increased activity levels in the vicinity of the archaeological sites, and that two adverse impacts could be associated with this activity.

- *Vehicle/machinery manoeuvring*

If four wheel drive vehicles or heavy earth moving machinery are operated accidentally or inadvertently on archaeological sites this may lead to the fragmentation of cultural materials such as stone artefacts and possibly the acceleration of erosion. It is recommended that work crews are informed about the presence and position of archaeological sites in the project area, and requested not to carry out activities within a 100m radius of these sites. It is further recommended that heritage areas should be marked on the ground with signs and/or temporary fencing.

- *Casual vandalism and unauthorised collection of archaeological material.*

There is a danger that increased levels of activity within the project area will be associated with increasing levels of casual site visitation. It is recommended that Mt Grace Resources make all employees and contractors aware of the heritage values

of the area during the induction process, and adopt a policy which penalises any personnel found guilty of interfering with archaeological sites.

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## APPENDIX A

### Criteria for registration as a declared heritage place or object, *Northern Territory of Australia Heritage Conservation Act (1991)*

(a) for the evolution of flora, fauna, landscape or climate;

(b) because of the richness or diversity of its flora, fauna, landscapes or cultural features;

(c) because it contains rare, endangered, or uncommon flora, fauna, biotic communities, ecosystems, natural landscapes or phenomena;

(d) in demonstrating the principal characteristics of the range of landscapes, environments or ecosystems, the attributes of which identify them as being characteristic of their class;

(e) as wilderness;

(f) for the maintenance of existing natural processes or systems;

(g) because it contributes to a wider understanding of natural history by virtue of its use as a research site, a teaching site, an example of a type of locality or reference area;

(h) by virtue of its association with events, developments or cultural phases in human occupation and evolution;

(j) by providing information contributing to a broader understanding of the history of human occupation;

(k) in demonstrating a way of life, custom, land use, process, function or design no longer practised, in danger of being lost or of exceptional interest;

(m) in demonstrating the principal characteristics of the range of human activities which take or have taken place in the Territory, including ways of life, customs, processes, land uses, functions, designs or techniques;

(n) by virtue of aesthetic characteristics or through technical, creative, design or artistic excellence, innovation or achievement held in high esteem or otherwise valued by the community;

(p) in being highly valued by a community for religious, spiritual, symbolic, cultural, educational or social associations; or

(q) through its close association with individuals whose activities have been significant in the history of the Territory.

# Archaeological Survey:
# Mt Grace Magnesium Project, Batchelor

A report to

**URS Australia Pty Ltd**
GPO Box 2005
Darwin NT 0801

**Heritage Surveys**

PO Box 41552
Casuarina NT 0811

July 2001

## Abstract

An archaeological survey of the proposed Mt Grace Resources magnesium project at Batchelor has been completed. A total of six prehistoric artefact scatters, five of which occur in direct association with rockshelters, were identified in the project area. An additional open artefact scatter, a cluster of isolated stone artefacts, and a single iron pole originally from the overland telegraph line were also identified.

No archaeological sites are expected to be directly impacted as a result of mine construction. Based on existing plans for the mine, it is recommended that no further action will be required in terms of the *Northern Territory of Australia Heritage Conservation Act (1991).*

Given that mine construction and operation is likely to be associated with increased levels of activity on the mine lease, there is a potential risk of sites being impacted inadvertently by vehicles or heavy machinery or through casual site visitation. As a result, it also recommended that:

- Work crews are informed about the presence and position of archaeological sites in the project area, and requested not to carry out activities within a 100m radius of these sites.
- Heritage areas should be marked on the ground with signs and/or temporary fencing
- Mt Grace Resources make all employees and contractors aware of the heritage values of the area during the induction process, and adopt a policy which penalises any personnel found guilty of interfering with archaeological sites.