



P.O. Box 22407, Windhoek, Namibia
email: jkinahan@iafrica.com.na

J. & J. KINAHAN, Archaeologists
t/a Quaternary Research Services
Tel./fax +264+61+236216/256702 Cell 081 3320832
Field communications V5Z 3476 via +264+64+203582

10 November 2009

Archaeological reconnaissance of Navachab Gold Mine lease area, Erongo Region

QRS Job 114

AngloGold Ashanti Namibia (Pty) Ltd
Navachab Gold Mine
P.O. Box 150
Karibib

For attention: Mr Hildebrand Wilhelm

Introduction:

Navachab Gold Mine, situated in the eastern Erongo Region, is an established open-cast operation extracting relatively low grade ore from marbles of the prevailing Karibib Formation. The mine area (ML-31) and the adjacent exploration area (EPL-999) together comprise 7937.4ha., of which 508.6ha., or 6.4% is occupied by the mine, ore processing plant and waste rock dumps¹. The undisturbed part of the combined property is represented by typical escarpment terrain, with rugged limestone hills, deeply incised drainage, and large areas of valley-fill colluvium. The vegetation is dominated by sparse thorn scrub, but the presence of several small springs suggests that the Navachab area might have been a focus of human settlement in the past and therefore relatively rich in archaeological evidence.

Archaeological sites and related evidence of early human settlement in Namibia are protected under the National Heritage Act (27 of 2004), which makes provision for archaeological impact assessment of mining activities such as at Navachab. To ensure compliance with the Heritage Act and the related provisions of the Environmental Management Act (7 of 2007), Navachab

¹ Data from Mrs M. Bell, Environmental Officer, Navachab Mine

Gold Mine commissioned QRS to carry out an archaeological reconnaissance of the lease area, to identify and assess sites or remains in parts of the lease area targeted for mining, and to estimate the cumulative impact on archaeological sites, of mining operations to date. Although relatively little archaeological field survey has been carried out in the Karibib area, there are records of mid- to late Pleistocene human occupation, and a number of Holocene sites associated with rock art, pottery and other indications of complex hunter-gatherer settlement. No major sites have been reported from the vicinity of Navachab, however².

Field survey of undisturbed terrain involves a simplified land-system approach, weighted in favour of situations that are known from adjacent or nearby areas, to have attracted early human settlement, or to present the sort of conditions where archaeological remains might be best preserved³. In the Navachab area, the most promising conditions are found on the younger valley-fill terraces of the Kachab River, in the lower parts of some minor tributary systems, and in the vicinity of isolated outcrops. As it happens, the main target for future operations at Navachab, on EPL-999, is an older pre-Quaternary valley-fill terrace of the Kachab, known as “Anomaly 16”. The present survey focussed on this valley, extending out to other parts of the property, including the sites of early colonial mining activity such as the Dernberg marble quarry and the Navachab guano mine.

In the field, archaeological sites were plotted by hand on the relevant 1:50k topographic maps and their position co-ordinates were established by hand-held GPS. The sites were described according to their physical setting, major characteristics and estimated chrono-stratigraphic age. Each site was assessed in terms of its archaeological significance, or value for possible future study, and its vulnerability to damage or destruction in the course of present or anticipated activities in the lease area. The assessment employs two parallel 0-5 scales, summarized in the text box below, allowing independent assessment of the two variables.

2 Kinahan, J. 2000. *A first approximation of archaeological site distributions in Namibia*. Report to the Atlas of Namibia Project, Directorate of Environment Affairs, Windhoek. (QRS Job 15).

3 Stromquist, L. et al. 1999. Utilizing landscape information to analyze and predict environmental change: the extended baseline perspective. *Ambio* 28 (5):436-443. Banning, E.B. 2002. *Archaeological Survey*. New York, Kluwer pp273.

SIGNIFICANCE RATING		VULNERABILITY RATING	
0	no significance	0	not vulnerable
1	disturbed or secondary context	1	no threat posed
2	isolated minor find	2	low or indirect threat
3	archaeological site	3	probable threat
4	multi-component site	4	high likelihood of disturbance
5	major archaeological site	5	direct and certain threat

The following section of the report sets out the observations made in the course of the survey, also summarized as a distribution map (Figure 1). The site distribution data (including all key attributes), as well as related cadastre data for the lease area, are submitted with the report in digital format as ArcGIS shp files (WGS84 projection).

Observations:

A total of seventeen archaeological sites were recorded in the course of the field survey. The distribution of the sites is shown in Figure 1, below, and details of the sites are set out in the site gazetteer.

Mid- to late Pleistocene stone artefact material was found at two sites, QRS 114/11 and 15, although in both cases there was insufficient material to warrant more detailed study. Holocene stone artefact material was found at six sites, QRS 114/1, 5, 12, 13, 14 and 17. These were all low density surface scatters of quartz artefact debris and contained no formal tool types or dateable organic remains. Possibly coeval with this and slightly younger are a series of stone feature sites, including two suspected human burials, QRS 114/2 and 4, as well as several other sites with stone cairn and hut features, QRS 114/3 and 10. One site, QRS 114/16 had several small diggings which probably represent wild grass seed harvesting activities during the late pre-colonial or early colonial era.

The most significant traces of historical or colonial era occupation were found at the guano mining site QRS 114/7 and related site QRS 114/8. The actual date of these workings is not clear. Other historical mine workings are represented by the old Dernberg marble quarry, QRS 114/6 which has some abandoned remnants of machinery, earthworks and a small building.

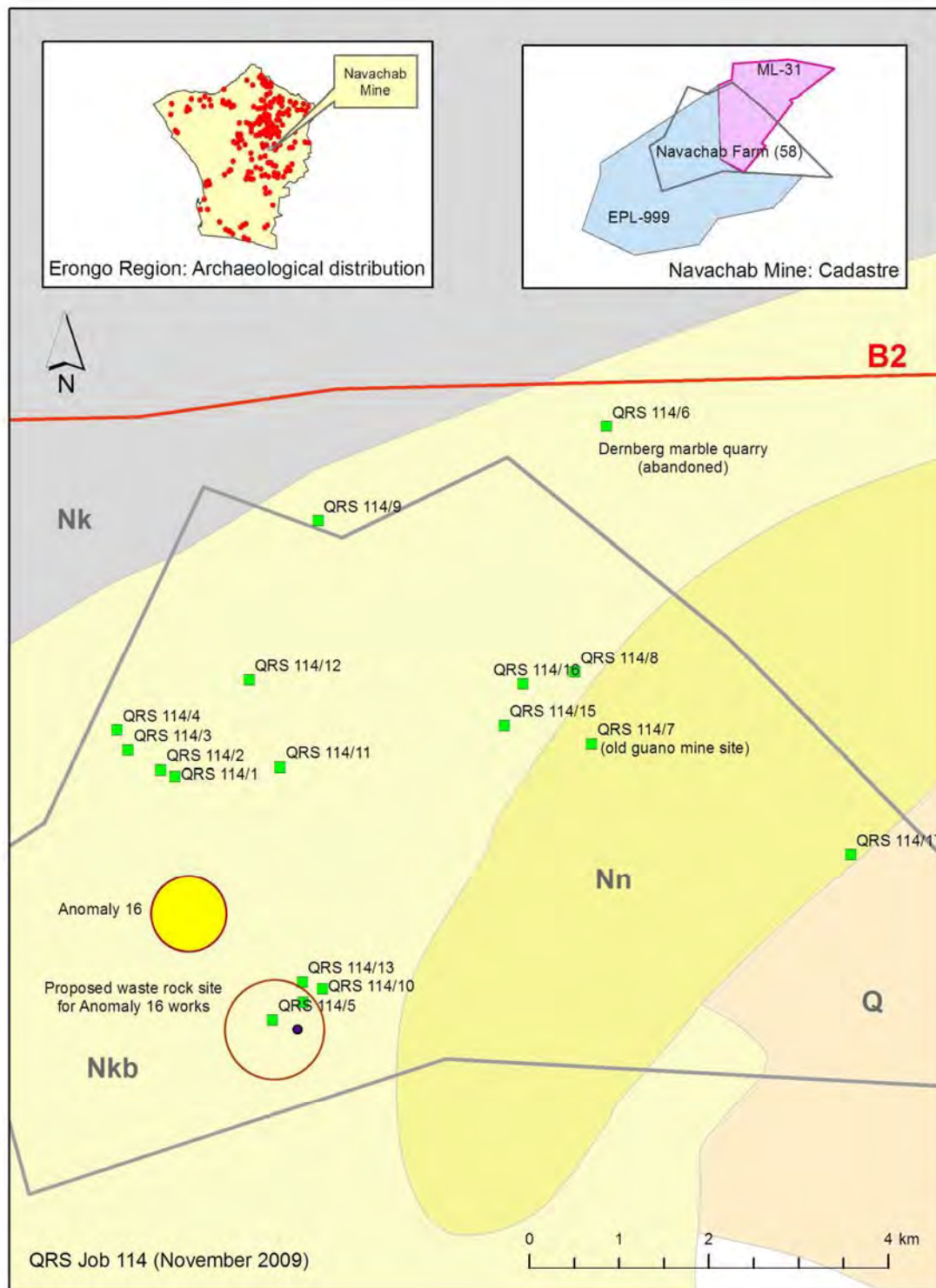


Figure 1: The distribution and geological setting of archaeological sites located during the Navachab reconnaissance survey (see Site Gazetteer or GIS shp file Attribute Table for accompanying data).

SITE GAZETTEER

QRS 114/1

Site coordinates: Lat.-21.97758 Long.15.71756
Setting: Seepage in tributary to Kachas River
Description: LSA scatter
Records: Field notes, photographs and locality data.
Significance rating: 1
Vulnerability rating: 2

QRS 114/2

Site coordinates: Lat.-21.97697 Long.15.71612
Setting: Young valley-fill colluvium and hill talus
Description: Stone feature dispersed ca 5m dia., possible burial.
Records: Field notes and locality data.
Significance rating: 3
Vulnerability rating: 2



QRS 114/2, dispersed cairn on colluvial valley-fill terrace, Kachab River in background.

QRS 114/3

Site coordinates: Lat.-21.97500 Long.15.71286
Setting: Old valley-fill colluvium, calcretized
Description: Stone feature dispersed ca 2m dia., possible burial.
Records: Field notes, photographs and locality data.
Significance rating: 3

Vulnerability rating: 2

QRS 114/4

Site coordinates: Lat.-21.97301 Long.15.71178
Setting: Young valley-fill colluvium and hill talus
Description: Stone feature dispersed ca 2m dia., possible burial.
Records: Field notes and locality data.
Significance rating: 3
Vulnerability rating: 2

QRS 114/5

Site coordinates: Lat.-22.00197 Long.15.72733
Setting: Old valley-fill colluvium, calcretized
Description: LSA scatter
Records: Field notes and locality data.
Significance rating: 3
Vulnerability rating: 3

QRS 114/6

Site coordinates: Lat.-21.94252 Long.15.76077
Setting: Marble hill
Description: Abandoned marble quarry works
Records: Field notes, photographs and locality data.
Significance rating: 2
Vulnerability rating: 3



QRS 114/6 Site of Dernberg marble quarry with ruined site building in foreground



QRS 114/6 Dernberg marble quarry; base and derrick of rotating crane

QRS 114/7

Site coordinates: Lat.-21.97437 Long.15.75928

Setting: Cave near summit of prominent limestone hill

Description: Historical guano mine workings; appear to have removed about 250m³ to loading ramp at foot of hill slope approximately 95m below. Some jute bags noted within cave; parts of winch anchor and cast iron flywheel pieces on slope.

Records: Field notes, photographs and locality data.

Significance rating: 3

Vulnerability rating: 2



QRS 114/7 entrance to guano mine viewed from within cave.



QRS 114/7 possible remnants of winch anchor

QRS 114/8

Site coordinates: Lat.-21.96721 Long.15.75761
Setting: Foothlope of previous feature
Description: Historical enclosure, consisting of two adjacent 12mx12m rectangular stone alignments which may have been footing for a light fence. Approximately 25m downslope is a circular stone-lined pond, 2.2m dia. and 0.3m deep, lined with lime cement: probably a quenching bath for iron wagon tyres.
Records: Field notes, photographs and locality data.
Significance rating: 3
Vulnerability rating: 3



QRS 114/8 Possible iron wagon tyre quenching bath

QRS 114/9

Site coordinates: Lat.-21.95203 Long.15.73190
Setting: Outcrop, dolomite erosion remnant
Description: Historical, scatter of 19th century brown stoneware.
Records: Field notes and locality data.
Significance rating: 2
Vulnerability rating: 1

QRS 114/10

Site coordinates: Lat.-21.99888 Long.15.73236
Setting: Young valley-fill colluvium with hill talus
Description: Stone feature, probably a hut, associated with schist whetstone

Records: Field notes and locality data.
Significance rating: 3
Vulnerability rating: 2



QRS 114/10 (red ellipse) on typical young valley-fill terrace adjacent to the Kachab River. The high bank centre left is calcretized pre-Quaternary valley fill partly obscuring a schist pediment.

QRS 114/11

Site coordinates: Lat.-21.97668 Long.15.72809
Setting: Stream confluence
Description: MSA flake, isolated find
Records: Field notes and locality data.
Significance rating: 2
Vulnerability rating: 1

QRS 114/12

Site coordinates: Lat.-21.96799 Long.15.72501
Setting: Gravel outwash fan
Description: LSA scatter
Records: Field notes and locality data.
Significance rating: 2
Vulnerability rating: 1

QRS 114/13

Site coordinates: Lat.-21.99819 Long.15.73032
 Setting: Old valley-fill colluvium, calcretized
 Description: LSA scatter
 Records: Field notes and locality data.
 Significance rating: 2
 Vulnerability rating: 1

QRS 114/14

Site coordinates: Lat.-22.00019 Long.15.73037
 Setting: Schist pediment outcrop
 Description: LSA scatter
 Records: Field notes and locality data.
 Significance rating: 2
 Vulnerability rating: 1

QRS 114/15

Site coordinates: Lat.-21.97255 Long.15.75052
 Setting: Outcrop (rock type not noted)
 Description: MSA scatter
 Records: Field notes and locality data.
 Significance rating: 3
 Vulnerability rating: 1

QRS 114/16

Site coordinates: Lat.-21.96839 Long.15.75242
 Setting: Young valley-fill colluvium with hill talus
 Description: Seed diggings, five within 100m radius, probably related to QRS 114/8
 Records: Field notes and locality data.
 Significance rating: 2
 Vulnerability rating: 1

QRS 114/17

Site coordinates: Lat.-21.98538 Long.15.78522
 Setting: Outcrop (rock type not noted)
 Description: LSA scatter
 Records: Field notes and locality data.
 Significance rating: 2
 Vulnerability rating: 1

Assessment:

The archaeological and historical sites examined in the course of this survey represented thinly scattered remains of human settlement dating from the late Pleistocene to recent colonial period.

Despite the presence of shallow groundwater resources, no indications were found of large-scale, concentrated or semi-permanent settlement, although it is possible that such sites exist outside the area covered by the survey. The general characteristics of the archaeology in this area suggest that mining operations to date at Navachab have had a negligible impact on the

regional archaeological record.

The sites found in the survey area were generally of low to medium significance, with little potential for future research. It is not possible to know the vulnerability of these sites with certainty until plans for mining Anomaly 16 have been finalized. However, given the low significance of the sites in this area, mining will not have severe consequences for the regional archaeological record. Some cautionary recommendations are set out below to reduce the archaeological impact of mining development.

Recommendations:

1. Depending on the scale of work envisaged at Anomaly 16 it may be necessary to carry out additional archaeological field survey on the western parts of EPL-999 not covered during the present survey.
2. The present access to Anomaly 16 passes very close to QRS 114/8 which seems to form part of the historical guano mining operation. If this access is to be significantly widened, it would be advisable to re-route it to the north and avoid further damage to the site.
3. The Dernberg marble quarry QRS 114/6 may be affected if the present work on Grid A is significantly extended. If such extension is planned it would be advisable to document those parts of the quarry that might be affected.

I trust that you will find this report and assessment satisfactory

Yours sincerely



John Kinahan PhD MSAIE & ES

Partner

Encl.: GIS files for site distribution and attribute data, and cadastre files generated from data supplied by Navachab Gold Mine (Pty) Ltd.