

ARCHAEOLOGICAL SURVEY
FOR THE PROPOSED
ACCESS ROAD
FROM MAUD CREEK PROJECT AREA
TO THE STUART HIGHWAY, KATHERINE, NT

A report for URS

On behalf of Terra Gold Mining Ltd

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SUMMARY

This report describes the findings from a cultural heritage survey along a proposed access road from the Maud Creek Gold Mine site to the Stuart Highway south of Katherine. No archaeological or historic sites were recorded, and three isolated stone artefacts were identified during the survey.

Two areas along the proposed route were not surveyed due to poor surface visibility:

1. An area south of the mine pit (the MLN 1978 and MCN 4218 mining lease), which has been previously surveyed by Guse and Gregory (1994) and Guse (1999). In that report, no further surveys were recommended for the area.
2. A large limestone outcrop south of point D. This area has not been previously surveyed, and it is recommended that if the proposed access route crosses this rocky outcrop, an archaeological survey of the area should be undertaken after the area has been burnt, and prior to road construction.

As the three isolated stone artefacts located during the survey are located outside the area to be disturbed no further action is required for compliance with provisions of the *Northern Territory Heritage Conservation Act 1991*.

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1.0. INTRODUCTION

This report describes a cultural heritage survey along a proposed access road from Maud Creek Gold Mine to the Stuart Highway, a distance of approximately seven kilometres. Begnaze was commissioned by URS on behalf of Terra Gold Mining Ltd to carry out the survey. The Maud Creek Gold Mine is located approximately 19 kilometres northeast of Katherine and adjacent to the southern boundaries of Nitmiluk National Park.

The proposed access road travels in a southwest direction from the mine site, starting approximately 200 metres west of the existing pit and across country until it reaches a track on the northern side of an existing fence line track. The proposed access road continues west along this fence line track for approximately 1.5 kilometres and then changes to a southwest direction across country, until it reaches another track on the western side of another existing fence line track which ends at the Stuart Highway (Figure 1).

As archaeological surveys have been carried out previously over all the mineral tenements that will be disturbed by the Maud Creek Gold Mine Project (Guse 1999, Heritage Surveys 1996, and Guse and Gregory 1994), no further surveys are required in these areas.

The fieldwork took two days and was carried out by Christine Crassweller and Patricia Bourke in May 2007.

1.1. Consultancy brief

The aim of the study is to locate and record any archaeological objects or places and to ensure compliance with the provisions of the *Northern Territory Heritage Conservation Act 1991*. The archaeological survey will be carried out as follows:

- The archaeological and heritage study will identify archaeological material within the designated areas by means of a survey carried out in a manner that will ensure the highest possible coverage of the area.
- Any archaeological or heritage places, objects or classes of objects located during the survey will be recorded in such detail as to permit independent assessment of their significance. The location of any archaeological places and objects will include coordinates obtained by a Global Positioning System (GPS). All sites will be named in order to identify the sites on the ground.
- After assessing the significance of the archaeological places or objects that will be disturbed by the development, recommendations will be made regarding compliance with the provisions of the *Northern Territory Heritage Conservation Act 1991*.

2.0 BACKGROUND INFORMATION

2.1 Environmental background

The proposed access road crosses the Lowland Plains, where the local relief rarely exceeds 20 metres. The area is part of the Tipperary Land System (Christian and Stewart 1952) consisting of gently undulating plains and low hills on sandstone, limestone and some shale covered in mostly low open forest or mixed open forest dominated by *Eucalyptus tetradonta* and associated species with tropical tall grasses on the better drained areas and *E. tectifica* and *E. foelschaeana* on wetter grounds (Wilson et al. 1991). The plains are relatively stable because of the gentle slopes and sandy mantles (Wright 1961:60). There are infrequent small creeks and drainage is irregular and less intense around flats and swamps areas. (Kruse *et al* 1994). The creeks and swamps would have been a focal point in the region as a source of water.

The proposed access road is on the Daly River Basin geomorphologic unit and the geological groups of either the Tindal Limestone or the Jindare Formation which consist of either limestones with minor grey mudstone and maroon siltstone, and purple to dark brown quartzofeldspathic sandstone respectively (Needham *et al* 1987 and Sweet *et al* 1994). In the Katherine – Tindal area there is a bed of spheroidal nodule chert cobbles which lies on top of the Tindal Limestone (Kruse *et al* 1994:41). Chert was a common raw material used in the manufacture of stone artefacts. The limestone can outcrop as either low hills of irregularly weathered often rugged boulders, as scattered platy boulders which in some areas cover large expanses, or as caves and sinkholes (Christian and Stewart 1952).

The mine lease is located on the Elevated Backbone Country of the Volcanics Land System that borders the Daly River Basin and consists of eroding upland country described as undulating terrain with scattered hills, isolated strike ridges and alluvial flats. This area contains among other raw material, tuff, dolerite, siltstone and basalt, which were used to manufacture stone artefacts in the past.

Maud Creek Station is an operational cattle property with both cattle and buffalo (URS 2006). Various mineral exploration activities have also occurred intermittently in the area since the 1970s (Dames and Moore 1994:16).

2.2 Historic background

Permanent European presence in the Katherine region followed the construction of the Overland Telegraph in the early 1870s and the first pastoral lease was taken up at Springvale in 1876. However, even by the early 1900s Katherine's permanent white population only totalled six people (Powell 1996). It was not until 1926 when the railway from Darwin reached Katherine was there an influx of white people. World War II brought another influx of Europeans and it also meant a major dislocation for the Aboriginal people who were either moved into camps or further south. Army camps and airfields were constructed around Katherine and the airfield at Tindal (approximately eight kilometres south of Maud Creek Mine) was built in 1944.

During the 1880s gold miners, both European and Chinese, were working in the Maud Creek area. Ffrench and Browne set up a battery at the junction of Maud and Fourteen Mile Creek in 1888 for public crushing, however the charges were exorbitant and much of the gold was lost in the tailings (Jones 1987:92) and the battery was closed in 1891. The area was mined again for a short period in the 1930s by Jones and O'Shea with a one head battery (Jones 1987:210).

2.3 Archaeological background

Previous archaeological surveys over the Maud Creek mineral leases were carried out by Guse (1999), Heritage Surveys (1996), and Guse and Gregory (1994). Sixteen Aboriginal archaeological sites (MC1-5, MC7-8 and MC10-18) and 242 isolated stone artefacts were identified during the surveys. The sites consisted of 13 stone artefact scatters and three stone quarries, extracting quartz and quartzite or a fine grained basalt (Guse 1999:8). The eight stone artefact scatters are located on stony rises or slopes, three are adjacent to creeks and three on alluvial flats and plains. The quarries are located on either a stony ridge or a low rise with low rocky outcrops.

As the above surveys were carried out mainly on the Volcanic land system and the majority of the proposed access route crosses the Tipperary land system, there may be a difference in the distribution of sites from one land system to the other. Systematic surveys by Hughes and Baker (1983) and Hughes (1983) were carried out on the Tipperary land systems in the Tindal area, approximately ten kilometres south of Maud Creek. The sites consisted of stone artefact scatters, quarries and rock art sites. Sites were often associated with major creeks, rock outcrops and sinkholes that provided either shelter, water and food resources or raw material for

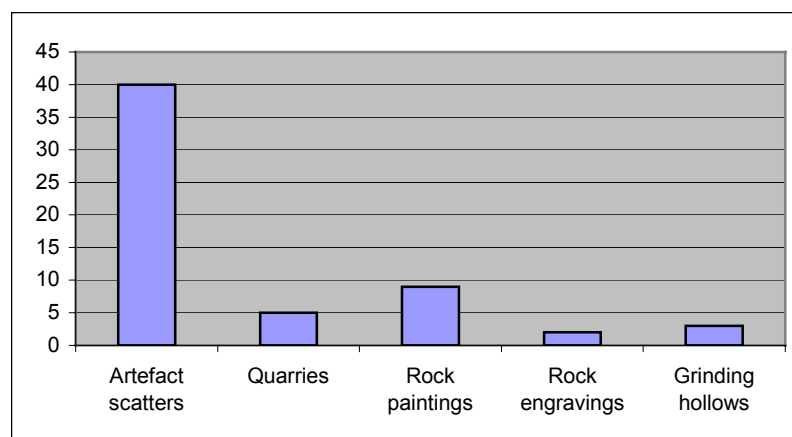
the manufacture of stone artefacts. The rock art sites located away from the escarpment tend to be located in isolated rock outcrops or ridges located in the plains areas. Consequently there is a higher likelihood for the location of archaeological sites in this type of environment, rather than on the featureless plains.

Isolated stone artefacts were recorded over every type of environment either as single specimens or small clusters that were not in sufficient numbers to be classified as a site. Hughes (1983:3-61) noted that Arndt collected about 3-4000 artefacts from 67 sites in the Katherine area of which 10% were recognisable as implements and 90% were waste flakes. The removal of all stone artefacts from some sites and the more notable artefacts from others will have a major affect on any predictions of site location and content in the Katherine area.

More recent surveys in the Tindal region Crassweller (2002) identified an historic World War II site, four stone artefact scatters, two rock art sites, an engraving site consisting of cupules and a stone arrangement consisting of a line of stones. One site contained stone artefacts, paintings and engravings. The stone artefacts were manufactured from locally available siltstone and chert.

The archaeological register at the NT Government office of Heritage Conservation Services has no sites listed in the area of the proposed access road. Archaeological site types listed on the register within a radius of approximately 20 km of the survey area are dominated by stone artefact scatters and smaller numbers of quarries, rock paintings and grinding hollows (Figure 2).

Figure 12. Frequency of archaeological site types within 20 kilometres of the survey area, as recorded in the NT Heritage Archaeological Site Register



Two historic sites consisting of historic mine workings are located in the vicinity of Maud Creek Gold Mine; MC6 (Guse and Gregory 1994:35) and the historic settlement of Maud Creek township, MC9 (Heritage Surveys 1996:25). Both of these sites are over one kilometre northeast of the start of the proposed access road.

3.0. FIELDWORK PROCEDURES

The survey consisted of pedestrian transects within 50 metres of the proposed route along the length of the proposed route, except for 900 metres near the start of the route south west of the existing pit where the surface was covered in dense grass and weeds resulting in surface visibility of less than 1%. This area had been previously surveyed by Guse and Gregory (1994) west of the pit and south west of the pit by Guse (1999).

The remaining route was surveyed by four pedestrian transects except along the fence line track in the middle of the proposed route between point B and C which was surveyed by two pedestrian transects.

3.1. Types of archaeological sites

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

- *Artefact scatters*; these may contain flaked or ground artefacts and hearthstones. They occur as surface scatters of materials or as stratified deposits when there have been repeated occupations.
- *Art sites*; these include paintings, stencils, drawings and engravings or poundings where the pictures or designs are produced by the removal of material from the rock surface.
- *Stone quarries*; these are generally sites where stone for flaked or edge ground artefacts have been extracted from an outcropping source of rock (Hiscock and Mitchell 1993).
- *Knapping floors*; these are discrete scatters of artefacts consisting of the remains of a single reduction event associated with the fabrication of implements.
- *Stone arrangements*; these can range from simple cairns to more elaborate arrangements. These stone arrangements were used in ceremonial activities and represent sacred or totemic sites. Other stone arrangements were constructed for route or territory markers, the walls of huts, fish traps or small walls to stop water from entering a rock shelter or to retain the floor.

3.2. Site definition

An archaeological site is defined for this survey as a concentration of artefactual material, such as stone artefacts, with an average density that is five times greater than the average density of the background scatter and there are more than ten artefacts which cover an area of at least two metres squared. A site will have an identifiable boundary where either artefact densities decrease to the extent as to be classified as background scatter or environmental features determine the boundary.

A background scatter is generally a very low density, more or less continuous distribution of isolated artefacts or shell over the landscape. Although these artefacts do not constitute a site they will be given location details for research purposes.

3.3. Artefact identification

A requirement for a successful archaeological project involves the accurate identification of archaeological materials. For an object to be identified as a flaked object it needs to possess one or more of the following:

- a positive or negative ring crack;
- a distinct positive or negative bulb of percussion;
- a distinct ejection scar in an appropriate position below the platform; or
- definite remnants of flake scars on dorsal surface or ridges.

Stone artefacts are divided into four main types (Hiscock 1984:128-129). They are defined as follows:

- *Cores* are pieces of stone that have one or more negative scars and the absence of positive flake scars.
- *Unretouched flakes* are pieces of stone that have been struck off another piece of stone and ideally possess platforms, positive bulbs of percussion, concentric ripples, ring cracks and /or erailure scars on the ventral surface.
- *Retouched flakes* are flaked flakes. They are identified by the presence of negative scars that must have been created after the ventral surface of the flake had been created. There will be either negative scars on the ventral surface or negative scars on the dorsal surface, which have been formed by the flake being hit on the ventral surface.
- *Flaked pieces* are stone artefacts that have been formed by knapping but cannot be identified as either a core or a flake.

Other artefact and implement types that have been identified in the region are listed below following characteristics outlined by McCarthy (1976) and Holdaway and Stern (2004).

- *Unifacial points* are flakes that have been retouched along the margins from one surface, either ventral or dorsal, to give or enhance its pointed shape. They are sometimes symmetrical or leaf shaped.
- *Bifacial points* are retouched along both ventral and dorsal surfaces of a flake to enhance or give the artefact its pointed shape. They may have the platform removed and the proximal end rounded.
- *Edge ground axes* have been shaped by the process of flaking, pecking and polishing. They generally have only one working edge that has been ground to a sharp margin although occasionally they may have two leading edges.
- *Grindstones* are characterized by a worn and abraded surface or surfaces. There also may be a concave surface.
- *Hammerstones* display use-wear on the surface in the form of the abrasion, pitting, edge fracturing with some negative scarring.
- *Manuports* are stone material that are not found naturally in an area and must have been carried in by humans.

3.4. Assessment of significance and heritage management principles

According to Sullivan and Bowdler (1984) archaeological significance means that it has scientific, archaeological or research value, that is, it has the potential to assist current or future research into problems of human history or other areas of enquiry. The Australian International Council on Monuments and Sites (ICOMOS) Charter for the Conservation of Places of Cultural Significance, otherwise known as the Burra Charter (Maquis-Kyle and Walker 1992:73) states that the scientific value or research potential of a place depends upon the importance of the data involved, on its rarity, quality or representativeness, and on the degree to which the place or object may contribute to further substantial information. Therefore the significance of a site is firstly related to the intactness or integrity of a site, that is its state of preservation, as well as the stratigraphic reliability of the cultural material. Secondly, the representativeness of a site is important, either because a site is unusual, or because the site has research potential when taken in conjunction with other sites. Thirdly, a site may provide chronology extending back into the past.

When assessing the significance of historic sites their aesthetic, historic and social value are also considered and consequently further criteria are used. These consist of:

- A site's association with events, developments or cultural phases in human occupation;
- A site's demonstration of a way of life, no longer practiced or in danger of being lost or of exceptional interest; and

- A site providing information contributing to a broader understanding of the history of human occupation.

It should be noted that historical significance will not necessarily be equated with archaeological significance, as some events may leave nothing in the archaeological record. In order to effectively manage any archaeological and historic material recorded during the survey, any sites and objects identified during the survey have been ranked according to their perceived significance.

4.0. RESULTS

The majority of the proposed access road crosses undulating plains covered in open woodlands with numerous low limestone outcrops, small gravelly areas and several small areas of low ground that appear to contain water for a longer period after the wet season. While these small areas had been highly disturbed by buffaloes, there is little surface disturbance from cattle along the remainder of the proposed route. The section of the route north of the Stuart Highway consists of undulating hills. There are no creeks within the vicinity of the proposed route.

While the vegetation had not been burnt prior to the survey, average surface visibility was generally 30%. There were frequent patches along the route, on average 200 metres apart, where visibility was over 90% (Photo 1). These areas tended to be associated with gravelly or stony surfaces where grass cover was low. These areas were targeted during the survey as, drawing from the results of previous archaeological investigations, it was predicted that they have a higher potential for the presence of archaeological material.

The proposed route avoids the majority of the limestone boulder outcrops except for three areas, as follows:

- An outcrop at 220511E 8398634N (close to point C on Figure 2, shown in Photo 2), of which the surface was intensely surveyed. No archaeological material was identified here, and this outcrop is easily avoided by the access road;
- An outcrop at 220477E 8398470N (between point C and D on Figure 2), of which the eastern base was intensely surveyed and contained sink holes. No archaeological material was identified here. The eastern side of this outcrop was surveyed as this side is the most practical way to re-align the route around these rocks; and
- An outcrop crossed by the existing fence line, 20 metres south of point D (Photo 3). Surveys in this area were abandoned as the large limestone outcrop was covered in dense grass, which resulted in no surface visibility at all.

Other low limestone outcrops and sink holes were identified adjacent to the fence line from the Stuart Highway. These areas were intensely surveyed and no archaeological material was identified.

The survey along the proposed access route did not identify any archaeological or historic sites.

Three isolated stone artefacts were identified between point A and B along the proposed route. All of the isolated artefacts are over 10 metres from the areas that will be disturbed by the construction of the proposed route and will not be disturbed by the proposed development.

Two of the isolated stone artefacts were identified on surfaces adjacent to gravelly surfaces and deep red soils. The third artefact was identified on the grass covered red soil plain. Table 1 describes these artefacts in detail.

Table 1. Details of isolated artefacts located in the survey

Isolated artefacts	Easting* (GDA94)	Northing	Type of artefact	Raw material	Dimension (mm)	Comments
1	222762	8400246	Retouched flake	quartzite	71x30x11	One lateral (Photo 4)
2	222815	8400272	Unretouched proximal flake	quartzite	12x22x7	Broken longitudinally
3	223993	8400996	Unretouched flake	chert	25x30x9	40% cortex

* Katherine 5369 1:100,000 Map Sheet

4.1. Discussion

The results from previous archaeological investigations in the region suggest that there is a higher potential for the presence of archaeological material in the vicinity of a water source, outcrops of a suitable raw material used in the manufacture of stone artefacts or near limestone outcrops where there is a wider variety of other resources. Consequently the low frequency of archaeological material identified during the survey is more than likely a result of the lack of features on the undulating plain that would have been a focal point in past subsistence strategies.

The density of archaeological sites and isolated stone artefacts previously identified on the Maud Creek lease north of the majority of the route was relatively high and their locations were associated with stony rises or slopes or creeks. While the surface visibility along the proposed access road was low at the time of this survey, there were no creeks in the area and only low gravelly rises and two limestone outcrops, which were all intensely surveyed. Therefore it is considered that the survey was concentrated enough to identify any significant archaeological material along the route.

The area south of point A on the route that was not investigated because of very low surface visibility had been previously surveyed when the vegetation was burnt and surface visibility was generally high at 80% during the Guse and Gregory survey (1994). As the proposed route along this area crosses undulating plains with no creeks or other features that may have acted as a focal point for past subsistence strategies, it is considered that further surveys in this area would have a low potential for identifying any significant unidentified archaeological material.

However, no previous surveys have been carried out in the area of the limestone boulder outcrop south of point D, which could not be investigated during this survey due to grass cover. Therefore if this area is to be disturbed by the construction of the access road then an archaeological survey should be carried out in this area after it has been burnt, prior to road construction.

5.0. RECOMMENDATIONS

The archaeological survey did not locate any archaeological or historic sites in the vicinity of the proposed access road from Maud Creek Gold Mine to the Stuart Highway. Three isolated stone artefacts were identified during the survey, however they are outside the area to be disturbed.

The survey was carried out using methodology that targeted areas that had higher potential for archaeological material. While surface visibility was generally low during the survey of the proposed access road, it is considered that the route crosses a terrain that has low potential for the presence of archaeological material, and further surveys along the route after burning the grass cover would be unlikely to identify any more significant archaeological or historic material.

The only exception to this recommendation relates to a section of the route south of point D, which was not surveyed at all due to poor surface visibility. As larger limestone boulders covering this area have a relatively high potential for the presence of archaeological material, it is recommended that if the proposed road crosses the outcrop, then an archaeological survey should be carried out in the area after the vegetation has been burnt, prior to road construction.

As the three isolated stone artefacts identified during the survey have been recorded in detail and will not be disturbed by the construction of the proposed access road it is recommended that no further action is needed for compliance with provisions of the *Northern Territory Heritage Conservation Act 1991*.

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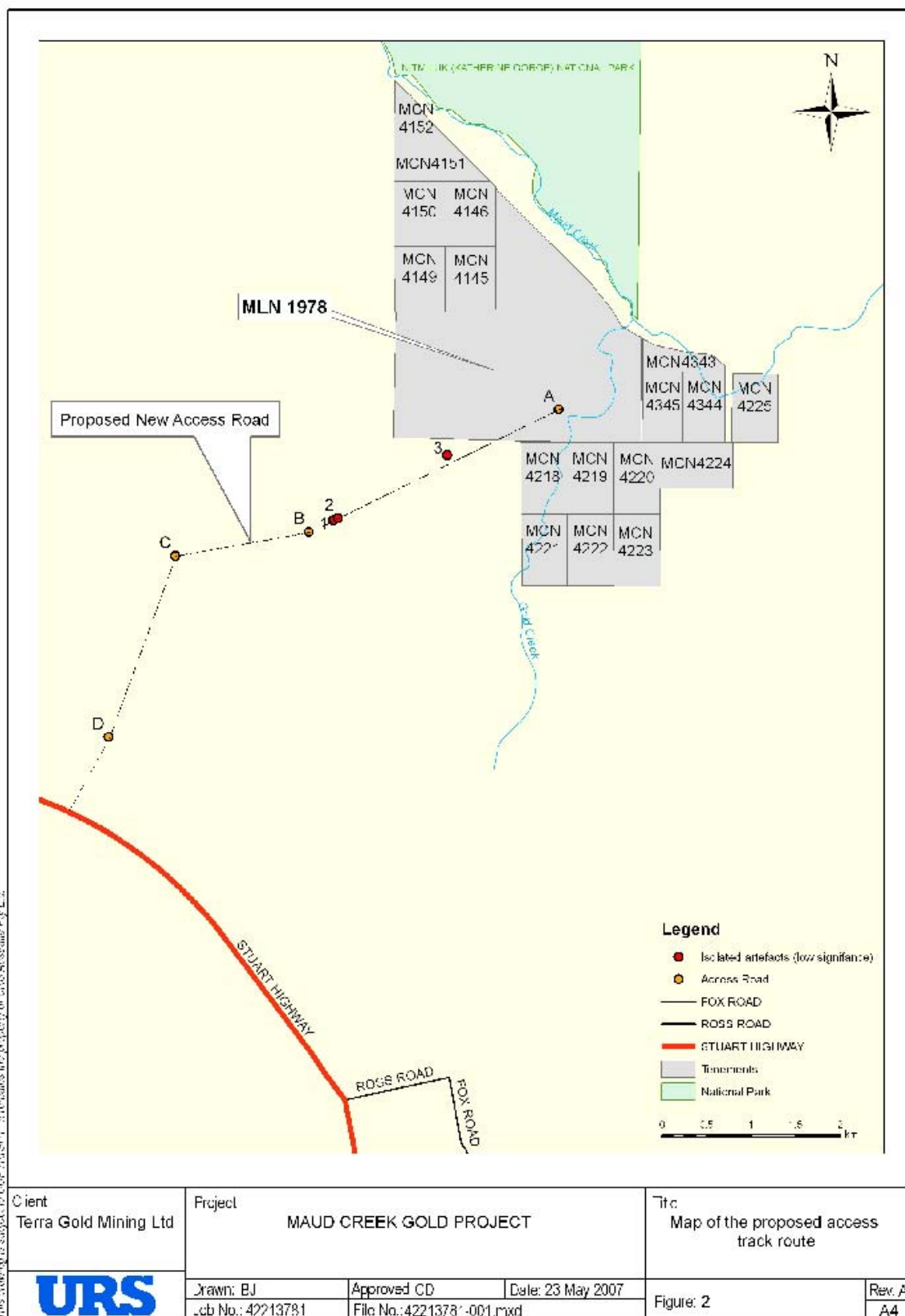




Photo 1. Example of areas of high surface visibility



Photo 2. Northern limestone outcrop, facing south



Photo 3. Facing south along fence line to limestone outcrop not surveyed



Photo 4. Isolated stone artefact 1