ARCHAEOLOGICAL SURVEYS FOR THE PROPOSED

EAST BURNSIDE PROJECT,

BROCKS CREEK, NT.

PRINCESS LOUISE

A report for URS

On behalf of Burnside Operations Pty Ltd

Begnaze Pty Ltd
Christine Crassweller
8 Wanguri Tce Wanguri NT 0810

June 2006

SUMMARY

An archaeological survey was carried out on the proposed Princess Louise open cut mine as a part of archaeological surveys carried out for the East Burnside Project. Two archaeological sites, two historic mine sites and six background scatters of isolated artefacts were are located during the survey.

Below is a summary of the recommendations that have been made to mitigate the loss of any archaeological or historic values and to ensure that there is compliance with the provisions of the *Northern Territory Heritage Conservation Act 1991*. These recommended actions should be carried out before any construction commences. The historic archaeological sites and objects listed below are within the areas that may be disturbed and consist of either prescribed places or objects protected under the Act or historic sites not protected under the Act.

Summary of recommendations

	Easting*	Northing	Recommendations
PL1	775306	8504522	Permanent fence along the southern side of the access road to the proposed Princess Louise open cut
PL2	775594	8504616	Apply for permission to destroy
PLshaft1	775568	8504609	No further action
PLshaft2	775585	8504657	No further action
BS Arch1	775397	8504436	No further action
BS Arch2	775493	8504554	Apply for permission to destroy
BS Arch3	775252	8504465	No further action
BSArch / His1	775384	8504644	Apply for permission to destroy
BS Arch/His3	775559	8504719	Apply for permission to destroy
BS Arch/His4	775413	8504474	No further action

*WGS84, Pine Creek 5270 1:100,000 map sheet

TABLE OF CONTENTS

1.0. INTRODUCTION

The revised Mine Management Plan for the Burnside Project by Burnside Operations Pty Ltd stated that Aboriginal and European archaeological surveys will be carried out for the East Burnside Project at the proposed North Point and Princess Louise open cut mines before the commencement of mining. Begnaze was contracted by URS on behalf of Burnside Operations to carry out the archaeological surveys over the above areas and also for three sections adjacent to the Stuart Highway.

This report describes the archaeological surveys over the area that will be disturbed by the proposed Princess Louise open cut mine and the haul road between Princess Louise and North Point open cut mines. The aim of the archaeological survey is to locate and record any prescribed 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 survey also identifies historic places resulting from early non-indigenous settlement such as mining activities. The brief also requires recommendations regarding mitigative procedures where appropriate, and the formulation of management strategies for any cultural materials located during the survey.

The Burnside Project is 160km by road south of Darwin and covers a 30k radius around the Brocks Creek Gold Mine (Figure 1). The survey was carried on one day in May 2006 by Christine Crassweller and Daryl Guse (Figure 1 and 2).

2.0. BACKGROUND INFORMATION

2.1. Environmental background

The general topography around the East Burnside Project consists of undulating terrain with scattered hills, isolated strike ridges and alluvial flats. It belongs to the Brocks Creek Undulating Land System that consists of strongly folding slates (NSR Environmental Consultants 1995). Story *et al*. (1969) describe the hill slopes and summits as consisting of erosional remnants of siltstone, sandstone and quartz on slightly weathered meta-sediments of the Burrell Creek geological formation. Colluvial wash slopes have a veneer of siltstone flakes and / or subangular stony quartz in a loamy mix. Soils are either gravelly or skeletal on the slopes and summits or silty, sand or clay soils on the flats

Within ten kilometres of the survey areas there is Gerowie Tuff with cherty tuff and the Mt Bonnie Formation containing siltstones with rare chert nodules (Needham and Stuart-Smith 1984) These geological units contain suitable raw material used in the manufacture of stone artefacts.

Vegetation in the area belong to Mapping Unit 15 described as dominated by *Eucalyptus tectifica* and *Eucalyptus latifolia* woodlands with *Sorghum* sp. grasslands understorey (Wilson *et al*. 1991).

2.2 Historic background

Gold was first discovered in 1870 when a construction team for the Overland Telegraph line was digging post holes in the area now known as Yam Creek and found alluvial gold. In 1872 more gold was discovered at Yam Creek by Westcott who named it the Priscilla Reef. By 1873 there were as many as eleven mining companies in the area including the Yam Creek Gold Mining Company and the Priscilla Reef Gold Mining Company (Mitchell 1994). These companies assumed that the discovery of surface gold indicated the presence of gold at depth

(Jones 1987). However due to the lower than expected yields and the cost of developing mines in the area the ventures were abandoned.

Yam Creek subsequently became the centre of mining activity until 1912. Mining leases in the area included North Point and Princess Louise mines located at the north of the field. These claims were worked intermittently with another intensive stage in 1888 at the North Point with as many as 600 Chinese alluvial miners in the area. The population had decreased to 300 by 1891 (Mitchell 1994: 19).

Between 1872-75 the Princess Louise claim was being worked by eight tributers who sunk shafts and tunnels. They spent 13 months driving a tunnel 200 feet and sunk a 70 feet shaft where they struck a reef. However the reef suddenly stopped. Consequently they received no return for their investments and the company abandoned the area. Another major mining activity occurred at the Princess Louise in 1908 by Chinese tributers. Many of the mines in the region have been intermittently mined up to the present.

The region was also impacted by World War II activities, with camps and air fields constructed along the Stuart Highway. Brocks Creek which is located approximately 15 kilometres west of the study area, was a large army camp that consisted of a detention center, a BIPOD complex and a field supply depot. In 1944 a pipeline was constructed from the Brocks Creek to the Fenton and Long airstrips to transport fuel (Conservation Commission n.d.). Some of the material remaining around the historic gold mines was re-used during this period. For example a 16,000 gallon tank was reduced and then reassembled as a swimming tank for soldiers in Adelaide River (Rayner 2001). Soldiers are also thought to be responsible for the demolition of the smelter stack at Yam Creek in 1942 (Mitchell 1994).

2.3. Archaeological background

Aboriginal archaeological sites identified during previous archaeological surveys between Adelaide River and Pine Creek (Guse and Gregory 1994, Guse 1995, 1996 and 1998, Heritage Surveys 1995a and b, Crassweller 2005 and 2006, Mulvaney 1990, Megirian 1986, Mitchell and Gregory 1995) have found that the most common form of archaeological sites are medium to small sized artefact scatters and quarries located mainly on low rises and ridges.

A search of the Archaeological Site Register for the Pine Creek 1:100,000 map sheet, held by the Heritage Advisory Services did not find any recorded archaeological or historic sites in the areas to be disturbed by the East Burnside Project. Of the ninety four Aboriginal archaeological sites recorded on the register 34 were stone artefact scatters and 60 were artefact scatters associated quarries. Other Aboriginal archaeological sites include a scarred tree, one hearth and 17 rock art sites. As the terrain around the East Burnside Project is not conducive for rock art there is very little likelihood for their presence in the study area. The same pattern occurs for identified sites on the McKinlay 1:100,000 map sheet with two stone artefact scatters and three scatters associated with a quarry. The differences in the number of sites between the two adjacent map sheets is a consequence of the higher number of archaeological surveys carried out for heritage clearances around the goldfield region on the Pine Creek map sheet and do not reflect an actual lack of sites in the McKinlay region.

The dominant raw materials used to manufacture the stone artefacts at these sites were quartz or tuff with smaller proportions of chert and hornfels. Quartz and tuff stone quarries were also located around outcrops where the quality of the raw material was suitable for artefact manufacture.

One historic site on the archaeological site register Yam Creek, is located approximately 500 metres southeast of the proposed North Point open cut and consists of the mine, smelter

complex, Chinatown and hotel complex. Mitchell (1995) comments that at historic sites broken bottle glass, porcelain, metal fragments and implements and earthenware would be the most common types of artefacts associated with mine workings, pits, adits and shafts. Structural features are less common although every goldfield had at least one stamp battery.

2.4. Predictive Model for the location of archaeological material.

The background historic information suggests that there will be a high potential for the presence of past mining features such as shafts and diggings in the areas around the proposed Princess Louise open cut mine. The remains of smaller items such as glass and ceramics or metal objects used for mining or domestic use should also occur frequently.

While the archaeological background indicates that the majority of previously identified stone artefact scatters and quarries were located on low rises and ridges in the region, the high disturbance around both of the mine suggests there is only a low potential for the presence of undisturbed Aboriginal archeological remains.

3.0. METHODOLOGY

The surveys over the proposed Princess Louise open cut mine consisted of pedestrian transects carried out in a zig-zag fashion over surfaces which had undergone relatively little disturbance by past mining activities. The survey concentrated on surfaces that had not been cleared and where the surface was covered in relatively undisturbed vegetation. The haul road between the two mines was surveyed from a slow moving vehicle with 50 metres pedestrian quadrats made in areas where ground surface visibility was higher than the surrounding area.

The location of the archaeological or historic sites are in WGS84 datum as this was the datum used on the maps identifying the areas to be surveyed.

3.1. Types of archaeological sites.

There are three types of sites previously recorded in the region and can broadly be defined as follows:

- *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* include stencils and paintings where material was added to the rock surfaces or engravings or poundings where the pictures or designs are produced by the removal of material from the rock surface.
- *Stone quarries* are generally sites where stone for flaked or edge ground artefacts have been extracted from an outcropping source of rock (Hiscock and Mitchell 1993).

3.2. Site definition.

An archaeological site is defined for this survey as a concentration of artefactual material with an average density that is 5 times greater than the average density of the background scatter and there are more than ten artefacts which cover an area of at least $2m^2$. 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.

Background scatter is generally a very low density, more or less continuous distribution of isolated artefacts 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 eraillure scar in an appropriate position below the platform.
- definite remnants of flake scars on the dorsal surface or dorsal ridges.

Stone artefacts are divided into 4 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 eraillure 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 piece*s 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 a site or object 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 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 representativenesss, 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, and the state of preservation of the archaeological material. Secondly, if the site has stratigraphic reliability then it may be possible to use the cultural material for dating which will provide a chronology extending back into the past. Thirdly, 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.

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 is associated with events, developments or cultural phases in human occupation.
- A site demonstrates a way of life, no longer practiced or in danger of being lost or of exceptional interest
- A site provides 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 they have been ranked according to their perceived significance.

4.0. RESULTS

4.1. General remarks

The proposed Princess Louise open cut is surrounded on three sides by steep sided hills, two of which are in the area to be disturbed. The majority of the surface that will be disturbed had been cleared of vegetation and / or the surface removed completely. The survey targeted areas still covered in native vegetation that appeared to be untouched by mining activities. The majority of archaeological and historic material is located on this surface. Surface visibility was 100% on the disturbed surfaces and 70% in undisturbed areas.

The two stone artefact scatters identified at the Princess Louise mine are located on the summit of adjacent steep sided hills that overlook the undulating plains. The archaeological site PL1 is a large artefact scatter containing a diverse range of artefact types and raw material. It is located on the top of the southern hill in an area that had not been disturbed. As PL1 is approximately 150 metres south of the background scatter BSarch/His1, which is mostly located in an area where the top of the hill had been removed, it is thought that originally the site may have extended across the summit of the hill.

One isolated artefact was located on the undisturbed southern slopes of the hill and the remaining isolated artefacts were located near an ephemeral creek at the base of the eastern slope. The glass bottle fragments were also found along the creek banks.

Site PL2 is a small low density artefact scatter located on the small level summit of the northern hill in an area that has not been cleared by recent mining, however it has been disturbed by historic mine workings and historic mine shafts. PLshaft1 is located on the western steep slope three quarters of the way up the hill and has a corrugated iron sheet on the opening of the shaft. PLshaft2, consists of two adjacent shafts on the more gentle north-west slope. The southern shaft at PLshaft2 has a dry stone wall that was evidently built to reinforce one side of the shaft opening. Two isolated stone artefacts and the base of a dark green bottle were identified on gently undulating terrain north west of this hill. Detailed descriptions of the two archaeological sites are below.

No archaeological or historic material was identified on the proposed haul road between Princess Louise and North Point mines. Average surface visibility was 50% as the area had not been recently burnt.

Table 1. Summary of identified historic and archeological sites and features

Survey Area	Site	Type	Easting*	Northing
Princess Louise**	PL1	Stone artefact scatter	775306	8504522
	PL2	Stone artefact scatter	775594	8504616
	PLshaft1	Historic mine shaft	775568	8504609
	PLshaft2	Historic mine shafts	775585	8504657

* WGS84, ** Pine Creek 5270 1:100,000 map sheet,

4.2. Archaeological Site, PL1

Type: Stone artefact scatter
Location: 52 775356E 8504542nN (northeast corner)
(Pine Creek 5270 1:100,000 map sheet)
Physiographic unit: Isolated steep hill
Dimensions: 55 x 20m
Visibility: 80%

This large artefact scatter is located along the level summit of a steep sided hill with open woodlands and a surface of gravelly skeletal soils. While this area appears to be relatively intact vehicles have driven over the site in last year. The southeast and southwest of the hill has not been disturbed by recent mining. The only remains of non-indigenous use on the hill were several mining markers of star pickets on the western arm of the hilltop, which were approximately 30 metres from the main concentration of stone artefacts.

There was an average of 8 artefacts per square metre in an area of 15 x 10 metres, which decreased to one or two artefacts per square metre for the rest of the site. Isolated flakes were also found on the western arm of the hill at one artefact per square metre. The majority of the stone artefacts were manufactured from tuff, with 10% quartz, minor quartzite, a grindstone fragment and one hornfels core. The artefact type consist of 10% cores, 10% retouched flakes and the remainder consists of unretouched flakes

Relationship to development: This artefact scatter is located approximately 20 metres south of the proposed access road to the open cut mine and may be disturbed during the construction of the road.

Archaeological significance. This site contains a diverse and dense scatter of stone artefacts in an area that has remained relatively undisturbed by past mining activities. Further research at this site would have a medium potential to increase the understanding of the procurement and manufacture of stone artefacts, other resource use and past settlement patterns in the region. Therefore it has been assessed as having a moderate archaeological significance.

4.3. Archaeological Site, PL2

Type: Stone artefact scatter
Location: 52 775594E 8504616N
(Pine Creek 5270 1:100,000 map sheet)
Physiographic unit: Isolated steep hill
Dimensions: 3 x 5m
Visibility: 80%

This small artefact scatter is located on the summit of a rocky steep sided hill covered in open woodland. The summit was approximately 30 x 15 metres. Visibility was very poor on the steep hill slope where grass cover was dense, however the grass cover decreased on the rocky and gravelly summit and where the surface has been disturbed in the past mining activities. While the main concentration is small there are approximately ten other artefacts located over the summit.

Maximum artefact density was 6 artefacts per square metre with an average 0.5 artefacts per square metre. Ninety five percent of the identified artefacts were manufactured from tuff, the remainder were made from quartz. The majority were unretouched flakes that had an average length of 40mm and a maximum length of 75mm, with 10% of both cores and retouched flakes.

Relationship to development: This site is located in the centre of the proposed waste dump and will be destroyed by the proposed development.

Archaeological significance. This stone artefact scatter is a common site type in the region. It is located in an area that has been disturbed by previous mining activities and contains a low diversity and frequency of artefact types. Therefore this site has low research potential and has been assessed as having low archaeological significance.

4.4. Background scatters of stone artefacts and historic objects.

The survey identified eight isolated stone artefacts located in six locations. The dominant raw material used for the isolated stone artefacts is tuff with one quartz and hornfels artefact. Tuff and quartz are locally available and the hornfels artefact probably came from the Edith River area south of Pine Creek. Five of the arefacts were retouched and included a unifacial point.

At three of the background scatter there was also broken glass bottles or shards. The dark green glass was manufactured in the mid-to-late eighteenth century (Burke and Smith 2004) so they are probably the remains of early mining activities in the area.

As the stone artefacts have been described in full they have little research value and consequently have been assessed as possessing low archaeological significance.

Table 2. Details of the background scatters at Princess Louise

Background Scatter No.	Easting*	Northing	Visib. %	Type of artefact	Raw material	Dimension (mm)
BSArch / His1	775384	8504644	60	Proximal flake, cortex on platform retouched both margins	tuff	13x 27 x 5
				Flake retouched on distal	tuff	40x 23 x 11
				Dark green glass fragment		
BS Arch1	775397	8504436	80	Unretouched flake	hornfels	50 x 2 x.5 8
BS Arch/His4	775413	8504474	90	Unifacial point	tuff	52 x 20 x 8
				Dark green glass fragment		
BS Arch2	775493	8504554	75	Unretouched flake	tuff	48 x 7 x 20
				Unretouched flake	quartz	22 x 15 x 8
BS His1	775538	8504554	70	Base of straight body green glass bottle marked 6 TO GALLON and thick glass bottle fragments dark green		
BS Arch/His3	775559	8504719	50	Retouched flake both margins	tuff	78 x 34 x 2
				Dark green bottle champagne base		
BS Arch3	775252	8504465	60	Retouched flake both margins	tuff	84 x 19 x 11

*WGS84, Pine Creek 5270 1:100,000 map sheet,

5.0. CONCLUSIONS & RECOMMENDATIONS

The overall results of the survey were quite different to the predictive model in that there was a very low frequency of objects related to the early mining period in the area. As the majority of the survey area had been highly disturbed by more recent mining activities there were only a few isolated fragments of glass and metal identified in areas where the historic record indicated the presence of many miners in the past. Another prediction was that there would be very little evidence of past Indigenous activities in the area around the mines, as prior mining activities would have destroyed or disturbed the surface. However stone artefact scatters PL1 and PL2 were identified in small pockets of the surface that had been subjected to only minor surface disturbances.

5.1. Recommendations

The archaeological survey over Princess Louise open cut mine site identified two artefact scatters and three historic mine shafts located within or adjacent to areas that may be impacted by the proposed developments for the East Burnside Project. Three of the seven background scatters are also in areas that may be disturbed.

As mine shafts are a common feature in the historic goldfields in the region and they are not protected under the Act, no further action is required before sites PLshaft1 and 2 are destroyed. The recommendations for the remaining sites are:

Recommendation 1.

PL1, a stone artefact scatter, is located 20 metres south of the access road to the Princess Louise Open cut mine and may be impacted by the proposed development. It has been assessed as having moderate archaeological significance. In order to protect the site from any loss of archaeological values it is recommended that a fence is constructed along the southern edge of the access road to make the site a 'no- go' area for personnel and machinery.

Recommendation 2.

Archaeological site PL2 is an artefact scatter located in an area within the proposed development of the Princess Louise open cut mine. It has been assessed has having low archaeological significance and will require a permit from the Minister for Natural Resources Environment and the Arts to disturb the site before mining commences in order that there is compliance with the provisions of the *Northern Territory Heritage Conservation Act 1991*.

Recommendation 3.

The most frequent historic sites located during the surveys were the mineshafts. As shafts are very common in the historic goldfields, they have been assessed as having low historic significance.

Recommendation 4.

There are three background scatters of isolated stone artefacts (BS2, BSArch/His 1 and BSArch/His3) that may be destroyed by the proposed developments. As these objects are protected prescribed objects under the *Northern Territory Heritage Conservation Act 1991* permission should be sought from the Minister for Natural Resources Environment and the Arts to destroy these objects before any mining developments commences in the surrounding areas.

Table 3. Summary of recommendations

	Easting	Northing	Significance	Type	Recommendations
PL1	775306	8504522	Moderate	Stone artefact scatter	Permanent fence along the southern side of the access road to the proposed Princess Louise open cut
PL2	775594	8504616	Low	Stone artefact scatter	Apply for permission to destroy
PLshaft1	775568	8504609	Low	Mine shaft	No further action
PLshaft2	775585	8504657	Low	Mine shaft	No further action
BS Arch2	775493	8504554	Low	Isolated stone artefacts	Apply for permission to destroy
BSArch/ His1	775384	8504644	Low	Isolated stone artefacts	Apply for permission to destroy
BS Arch/His3	775559	8504719	Low	Isolated stone artefacts	Apply for permission to destroy

REFERENCES

Burke, H. and Smith, C. 2004. *The Archaeologist's Field Handbook.* Allen and Unwin. Crows Nest

Conservation Commission, NT, n.d. *World War 11 Trails of History*. Collectors Edition.

Crassweller, C. 2005. Archaeological survey along the existing detour at Bridge Creek Stuart Highway, NT.A report to Roads Projects Division, DIPE.

Crassweller, C. 2006. Archaeological survey fro the proposed Fountain Head open Cut, East burnside Project, NT.A report for URS, On behalf of Burnside Operations Pty Ltd.

Dermoudy, P. 1989. *Down the track. A Military Buffs Guide to the Stuart Highway.* A report to the Council of the Australian BC Authority.

Guse, D. 1998 Archaeological survey of the Rising Tide proposed development area, Brocks Creek Gold Mine, Northern Territory A report for Acacia Resources

Guse, D. 1996. An archaeological assessment of the proposed mining prospects in the Bridge Creek Region. A report for Woodward-Clyde

Guse, D. 1995 Archaeological survey of the proposed realignment of the North Australian Railway, Pine Creek to Union Reefs. NTUAS Report 27. A report to Australian National Rail.

Guse, D. and Gregory, R. 1994. An archaeological survey of the proposed realignment of the North Australian Railway, Bridge Creek to Howling Siding. NTUAS Report 25. A report to Australian National Rail.

Heritage Surveys, 1995a. Stage Two Archaeological Survey. Proposed Brocks Creek Gold Mine Northern Territory. A report for Solomon Pacific Resources NL

Heritage Surveys, 1995b. Archaeological mitigation at the proposed Brocks Creek Gold Mine Northern Territory. A report for Solomon Pacific Resources NL

Hiscock, P. 1984. A preliminary report on the stone artefacts from Colless Creek Cave, Northwest Queensland. *Queensland Archaeological Research*, 1:120-151.

Hiscock, P. and Mitchell, S, 1993. *Stone Artefact Quarries and Reduction Sites in Australia: Towards a Type Profile*. Technical Publications Series Number 4. Australian Heritage Commission, Canberra.

Holdaway, S. and Stern, N. 2004. *A Record in Stone. The Study of Australia's Flaked Stone Artefacts*. Museum Victoria and AIATSIS.

Jones, TG. 1987. *Pegging the Northern Territory. A History of mining in the Northern Territory, 1870-1946.* Department of Mines and Energy,NT, Darwin.

Maquis-Kyle, P. and M. Walker, 1992. *The Illustrated Burra Charter: Making good decisions about the care of important places*. Australian Heritage Commission, Canberra.

Megirian, D 1986 Archaeological report Amadeus basin to Darwin Natural Gas Pipeline. MAGNT

McCarthy, F.D. 1976. *Australian Aboriginal Stone Implements*. The Australian Museum Trust, Canberra.

Mitchell, S. 1993 An archaeological investigation of heritage sites in the Southern Lease Project area, Pine Creek. A report for Shell Company Australia

Mitchell, S. 1994. An archaeological and historical survey of selected mining sites in the Pine Creek District, NT. Unpublished report to the National Trust of Australia (NT Branch)

Mitchell, S and Gregory, R. 1995. An archaeological survey of heritage sites at the proposed Brocks Creek Gold Mine, NT. A report for NSR Environmental Consultants Pty Ltd.

Mulvaney, K. 1990. An archaeological survey of 66KV Transmission Line Goodall Gold Mine. An unpublished report fro the Power and Water authority, MAGNT

NSR Environmental Consultants.1995 Brocks Creek Gold Project. Solomon Pacific resources NL. Draft Environmental Impact Statement. Main Report

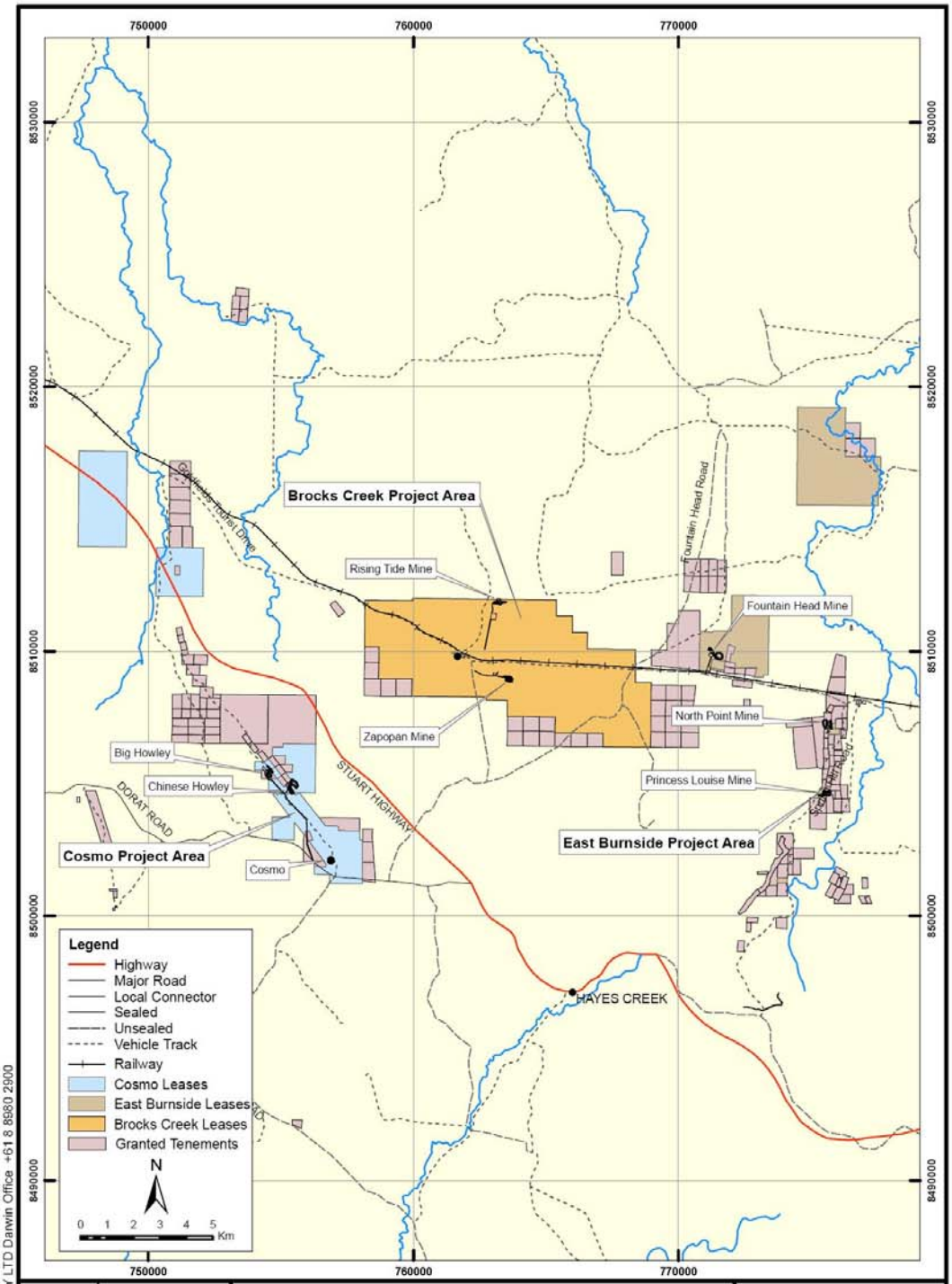
Needham, RS. and Stuart-Smith, PG. 1984. Geology of the Pine Creek Geosyncline, Northern Territory. Bureau of Mineral Resources, Geology and Geophysics, Darwin.

Rayner, RJ.2001. *Darwin and Northern Territory Force*. Rudder Press NSW

Story, R. Williams, MAJ. Hooper, ADL. O'Ferrall, RE and McAlpine, JR. 1969. Lands of the Adelaide-Alligator Area, Northern Territory. Lands Research Series. No. 25. Melbourne.

Sullivan, M.E. and S. Bowdler 1984. *Site Surveys and Significance Assessment in Australian Archaeology*. Department of Prehistory, Research School of Pacific Studies, ANU, Canberra.

Wilson, BA. Brocklehurst, PS. Clarke, MJ Dickinson, KJM. 1991. Vegetation Survey of the Northern Territory. (Northern Sheet). Conservation Commission of the Northern Territory, Palmerston.



URS AUSTRALIA PTY LTD Darwin Office +61 8 8980 2900

Job	42213732	
Prep. By	JD	5 Jun 06
Chk.d By	JM	5 Jun 06
Revision No.		0

GBS Gold Australia
BURNSIDE PROJECT AREA

SITE AND SURROUNDS

Figure 1

URS

42213720-001.mxd

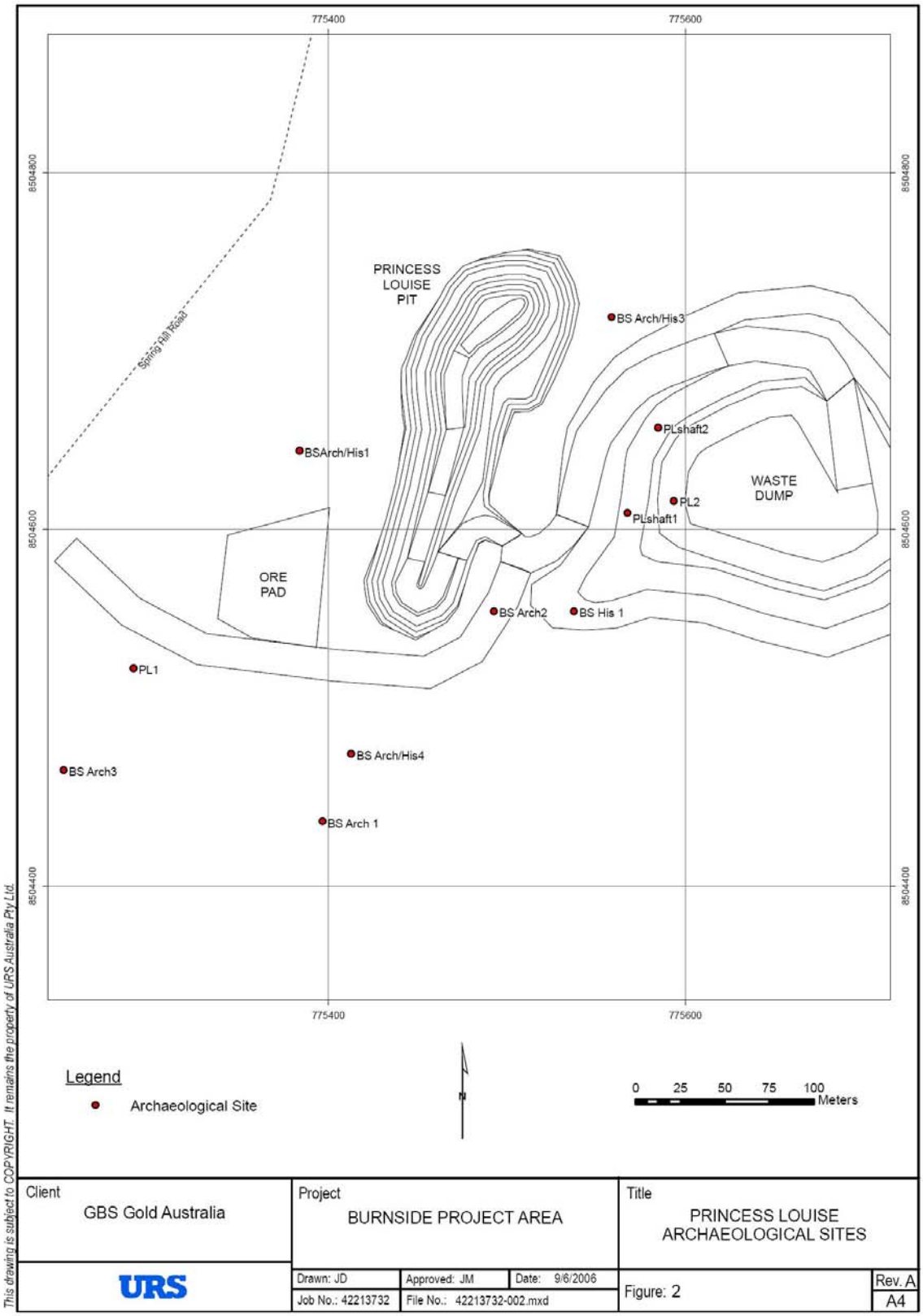

775400
775600
8504800
8504600
8504400
Spring Hill Road
PRINCESS
LOUISE
PIT
BS Arch/His3
PLshaft2
BSArch/His1
WASTE
DUMP
PL2
PLshaft1
ORE
PAD
BS Arch2
BS His 1
PL1
BS Arch/His4
BS Arch3
BS Arch 1
Legend
Archaeological Site
N
0 25 50 75 100
Meters
This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.
Client
GBS Gold Australia
Project
BURNSIDE PROJECT AREA
Title
PRINCESS LOUISE
ARCHAEOLOGICAL SITES
URS
Drawn: JD
Approved: JM
Date: 9/6/2006
Job No.: 42213732
File No.: 42213732-002.mxd
Figure: 2
Rev. A
A4

Photo 1. PLshaft1

Photo 2 Northern shaft at PLshaft2

Photo3. PL1 facing south

Photo 4. Artefacts from PL1

Photo 5. PL1 taken from PL2

Photo 6. Northern slope of PL2

ARCHAEOLOGICAL SURVEYS FOR THE PROPOSED

EAST BURNSIDE PROJECT,

BROCKS CREEK, NT.

NORTH POINT

A report for URS

On behalf of Burnside Operations Pty Ltd

Begnaze Pty Ltd
Christine Crassweller
8 Wanguri Tce Wanguri NT 0810

June 2006

SUMMARY

An archaeological survey was carried out over the North Point open cut mine and two archaeological sites, five historic mine sites and two background scatters of isolated artefacts were located during the survey. Three sites consisting of mine shafts NPshaft 2,3 and 5 will be destroyed during the development. One site NPshaft1 has been assessed as having moderate archeological and historic significance so recommendations have been made to ensure this site is n0t disturbed.

Below is a summary of the recommendations that have been made to mitigate the loss of any archaeological or historic values and to ensure that there is compliance with the provisions of the *Northern Territory Heritage Conservation Act 1991*. These recommended actions should be carried out before any construction commences. The historic archaeological sites and objects listed below are within the areas that may be disturbed and consist of either prescribed places or objects protected under the Act or historic sites not protected under the Act.

Summary of recommendations

	Easting	Northing	Recommendations
NPshaft1	775799	8507498	Ensure that the area is made a 'no go' area
NPshaft2	775778	8507085	No further action
NPshaft3	775785	8507076	No further action
NPshaft5	775786	8507112	No further action
BS Arch6	796207	8478585	Apply for permission to destroy
BS Arch7	759630	8503863	Apply for permission to destroy

TABLE OF CONTENTS

1.0. INTRODUCTION

The revised Mine Management Plan for the Burnside Project by Burnside Operations Pty Ltd stated that Aboriginal and European archaeological surveys will be carried out for the East Burnside Project at the proposed North Point and Princess Louise open cut mines before the commencement of mining. The archaeological survey at the proposed Fountain Head open cut mine is described in Crassweller (2006). Begnaze was contracted by URS on behalf of Burnside Operations to carry out the archaeological surveys over the above areas.

This report describes the archaeological survey over the North Point open cut mine area. The aim of the archaeological survey is to locate and record any prescribed 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 survey also identifies historic places resulting from early non-indigenous settlement such as mining activities. The brief also requires recommendations regarding mitigative procedures where appropriate, and the formulation of management strategies for any cultural materials located during the survey.

The Burnside Project is 160km by road south of Darwin and covers a 30k radius around the Brocks Creek Gold Mine (Figure 1). The survey was carried out over one day in May 2006 by Christine Crassweller and Daryl Guse and covered the areas to be disturbed by the open cut mine (Figure 1 and 2).

2.0. BACKGROUND INFORMATION

2.1. Environmental background

The general topography around the East Burnside Project consists of undulating terrain with scattered hills, isolated strike ridges and alluvial flats. It belongs to the Brocks Creek Undulating Land System that consists of strongly folding slates (NSR Environmental Consultants 1995). Story *et al*. (1969) describe the hill slopes and summits as consisting of erosional remnants of siltstone, sandstone and quartz on slightly weathered meta-sediments of the Burrell Creek geological formation. Colluvial wash slopes have a veneer of siltstone flakes and / or subangular stony quartz in a loamy mix. Soils are either gravelly or skeletal on the slopes and summits or silty, sand or clay soils on the flats

Within ten kilometres of the survey areas there is Gerowie Tuff with cherty tuff and the Mt Bonnie Formation containing siltstones with rare chert nodules (Needham and Stuart-Smith 1984) These geological units contain suitable raw material used in the manufacture of stone artefacts.

Vegetation in the area belong to Mapping Unit 15 described as dominated by *Eucalyptus tectifica* and *Eucalyptus latifolia* woodlands with *Sorghum* sp. grasslands understorey (Wilson *et al*. 1991).

2.2 Historic background

Gold was first discovered in 1870 when a construction team for the overland telegraph line were digging post holes in the area now known as Yam Creek and found alluvial gold. In 1872 more gold was discovered at Yam Creek by Westcott who named it the Priscilla Reef. By 1873 there were as many as eleven mining companies in the area including the Yam Creek Gold Mining Company and the Priscilla Reef Gold Mining Company (Mitchell 1994). These companies assumed that the discovery of surface gold indicated the presence of gold at depth

(Jones 1987). However due to the lower than expected yields and the cost of developing mines in the area the ventures were abandoned.

Yam Creek subsequently became the centre of mining activity until 1912. Mining leases in the area included North Point and Princess Louise mines located at the north of the field. These claims were worked intermittently with another intensive stage in 1888 at the North Point with as many as 600 Chinese alluvial miners. The population had decreased to 300 by 1891 (Mitchell 1994: 19). Many of the mines in the region have been intermittently mined up to the present time.

The region was also impacted by World War II activities, with camps and airfields constructed along the Stuart Highway. Brocks Creek which is located approximately 15 kilometres west of the study area, was a large army camp that consisted of a detention center, a BIPOD complex and a field supply depot. In 1944 a pipeline was constructed from the Brocks Creek to the Fenton and Long airstrips to transport fuel (Conservation Commission n.d.). Some of the material remaining around the historic gold mines was re-used during this period. For example a 16,000 gallon tank was reduced and then reassembled as a swimming tank for soldiers in Adelaide River (Rayner 2001). Soldiers are also thought to be responsible for the demolition of the smelter stack at Yam Creek in 1942 (Mitchell 1994).

2.3. Archaeological background

Aboriginal archaeological sites identified during previous archaeological surveys between Adelaide River and Pine Creek (Guse and Gregory 1994, Guse 1995, 1996 and 1998, Heritage Surveys 1995a and b, Crassweller 2005 and 2006, Mulvaney 1990, Megirian 1986, Mitchell and Gregory 1995) have found that the most common form of archaeological sites are medium to small sized artefact scatters and quarries located mainly on low rises and ridges.

A search of the Archaeological Site Register for the Pine Creek 1:100,000 map sheet, held by the Heritage Advisory Services did not find any recorded archaeological or historic sites in the areas to be disturbed by the East Burnside Project. Of the ninety four Aboriginal archaeological sites recorded on the register 34 were stone artefact scatters and 60 were artefact scatters associated quarries. Other Aboriginal archaeological sites include a scarred tree, one hearth and 17 rock art sites. As the terrain around the East Burnside Project is not conducive for rock art there is very little likelihood for their presence in the study area. The same pattern occurs for identified sites on the McKinlay 1:100,00 map sheet with two stone artefact scatters and three scatters associated with a quarry. The differences in the number of sites between the two adjacent map sheets is a consequence of the higher number of archaeological surveys carried out for heritage clearances around the goldfield region on the Pine Creek map sheet and do not reflect an actual lack of sites in the McKinlay region.

The dominant raw materials used to manufacture the stone artefacts at these sites were quartz or tuff with smaller proportions of chert and hornfels. Quartz and tuff stone quarries were also located around outcrops where the quality of the raw material was suitable for artefact manufacture.

One historic site on the archeological site register Yam Creek, is located approximately 500 metres southeast of the proposed North Point open cut and consists of the mine, smelter complex, Chinatown and hotel complex. Mitchell (1995) comments that at historic sites broken bottle glass, porcelain, metal fragments and implements and earthenware would be the most common types of artefacts associated with mine workings, pits, adits and shafts. Structural features are less common although every goldfield had at least one stamp battery.

2.4. Predictive Model for the location of archaeological material.

The background historic information suggests that there will be a high potential for the presence of past mining features such as shafts and diggings in the areas around the proposed North Point open cut mine. The remains of smaller items such as glass and ceramics or metal objects used for mining or domestic use should also occur frequently especially near North Point which was relatively close to the township of Yam Creek.

While the archaeological background indicates that the majority of previously identified stone artefact scatters and quarries were located on low rises and ridges in the region, the high disturbance around both of the mine sites and along the Stuart Highway suggests there is only a low potential for the presence of undisturbed Aboriginal archeological remains.

3.0. METHODOLOGY

The surveys over the proposed North Point open cut mine consisted of pedestrian transects carried out in a zig-zag fashion over surfaces which had undergone relatively little disturbance by past mining activities. The surveys over both the proposed open cuts concentrated on surfaces that had not been cleared and the surface was covered in relatively undisturbed vegetation.

The location of the archaeological or historic sites are in WGS84 datum as this was the datum used on the maps identifying the areas to be surveyed.

3.1. Types of archaeological sites.

There are three types of sites previously recorded in the region and can broadly be defined as follows:

- *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* include stencils and paintings where material was added to the rock surfaces or engravings or poundings where the pictures or designs are produced by the removal of material from the rock surface.
- *Stone quarries* are generally sites where stone for flaked or edge ground artefacts have been extracted from an outcropping source of rock (Hiscock and Mitchell 1993).

3.2. Site definition.

An archaeological site is defined for this survey as a concentration of artefactual material with an average density that is 5 times greater than the average density of the background scatter and there are more than ten artefacts which cover an area of at least $2m^2$. 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.

Background scatter is generally a very low density, more or less continuous distribution of isolated artefacts 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 eraillure scar in an appropriate position below the platform.
- definite remnants of flake scars on the dorsal surface or dorsal ridges.

Stone artefacts are divided into 4 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 eraillure 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 piece*s 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 a site or object 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 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 representativenesss, 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, and the state of preservation of the archaeological material. Secondly, if the site has stratigraphic reliability then it may be possible to use the cultural material for dating which will provide a chronology extending back into the past. Thirdly, 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.

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 is associated with events, developments or cultural phases in human occupation.
- A site demonstrates a way of life, no longer practiced or in danger of being lost or of exceptional interest
- A site provides 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 they have been ranked according to their perceived significance.

4.0. RESULTS

The majority of the surface where the North Point open cut pit and waste dump will be located had been removed during earlier mining activities. The survey concentrated on the eastern and southern side of the open cut where vegetation was either re-growth or the surface was relatively intact. Average surface visibility was 70%. East of the proposed open cut is a low rise above a small alluvial plain that extends around to the western side of the disturbed area near the proposed waste dump. On the northern end of the rise is a low rocky outcrop where the surface has been disturbed by a shaft, NPshaft1 and numerous pits and trenches. Further shafts, trenches and shallow pits are scattered across the low rise. Three more shafts Npshaft2, 3 and 5 are located adjacent to the track that goes to Yam Creek and within the southern section of the proposed open cut. A fourth shaft, NPshaft4 was located east of the proposed open cut on the summit of a low ridge and surrounded by pits and trenches. Unlike the other vertical shafts NPshaft4 is at an angle of approximately 30 degrees to the surface. This site is outside the proposed development.

Two stone artefact scatters, NP1 and NP2 we located 50 metres apart on the top of the low undulating rise. They were surrounded by small disturbed areas and the items at the sites included a very low density of historic glass shards and pottery. These two sites are outside the areas to be disturbed.

Table 1. Summary of identified historic and archeological sites and features

Site	Type	Easting*	Northing
NPshaft1	Historic mine shaft	775799	8507498
Diggings		775786	8507438
Diggings		775833	8507430
Trench		775814	8507387
NP1	Stone artefact scatter	775808	8507366
Diggings		775805	8507329
NP2	Stone artefact scatter	775809	8507323
NPshaft2	Historic mine shaft	775778	8507085
NPshaft3	Historic mine shaft	775785	8507076
Trench		775849	8507082
Trench		775861	8507059
NPshaft4	Historic mine shaft	775864	8507039
NPshaft5	Historic mine shaft	775786	8507112

* WGS84, McKinlay River 5271 1:100,000 map sheet

4.3.1. Archaeological site, NP1
Type: Stone artefact scatter
Location: 52 775808E 8507366N
(McKinlay River 5271 1:100,000 map sheet)
Physiographic unit: Gentle slope
Dimensions: 5 x 8m
Visibility: 70%

This site is located on the level summit of a low gravelly rise that was probably surrounded by a small alluvial plain before the surrounding area had been disturbed. The rise is covered in low open woodland, grass understory and skeletal soils. It is located approximately 25 metres from the cleared area to the west and adjacent to historic mine workings.

The majority of artefacts consist tuff flakes, which include a bifacial point butt. Quartz was present in minor numbers. No cores were present, less than 5% of the artefacts were retouched and all flakes were less than 20cm long. The maximum density of artefacts was 8 artefacts per square metre with an average of 0.75 artefacts per square metre.

Within the boundary of the site were several glass fragments, a fragment of orange coloured pottery with the remains of an incised design and the base of a metal matchbox. There is no evidence that miners and Indigenous people used the site concurrently. The site was probably selected by both groups of people because it was on a level area surrounded by alluvial plains. Therefore the iste may have been disturbed by past mining activities.

Relationship to development: This site is located approximately 30 metres from the proposed open cut mine and outside the area that will be disturbed

Archaeological significance: This stone artefact scatter is a common site type in the region. It is located in an area that has been disturbed by previous mining activities and contains a low diversity and frequency of artefact types. The artefacts both Indigenous and European have been recorded in detail. Therefore this site has low research potential and has been assessed as having low archaeological significance.

4.3.2. Archaeological site, NP2
Type: Stone artefact scatter
Location: 52 775809E 8507323N
(McKinlay River 5271 1:100,000 map sheet)
Physiographic unit: Gentle slope
Dimensions: 4 x 4m
Visibility: 95%

This is a small artefact scatter is located on the same rise as NP1 which is 40m north. The artefacts consisted only of unretouched tuff flakes with an average density of one artefact per square metre. It does not appear that the flakes are the result of a single knapping event as the flakes were not concentrated within one area within the boundaries of the site.

Relationship to development: This site is located approximately 30 metres from the proposed open cut mine and outside the area that will be disturbed

Archaeological significance. This is a small stone artefact scatter and contains a low diversity and frequency of artefact types. Therefore this site has low research potential and has been assessed as having low archaeological significance.

4.3.3. Historic site NPshaft1
Type: Mine shaft, stone arrangement stone floor, trenches
Location: 52 775799E 8507498N
(McKinlay River 5271 1:100,000 map sheet)
Physiographic unit: Rocky outcrop
Dimensions: 30 x 15m
Visibility: 95%

This site is located on the top of a rocky outcrop on the end of a low ridge. The shaft is located near the center of the ridge. On the eastern side the rock has been excavated leaving a deep trench in the side of the rocky hill. Below this trench is an area where the surface has been built up and leveled off. This appears to have been a work area to process the excavated material from the shaft. A single row of stone is located around one side of the work area. On the western side of the shaft is another work area where the surface had been built up and leveled.

Relationship to development: This site is located outside the area of the proposed open cut and waste dump area.

Archaeological significance As there are a series of features around this shaft that appear to be the remains of the gold extraction processes used in the past, this site has been assessed as having moderate archaeological and historic significance based on its rarity of features and the archaeological potential for understanding the historic mining processes used at the site.

4.4. Background scatters of stone artefact.

Only two isolated stone artefacts were identified during the survey, the details of which are in Table 2. As the stone artefacts have been described in full they have low research value and consequently have been assessed as possessing low archaeological significance.

Table 2. Details of the background scatters

Background Scatter No.	Easting*	Northing	Visib. %	Type of artefact	Raw material	Dimension (mm)
BS Arch 4	775782	8507466	70	Retouched flake both margins	tuff	58 x 36 x 9
BS Arch5	775809	8507288	70	Multiplatform core, 25% cortex, large and small –ve flakes	tuff	100 x 58 x 40

*WGS84, McKinlay River 5271 1:100,000 map sheet

5.0. CONCLUSIONS & RECOMMENDATIONS

The overall results of the survey were quite different to the predictive model in that there was a very low frequency of objects related to the early mining period in the area. Only a few isolated fragments of glass and metal were located in areas where the historic record indicated the presence of many miners in the past. Another prediction was that there would be very little evidence of past Indigenous activities in the area around the mines, as prior mining activities would have destroyed or disturbed the surface.

The two stone artefact scatters NP1 and NP2 identified adjacent to the proposed development were in an area that had not been seriously impacted by past mining activities. However the presence of glass and pottery fragments at one NP1 suggests that the site had been disturbed.

5.1. Recommendations

Of the two archaeological and five historic sites located during the survey, only four of the historic mine shafts are located within or adjacent to areas that may be impacted by the

proposed developments for the East Burnside Project. The isolated stone artefacts will also be disturbed by the proposed development.

As mine shafts are a common feature in the historic goldfields and they are not protected under the act, no further action is required before and NPshaft 2, 3 and 5 are destroyed. The recommendations for the remaining sites that may be impacted by the development are as follows.

Recommendation 1.

While the most northern mine shaft at North Point, NPshaft1 is located approximately 80 metres from the proposed open cut there is a potential for accidental disturbance to the site by heavy machinery. As this site has been assessed has having moderate archaeological and historic significance it is recommended all personnel are made aware that the rocky outcrop on which the site is located is made a 'no go' area for heavy machinery.

Recommendation 2.

There are two isolated stone artefacts, BSArch 4 and 5 that may be destroyed by the proposed developments. As these objects are protected, prescribed objects under the *Northern Territory Heritage Conservation Act 1991* permission should be sought from the Minister for Natural Resources Environment and the Arts to destroy these objects before any mining or associated works commences in the surrounding areas.

Table 3. Summary of recommendations

	Easting	Northing	Significance	Type	Recommendations
NPshaft1	775799	8507498	Moderate	Mine shaft	Ensure that the area is made a 'no go' area
NPshaft2	775778	8507085	Low	Mine shaft	No further action
NPshaft3	775785	8507076	Low	Mine shaft	No further action
NPshaft5	775786	8507112	Low	Mine shaft	No further action
BS Arch6	796207	8478585	Low	Isolated stone artefact	Apply for permission to destroy
BS Arch7	759630	8503863	Low	Isolated stone artefact	Apply for permission to destroy

REFERENCES

Conservation Commission, NT, n.d. *World War 11 Trails of History*. Collectors Edition.

Crassweller, C. 2005. Archaeological survey along the existing detour at Bridge Creek Stuart Highway, NT.A report to Roads Projects Division, DIPE.

Crassweller, C. 2006. Archaeological survey fro the proposed Fountain Head open Cut, East burnside Project, NT.A report for URS, On behalf of Burnside Operations Pty Ltd.

Dermoudy, P. 1989. *Down the track. A Military Buffs Guide to the Stuart Highway.* A report to the Council of the Australian BC Authority.

Guse, D. 1998 Archaeological survey of the Rising Tide proposed development area, Brocks Creek Gold Mine, Northern Territory A report for Acacia Resources

Guse, D. 1996. An archaeological assessment of the proposed mining prospects in the Bridge Creek Region. A report for Woodward-Clyde

Guse, D. 1995 Archaeological survey of the proposed realignment of the North Australian Railway, Pine Creek to Union Reefs. NTUAS Report 27. A report to Australian National Rail.

Guse, D. and Gregory, R. 1994. An archaeological survey of the proposed realignment of the North Australian Railway, Bridge Creek to Howling Siding. NTUAS Report 25. A report to Australian National Rail.

Heritage Surveys, 1995a. Stage Two Archaeological Survey. Proposed Brocks Creek Gold Mine Northern Territory. A report for Solomon Pacific Resources NL

Heritage Surveys, 1995b. Archaeological mitigation at the proposed Brocks Creek Gold Mine Northern Territory. A report for Solomon Pacific Resources NL

Hiscock, P. 1984. A preliminary report on the stone artefacts from Colless Creek Cave, Northwest Queensland. *Queensland Archaeological Research*, 1:120-151.

Hiscock, P. and Mitchell, S, 1993. *Stone Artefact Quarries and Reduction Sites in Australia: Towards a Type Profile*. Technical Publications Series Number 4. Australian Heritage Commission, Canberra.

Holdaway, S. and Stern, N. 2004. *A Record in Stone. The Study of Australia's Flaked Stone Artefacts*. Museum Victoria and AIATSIS.

Jones, TG. 1987. *Pegging the Northern Territory. A History of mining in the Northern Territory, 1870-1946.* Department of Mines and Energy,NT, Darwin.

Maquis-Kyle, P. and M. Walker, 1992. *The Illustrated Burra Charter: Making good decisions about the care of important places*. Australian Heritage Commission, Canberra.

Megirian, D 1986 Archaeological report Amadeus basin to Darwin Natural Gas Pipeline. MAGNT

McCarthy, F.D. 1976. *Australian Aboriginal Stone Implements*. The Australian Museum Trust, Canberra.

Mitchell, S. 1993 An archaeological investigation of heritage sites in the Southern Lease Project area, Pine Creek. A report for Shell Company Australia

Mitchell, S. 1994. An archaeological and historical survey of selected mining sites in the Pine Creek District, NT. Unpublished report to the National Trust of Australia (NT Branch)

Mitchell, S and Gregory, R. 1995. An archaeological survey of heritage sites at the proposed Brocks Creek Gold Mine, NT. A report for NSR Environmental Consultants Pty Ltd.

Mulvaney, K. 1990. An archaeological survey of 66KV Transmission Line Goodall Gold Mine. An unpublished report fro the Power and Water authority, MAGNT

NSR Environmental Consultants.1995 Brocks Creek Gold Project. Solomon Pacific resources NL. Draft Environmental Impact Statement. Main Report

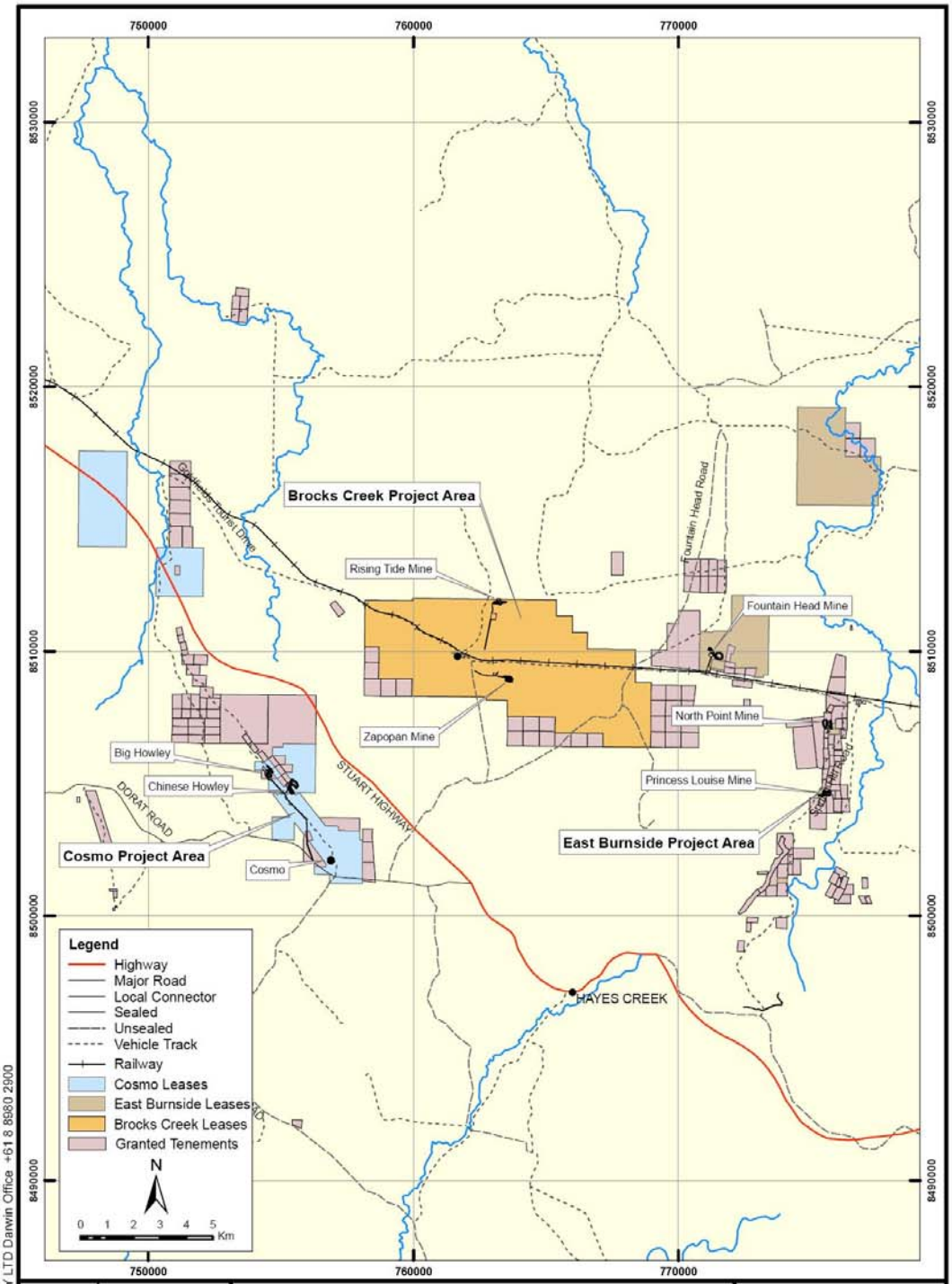
Needham, RS. and Stuart-Smith, PG. 1984. Geology of the Pine Creek Geosyncline, Northern Territory. Bureau of Mineral Resources, Geology and Geophysics, Darwin.

Rayner, RJ.2001. *Darwin and Northern Territory Force*. Rudder Press NSW

Story, R. Williams, MAJ. Hooper, ADL. O'Ferrall, RE and McAlpine, JR. 1969. Lands of the Adelaide-Alligator Area, Northern Territory. Lands Research Series. No. 25. Melbourne.

Sullivan, M.E. and S. Bowdler 1984. *Site Surveys and Significance Assessment in Australian Archaeology*. Department of Prehistory, Research School of Pacific Studies, ANU, Canberra.

Wilson, BA. Brocklehurst, PS. Clarke, MJ Dickinson, KJM. 1991. Vegetation Survey of the Northern Territory. (Northern Sheet). Conservation Commission of the Northern Territory, Palmerston.


750000
760000
770000
8530000
8520000
8510000
8500000
8490000
Brocks Creek Project Area
Rising Tide Mine
Fountain Head Mine
Fountain Head Road
Zapopan Mine
North Point Mine
Princess Louise Mine
Big Howley
Chinese Howley
DORAT ROAD
STUART HIGHWAY
Cosmo Project Area
Cosmo
East Burnside Project Area
HAYES CREEK
Legend
Highway
Major Road
Local Connector
Sealed
Unsealed
Vehicle Track
Railway
Cosmo Leases
East Burnside Leases
Brocks Creek Leases
Granted Tenements
N
0 1 2 3 4 5 Km
URS AUSTRALIA PTY LTD Darwin Office +61 8 8980 2900
Job 42213732
Prep. By JD 5 Jun 06
Chk.d By JM 5 Jun 06
Revision No. 0
GBS Gold Australia
BURNSIDE PROJECT AREA
SITE AND SURROUNDS
Figure 1
URS
42213720-001.mxd

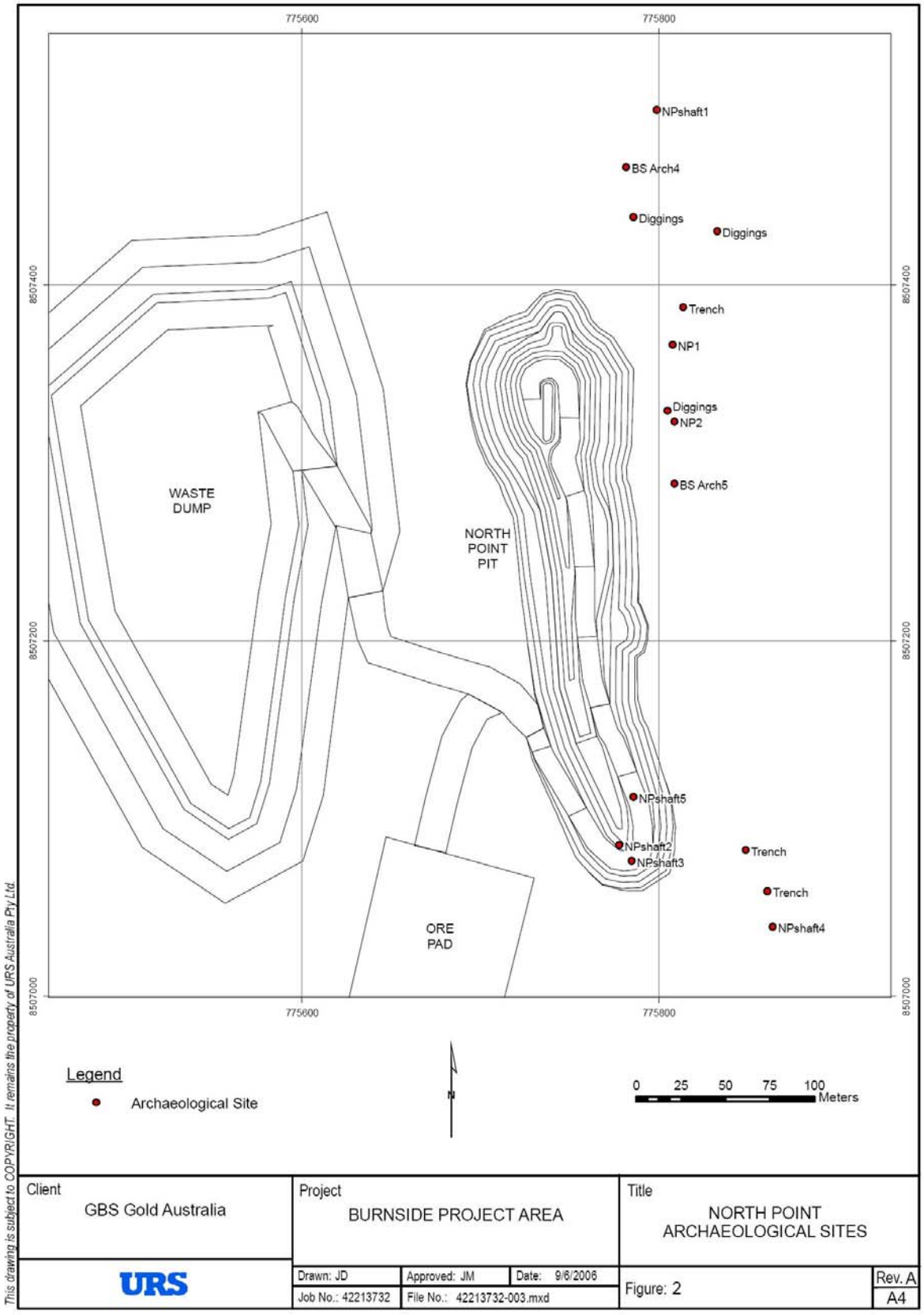

775600
775800
8507400
8507200
8507000
NPshaft1
BS Arch4
Diggings
Diggings
Trench
NP1
Diggings
NP2
BS Arch5
WASTE
DUMP
NORTH
POINT
PIT
NPshaft5
NPshaft2
NPshaft3
Trench
Trench
NPshaft4
ORE
PAD
Legend
Archaeological Site
N
0 25 50 75 100
Meters
This drawing is subject to COPYRIGHT. It remains the property of URS Australia Pty Ltd.
Client
GBS Gold Australia
Project
BURNSIDE PROJECT AREA
Title
NORTH POINT
ARCHAEOLOGICAL SITES
URS
Drawn: JD
Approved: JM
Date: 9/6/2006
Job No.: 42213732
File No.: 42213732-003.mxd
Figure: 2
Rev. A
A4

Photo 1. NPshaft1.

Photo 2. Stone lines NPshaft1

Photo 3. Built up rock platform NPshaft1

Photo 4. Trench between shaft % work area, NPshaft1

Photo 5. Rock platform NPshaft1

Photo 6. Archaeological site, NP1

Photo 7. Historic fragments NP1

Photo 8. Bifacial point butt, NP1

Photo 9. Archaeological survey NP2

Photo10. NPshaft5

Photo 11.NPshaft2

Photo 12. NPshaft4