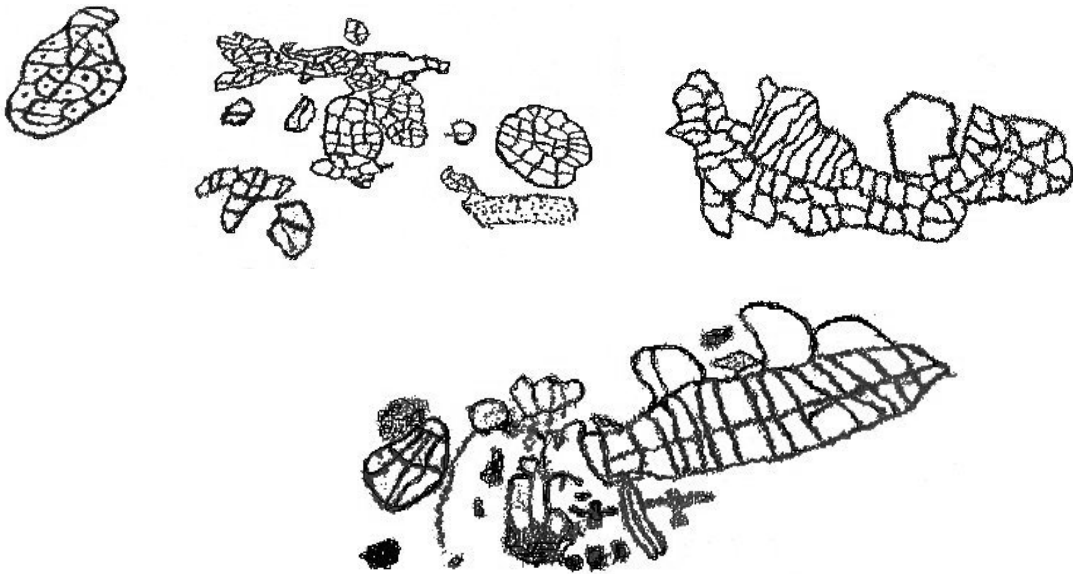


Annexure Q1:

A Phase One Archaeological Assessment (Pg 1 to 47)

A PHASE ONE ARCHAEOLOGICAL ASSESSMENT OF HERITAGE RESOURCES IN THE TRANS HEX DIAMOND CONCESSION *RICHTERSVELD*



PREPARED FOR

TRANS HEX GROUP LTD.

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by

David Halkett
Archaeology Contracts Office
Department of Archaeology
University of Cape Town
Private Bag
Rondebosch
7701

Tel: (021) 650 2357 Fax: (021) 650 2352 E-mail: djh@beattie.uct.ac.za



EXECUTIVE SUMMARY

An investigation of heritage resources in diamond mining areas under the control of Trans Hex has noted that numerous sites exist in the area. Many of the sites occur on the recent floodplains within a few hundred meters of the Orange River and are generally not affected by the actual mining operation. Of concern are the threats from mining related infrastructure on heritage sites e.g. roads, pump stations and prospecting activities often intrude on sensitive areas.

Many petroglyphs are found at Bloeddrift. These are found wherever dolomite is present including areas around the active mining. Damage has occurred as a result of a number of mining and related activities. Care should be taken to ensure that engravings are not damaged as these have the potential to become tourist attractions in the future. A more insidious form of damage is however the increase of graffiti that has taken place as a result of the increase in the number of people working in proximity to petroglyphs. It is suggested that Trans Hex design a campaign to educate employees (including subcontractors) as to the heritage value of the engravings. Such a campaign could be extended to schools and local communities as a public relations exercise.

It is suggested that where there is the potential for damage to occur to heritage sites, that they be identified and protected or mitigated by systematic archaeological excavation.

Front cover illustrations: a selection of engravings from Bloeddrift (various scales)

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1. INTRODUCTION

1.1 Background and brief

Prospecting and mining of diamonds has been taking place along the Orange river for many years. The area that is the subject of this investigation is the concession on the southern bank of the Orange River in the Richtersveld, currently mined by the Trans Hex Group. The nature of the mining is to recover diamonds from gravel deposits in palaeo-channels of the Orange. As with any river, there are areas of erosion and areas of deposition. It is the latter that are detected by prospecting and if the yield is high enough will be mined. This results in the mining being confined to certain areas rather than taking place along the entire length of the concession. The location of the concession and mining areas is shown in Figure 1.

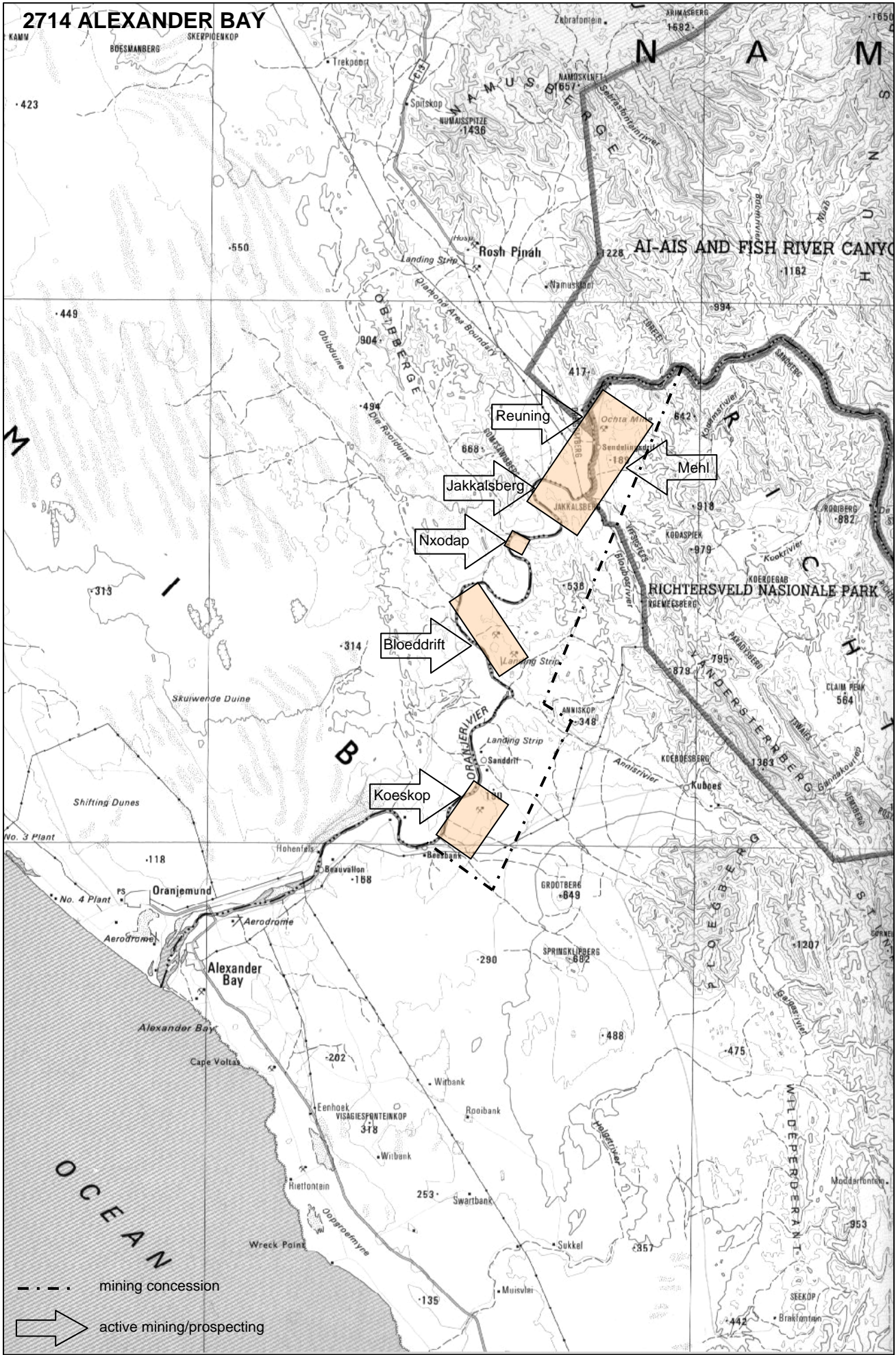
As can be seen from Figure 1, the concession extends into the Richtersveld National Park. It was the section that overlapped the park that was of primary concern to the National Monuments Council, who had requested Trans Hex to commission a Phase 1 archaeological study of that area. The Archaeology Contracts Office was appointed to conduct the study. In discussions with Trans Hex, it was suggested that the study be extended to cover other parts of the concession as well, so that an overall management plan could be prepared. A similar suggestion had been made in 1997 by representatives of the Kimberley office of the National Monuments Council and McGregor Museum (Morris & Turkington 1997). Under current and imminent legislation it is an offence to damage archaeological sites and it seemed appropriate to identify those areas where there may be problems as well as those where there were none.

An initial short scoping visit was made to the area during which we were accompanied by Mr. Herman Bruwer, who is responsible for the environmental management of the mine (Halkett 1998). Based on this visit, a proposal for the study was prepared which was based on the terms of reference suggested by the National Monuments Council. The brief included:

- an overview of previous work in the area;
- a field survey of the area;
- sites should be plotted on maps/plans from which their locations could be easily identified;
- assess the archaeological significance of sites as well as assessing vulnerability in terms of mining operations;
- liaise with Trans Hex to ascertain the sequence of mining;
- prepare a report laying out the findings of the investigation and suggesting methods for ongoing management of heritage resources, including mitigation measures for sites which could be destroyed by mining;
- make suggestions regarding access by tourists to rock engraving sites at Bloeddrif;

1.2 Defining the subject of the investigation

In undertaking this project we have examined a broad range of sites from the historical and pre-colonial period which collectively are termed heritage resources (these terms are fully explored in Section 3). These resources include Early and Middle Stone Age artefact scatters, San occupation sites, early herder encampments, rock engraving sites, graves and a single building.



1 Location of the survey

0 25km

2. SCOPE OF THE PROJECT

2.1 Archaeological goals

The relative remoteness of the Richtersveld has meant that over the years, few archaeological projects have been undertaken there. While some archaeological excavations have been conducted near Sendelingsdrift (Jakkalsberg A and B), no systematic archaeological site surveys have been undertaken along this part of the Orange River. This, despite the fact that we know from the reports of early explorers, that both San hunter-gatherers and Khoekhoen¹ pastoralists were still to be found in the area at the beginning of the colonial era, and had existed here for millennia before that.

One of the goals of this assessment has therefore been to locate some of these sites and based on the results, to try and understand some basic settlement behaviour. In other words, we are trying to understand how pre-colonial people used the landscape, and the range of sites that were created in the process. By developing an understanding of land use, it is hoped that we will be able to extrapolate our findings more broadly to both active, and potential mining areas along the river which have not yet been studied, to ensure long term management of the heritage resources.

2.2 Previous studies

In addition to fieldwork, we have made a survey of published and unpublished literature on the archaeology of the area in an attempt to get as broad a view possible of the distribution of sites. It must however be noted that very little archaeological research has been undertaken here and published material is scant. The engravings are perhaps an aspect of the archaeology that has elicited most comment from a broad range of visitors to the area. While their observations provide us with some confirmation of the location of engraving sites, other comments on the content are often speculative and therefore not very informative. The information obtained from this exercise has been integrated into the report and a full bibliography is presented at the end of the report.

2.3 Method

The Trans Hex mining concession is quite large extending along the river from Koeskop in the south to just beyond Reuning (Sendelingsdrift) in the north (see Figure 1). In reality, only a relatively small part of this area is mined at present although ongoing prospecting may mean that the situation could change in the future.

In preparing this report, we have looked at different parts of the landscape in order to gain an understanding of the location of human occupation in the past while at the same time remaining cognizant of the need to assess impacts from current mining operations. This has been achieved by looking at the areas in and around active mining, as well as at areas where mining has taken place in the past. We have also looked at areas where no mining has, or is taking place at present, to test if our understanding of settlement pattern is correct.

The survey has been done by walking and driving through sections of the landscape and recording site locations. The locations have been plotted on extracts from enlarged aerial

¹ This is the grammatically correct term. It is the common-gender plural of 'Khoe' in Nama and Korana and means more than one person, or people (Deacon 1999:129-130).

photographs and in addition, digital, slide and video photographic coverage of sites was kept and notes were made about the content. Sites were also assessed for uniqueness and research potential. While GPS fixes have been obtained for sites, these remain too inaccurate for use in planning.

3. BACKGROUND HISTORY OF THE NORTHERN CAPE

The history of the Western and Northern Cape is long and complex spanning many thousands of years. Our current understanding of the history is based on archaeological observations as well as the surviving written texts from the colonial period. Broadly, four distinct periods of this history may be defined. These are summarised below to contextualise the findings made during this study.

3.1 The Early Stone Age (ESA)

Archaeological research has demonstrated that the earliest stone artefacts in South Africa, dating to about 1,7 million years ago, are found at the Sterkfontein caves in Gauteng where they are associated with the remains of *Homo habilis*. These tools are crude by later standards and have been assigned to the Oldowan industry. At approximately 1,5 million years, distinctive stone tools called handaxes appear and are believed to coincide with the emergence of the more evolved *Homo erectus/ergaster*. These tools appear to have been made according to much the same pattern until about 200 000 years ago.

Literally millions of handaxes have been found throughout South Africa, usually in places associated with rivers, pans or springs and, on rare occasions, in caves. They were recorded at a number of locations in South Africa as early as 1881, and even then the similarities with the oldest stage of the European Palaeolithic was noted. In the western Cape, handaxes were first described from the Stellenbosch vineyards in 1899 (Peringuey 1911), and because of their abundance in that area, from about 1926, sites with these tools were described as being part of the Stellenbosch culture. Today, handaxes are described as Acheulian, to emphasise the similarity with stone tools found particularly at St Acheul in France, and with those in the rest of Africa and parts of Europe and the Far East (Sampson 1974).

The favoured raw material for the production of Early Stone Age tools was quartzite. It is no coincidence therefore, that ESA sites are often found next to river beds where large quantities of water worn quartzite cobbles can be found. Since few stratified instances of these artefacts are found in association with organic remains, study of other aspects of life at that time remains difficult.

3.2 The Middle Stone Age (MSA)

Large cave sites discovered in the Kalk Bay mountains on the Cape Peninsula in the 1920s, contained deep deposits with large numbers of more refined stone artefacts in the lower parts of the sequences (Sampson 1974). These were recognisably different from ESA artefacts and had many similarities to artefacts found in the Palaeolithic sites of Europe. Similar kinds of artefacts have since been found on many open sites and on rare occasions, in the deposits of caves throughout South Africa. A larger selection of fine grained raw material was used for the manufacture of artefacts as new techniques of production, and secondary working into intricate tools, required more predictable flaking properties. Research has shown that these artefacts belong to a period known in South Africa as the Middle Stone Age and date to the period between 40 000 and 200 000 years.

In some very rare instances where circumstances permit, fossil animal bone and marine shells have been found in association with the artefacts giving some indication of the diet and lifestyle of the makers. MSA people are thought to have been an early form of modern humans (*Homo sapiens*) who were capable of hunting large animals. Current theory is that early *Homo sapiens* evolved into fully modern form in Africa and migrated to Europe via the Middle East some 40 000 years ago (Klein 1989). It is believed that these new migrants may have been responsible for the demise of the Neanderthal populations in Europe. There has been a resurgence of interest in this period and a number of sites in the Cape are being investigated by local and international archaeological teams. Development of new dating techniques extending beyond the range of radiocarbon age determinations, is greatly enhancing this research.

3.3 The Late Stone Age (LSA)

This period has been subjected to detailed study by archaeologists. Late Stone Age people ancestral to the San (Bushmen) and the Khoekhoen (Hottentots) of early colonial times lived in southern Africa some 40 000 years ago.

During most of the Holocene (last 10 000 years) southern Africa was inhabited by small groups of San hunter-foragers who were highly mobile. They hunted with bows and arrows, snared small animals and, where groups lived close to the shore, gathered shellfish and other marine resources, a habit which resulted in the use of the term “Strandlopers”². They used digging sticks, often weighted with bored stones, to find a variety of subterranean vegetable foods, particularly iridaceous bulbs. Having a prodigious knowledge of the environment and the resources around them, their cultural repertoire included a complex belief system, aspects of which are represented in many rock painting and engraving sites in the northern and western Cape. Many paintings and engravings are understood as being closely linked with shamanistic ritual or belief (Lewis-Williams 1981).

The occurrence of sheep and pottery remains in archaeological sites dating to the last 2000 years and younger points to the appearance at that period of a new economy and way of life based on pastoralism. It seems most likely that groups of people, probably the ancestors of the Khoekhoen of colonial times adopted pastoralism, in this case with herds of fat-tailed sheep and later cattle (Smith 1987, Sealy and Yates 1994). With the advent of pastoralism, or soon afterwards, ceramic technology was introduced. While some San groups appear to have co-existed with pastoralists, it has been suggested that hunter-foragers were marginalised moving to areas where grazing opportunities were less attractive to pastoralists (Parkington et al 1986). The precise origin of early stock keeping and ceramic technology in southern Africa is still unclear but it is suggested that it was introduced from the north.

3.4 The Colonial Period

When the Dutch colonists arrived to set up a replenishment station at the Cape in 1652, they encountered several Khoekhoen groups. Some of these groups lived for part of the year on the Cape Peninsula as part of their seasonal round, while the larger groups grazed herds of sheep and cattle in the Tygerberg Hills and Cape Flats and further afield.

² It has not been proven that there were indigenous groups who lived exclusively at the coast and entirely on marine foods, although hunter-foragers may have become more dependant on them when access to traditional food sources was limited by the influx of first, Khoekhoen pastoralists, and later European settlers.

First contact between Europeans and indigenous southern African pastoralist groups had however occurred much earlier when Portuguese mariners sailing down the coast in the 15th and 16th centuries had bartered supplies of meat from the Khoekhoen that they encountered at places such as Saldanha Bay (Smith 1985).

With the increase of shipping rounding the Cape, it was inevitable that some ships would be wrecked. Encampments were set up by the survivors of such wrecks, and they often recount meeting and trading with the indigenous groups (Raven-Hart 1967, Smith 1985) so that by the time that Van Riebeeck arrived, a history of contact had already been established.

At first the relationship between the Dutch and the Khoekhoen was one of co-operation, with a great deal of bartering taking place primarily to secure regular supplies of fresh meat. However, as the colony grew and free burghers were granted lands further away from Cape Town, grazing lands previously available to the Khoekhoen were encroached upon. The conflict for land began a process of attrition which, when accompanied by genocidal government policies and several deadly smallpox epidemics, broke down the indigenous population and its political structures. Those who survived were pressed into service as farm labour or settled around several large mission stations that had been established in the Cape.

According to the writings of early colonists, it appears that some San groups still existed in the Cape well into the colonial period. They pursued a largely hunting and foraging lifestyle and were often encountered in the more mountainous regions where there was less possibility of conflict with either the Khoekhoen or Dutch settlers (Parkington *et al* 1986). In the Roggeveld and further inland in the Karoo, the San suffered from repeated commando raids from the 1770s, but remnant groups maintained degrees of independence for another century (Deacon and Dowson 1996). Namaqualand and the upper Karoo were amongst the least desirable parts of the subcontinent in terms of early colonial penetration, and some Khoekhoen and San continued aspects of their traditional way of life and cultural repertoire here until they were displaced in the 19th century. The accounts of early travelers through Namaqualand, most notably that of Robert Jacob Gordon in 1779, clearly attest to the presence of indigenous hunter-forager and pastoralist groups in these areas (Raper & Boucher 1988). Similarly, the invaluable Bleek and Loyd records from people living in the Karoo in the 1870s provide insights into /Xam San life and folklore on the eve of their extinction (Deacon and Dowson 1996). The Nama, originally one of the Khoekhoen groups met by Gordon, still practice a form transhumant pastoralism in reservations in Namaqualand today.

The mountainous terrains of the Cape Fold Belt provided refuge in the early colonial era for Drosters (run-away slaves), many of whom forged links with the independent Khoesan in the area (Penn 1994). Colonial settlement was extended inland into the Roggeveld and the Hantam (Calvinia) in the 18th century.

4. DESCRIPTION OF THE STUDY AREA

The area that has been studied lies on the southern side of the Orange River in the area that is known as the Richtersveld. Lying some 40 km inland from the coast, the Richtersveld is a mountainous desert bisected by the Orange River and extending north into southern Namibia. While water is available all year round along the Orange, and from the many springs that are found in the mountains, moisture derived from regular coastal

mists that roll in from the cold Atlantic waters on the coast, sustain many of the inland plant and animal species on a year round basis. Occasional rain occurs during thunder storms with flash floods tending to occur during such times.

Although the presence of large dams on the Orange River maintains the water level all year round, in the past water would have been most plentiful during the summer, when rain is experienced in the greater catchment, and much lower during the winter. At periods of low water many shallow sand bars provided points where the river could be crossed. Many place names still reflect points where river crossings could be made, e.g. Sendelingsdrift, Bloeddrift etc. Periods of flood brought with them large amounts of silt and gravel which were deposited along the banks of the Orange as a series of terraces. Diamonds are found in the older gravel beds, and mining them makes for the dominant economic activity of the area today. In the past, other exotic rocks washed down amongst the gravels from higher upstream, were prized by the early inhabitants of the area for the production of stone artefacts.

The topography can be described in its simplest terms as generally mountainous except for areas along the Orange river where wide expanses of old flood plain can be found. Numerous water courses with their origin in the mountains bisect the silty floodplain before entering the Orange. A band of vegetation on average 200m in width grows along the Orange and consists mostly of acacia. Vegetation inland consists largely of succulent species, while trees are found along water courses.

While there are no large herds of grazing antelope to be found in the area today, troops of baboons frequent the mountains and periodically come down to the river to partake of both the water and the freshwater crustacea that live amongst the gravels, and Vervet monkeys inhabit the vegetation belt along the river. Fresh water fish, such as the catfish and the yellowfish are found in the Orange and judging by the amounts of bone in some of the ash middens on archaeological sites, early inhabitants made good use of this protein source. Before the building of the dams, there may have been seasons when fish were very easy to procure i.e. during the winter months when the river level dropped.

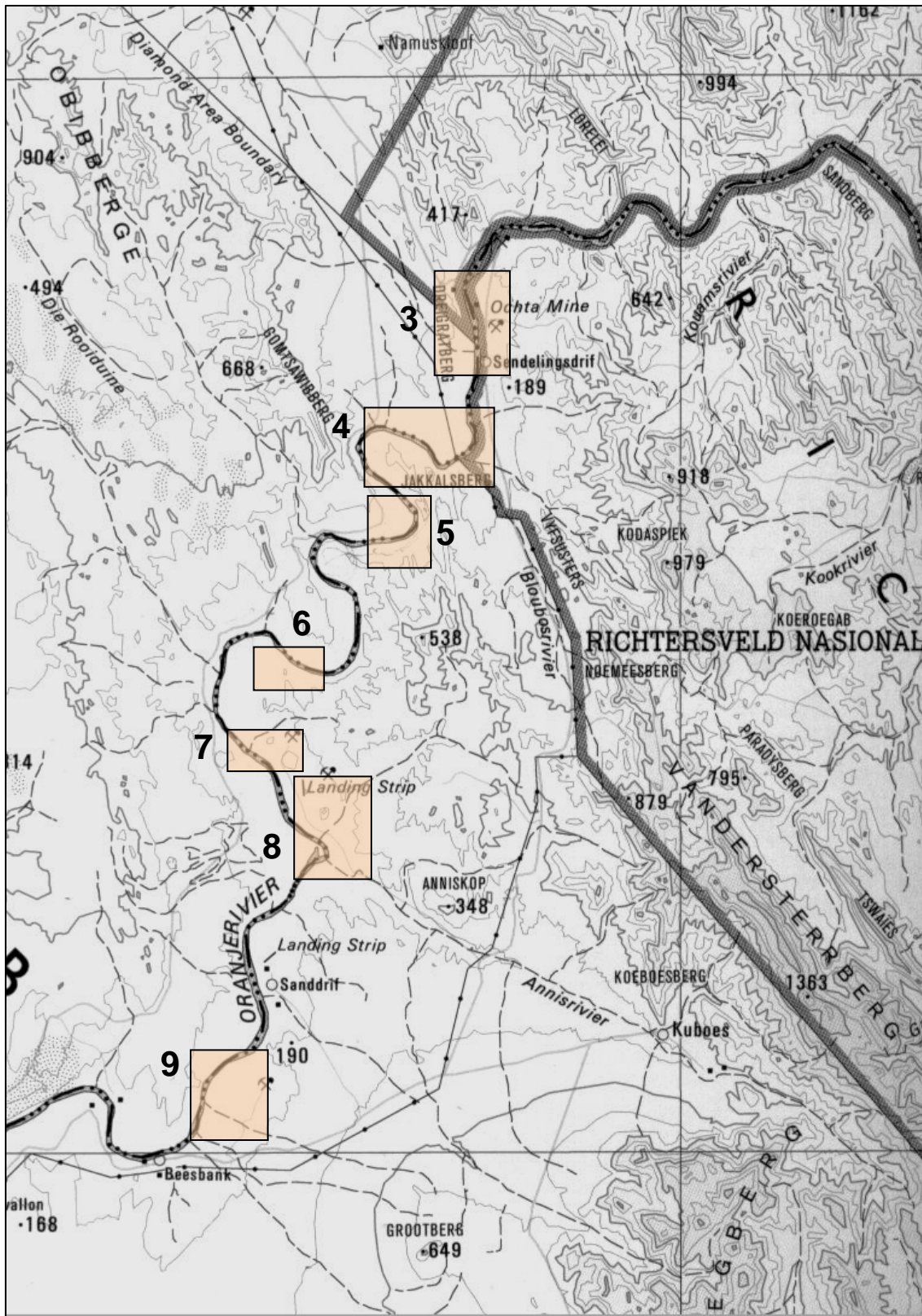
While many of the local inhabitants are employed in diamond mining, many are still pursuing a nomadic pastoralist lifestyle. Even those people who have settled in the more permanent villages such as Khubus or Sanddrift, often have huts along the Orange River where they stay while tending goats.

5. RESULTS OF THE SURVEY

As the survey focussed on several areas (see Figure 1), description of the sites has been divided accordingly with site designations reflecting sub-regional locations within the larger areas. While the three areas coincide with the main mining zones, it will be seen that sites quite distant from mining are included. Presented below is a summary of the archaeological observations on an area by area basis. A summary of age and content of sites can be found in Table 1 and site locations are shown on extracts from aerial photographs (Figures 3-9), and the positions of the extracts is shown on Figure 2. It should be noted that areas that have been searched are shown within dotted white lines on the photos to differentiate areas where there are no sites from areas which have not been searched.

SITE	TYPE	±AGE (YRS BP)	Stone	Ceramics	Oes	Bone	Shell	Specials
AACE 1	Artefact scatter	<2000	x, lgs					
AACE 2	Artefact scatter	ESA,MSA,LSA	x					
JKB A/B	Artefact scatter	>2000	xxx, spec	xxx, dec	xxx, dec,bds	xxx	x	ash, burial
JKB C	Artefact scatter	>2000	xx, scr,spec	xx	x, dec,bds	x	x	
JKB D	Graves	<300						
JKB E	Artefact scatter (minimal)	>2000	x	x, dec		x		
JKB F	Artefact scatter	>2000	xxx, ugs,lgs,spec	xxx, dec,lug	xx, dec,bds,wc	x	xx	
JKB G	Artefact scatter	>2000	x	x	x	x		
JKB H	Artefact scatter	>2000	x, spec	xxx, lug,dec	xxx, bds	x		
JKB J	Graves	>300						
JKB K	Artefact scatter	>2000	x, spec	xxx	xxx	xx	x	
JKB L	Artefact scatter	<2000	xxx, seg,scr,bkd,spec		xxx, dec,bds	x	x	
JKB M	Artefact scatter	>2000	x	x, dec	x	x		ochre cakes
JKB N	Artefact scatter	<2000	xx, bkd,scr,seg,bscr		x, dec,bds	x	x	
JKB O	Artefact scatter	>2000	x, spec	xx	xxx, bds	xxx		burial
JKB P	Artefact scatter	>2000	x	xxx	x	x		
JKB Q/R	Artefact scatter	>2000	x	x, dec	x, bds	x		
JKB S	Graves	>300						
MEHL 1	Ruins	>300						bottles,ceramics
MEHL 2	Artefact scatter	>2000	x	xx, dec	x, dec	x	x	
NXP 1	Engravings	<300						
NXP 2	Artefact scatter (minimal)	<2000	x		x, dec	x		
NXP 3	Graves	>300						
RN 1	Engravings	<300						
BLD 1	Engraving	<300						
BLD 2	Engraving	<300						
BLD 3	Engraving	<300						
BLD 4	Engraving	<300						
BLD 5	Engraving	<300						
BLD 6	Engraving	<300						
BLD 7	Engraving	<300						
BLD 8	Engraving	<300						
BLD 9	Engraving	<300						
BLD 10	Artefact scatter (minimal)	<2000	x		x, bds			deposit
BLD 11	Artefact scatter in shelter	>2000	x	x	x	x		deposit
BLD 12	Engraving	<300						
BLD 13	Engraving	<300						
BLD 14	Engraving	<300						
BLD 15	Artefact scatter (minimal)	?	x		x, bd	x		stone circle?
BLD 16	Engraving	<300						
BLD 17	Engraving	<300						
BLD 18	Engraving	<300						
BLD 19	Engraving	<300						
BLD 20	Engraving	<50						
BLD 21	Artefact scatter	>2000	xxx, spec	xxx, dec	xxx, bds	xxx		hearths
BLD 22	Artefact scatter	<2000	xxx, bscr,mp,bkd	x	xxx, dec,pend	xxx	xx	
BLD 23	Artefact scatter	>2000	xxx, spec	xxx	xxx, bds	xxx	x	hearths, burial, Cu point
BLD 24	Artefact scatter	<2000	xxx, seg,trap,point		x	x		
BLD 25	Artefact scatter	<2000	x, seg			x		
BLD 26	Engraving	<300		x				
BLD 27	Engraving	<300						
BLD 28	Engraving	<5						
BLD 29	Engraving	<300						
BLD 32	Artefact scatter	>2000	xxx	xxx	xx, bds	x	x	burial, ash patch
BLD 33	Artefact scatter	<2000?	x, bkd scr	x	x, bs			
BLD 34A	Artefacts scatter	<10 000	x					MSA
BLD 34B	Engraving	<300						
BLD 35	Engraving	<300						
BLD 36	Engraving	<300						
BLD 37	Artefact scatter	<2000	x, seg,mp,scr,bscr		x, bds,dec			some MSA reuse
BLD 38	Artefact scatter	<2000	x, bscr	x				
BLD 39	Artefact scatter	>2000	xxx, scr,seg	x	x, bds	x	x	mixed assemblages
BLD 40	Artefact scatter	MSA/ESA	x, handaxe, h/st					
BLD 41	Graves	LSA						
KK 1	Artefact scatter (minimal)	>2000	x, scr	x	x	x		
KK2	Artefact scatter	>2000	x	xx	xx, bds	x	x	ash
KK3	Graves	>100						

Table 1: Summary of archaeological sites



2 Location of the aerial photos



5.1 Reuning

(More commonly known as Sendelingsdrift and sometimes called Ochta)

5.1.1 Site location

Judging by the number of archaeological sites found in this area, the wide expanses of old floodplains inland of the vegetation belt along the Orange river were obviously favoured in the past for human occupation. Having examined a good deal of the floodplain between the mining areas at Nxodap and Ace it would appear that most of the occupation was located between Reuning and Jakkalsberg, while some sites are to be found south of Jakkalsberg as well. However as one moves south, the wide, silty floodplain gives way to mountain ridges extending all the way to the river. Site locations are shown on Figures 3, 4 and 5.

We have noticed that sites with occupational debris tend to be located close to dry watercourses (which would flow during times of rain). Although we have not been able to test this, it appeared that modern Nama settlements also favour similar locations. The floodplains have also been favoured for graves. A single small rockshelter on the north west end of the Jakkalsberg showed no sign of occupation.

5.1.2 Site types and age

A range of sites was found including ESA/MSA stone scatters (usually on the higher gravel terraces) (AA2) (Figure 3), and what we believe are pre-pastoralist encampments (pre-2000 BP) (JKB L, JKB N, NXP2)(Figures 4 and 5), and pastoralist encampments (2000 BP–1800 AD) (JKB A/B, JKB C, JKB E, JKB F, JKB G, JKB H, JKB K, JKB M, JKB O, JKB P, JKBQ/R, ME2) (Figures 4 and 5). A single colonial site (ME1) (Figures 4) is believed to represent the remains of part of the original Sendelingsdrift mission station (Plate 1). Rock engravings are found immediately north of Reuning on dolomite exposures(RN1)(Figure 3) and on slabs that have been dislodged from the main outcrop. While there are engravings here that are of undoubted vintage, some recently executed graffiti is also present (Plate 2). A single engraved dolomite rock, obviously washed down in the gravels, was found to the east of Jakkalsberg (Plate 3).

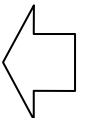
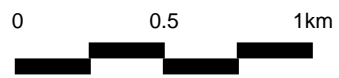
Numerous graves have been identified. Some of these show Christian influences (rectangular mounds of stone with crude headstones) and therefore date to within the last 200 years (JKB J, JKB S, NXP3) (Figures 4 and 5) (Plate 4), while others are more traditional in form with circular stone cairns covering them (JKB D) (Figure 4) (Plate 5). These most probably predate the colonial era, although at this stage it is impossible to say by how much. In one case a burial of a child was found eroding out of silts and did not appear to be covered by a cairn (Plate 6).

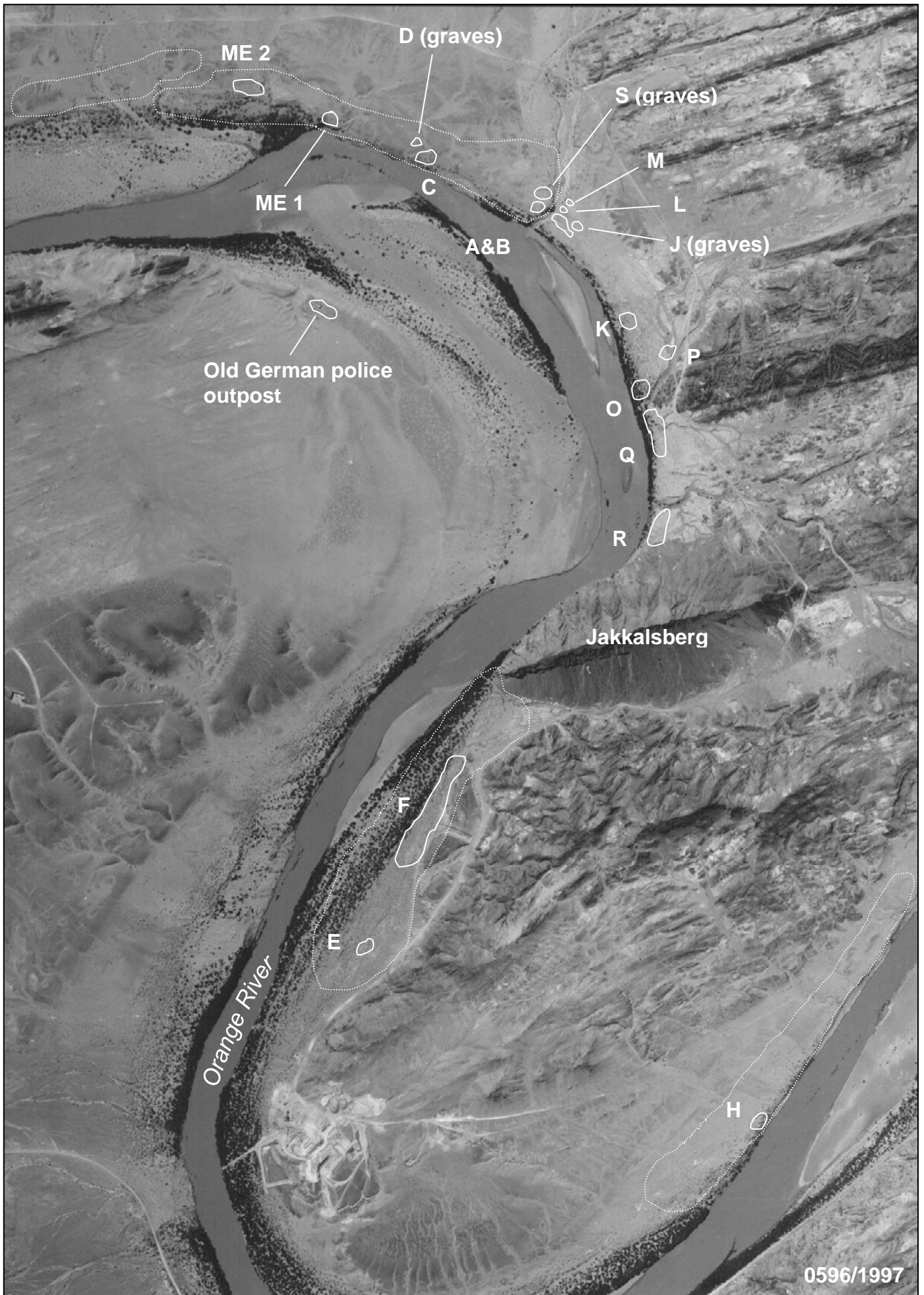
Excavations have been undertaken on the sites of Jakkalsberg A & B (Miller & Webley 1994, Brink & Webley 1996, Webley 1997). Based on the artefact content and age, these have been classified as herder sites. Radiocarbon dates from hearths on Jakkalsberg A place the occupation in the 7th century AD, with dates from site B being only slightly older. We would expect other sites like these containing indigenous ceramics to also fall within the last 2000 years.



3

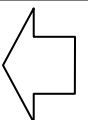
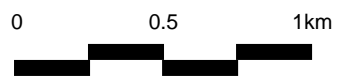
Location of archaeological sites





4

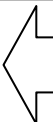
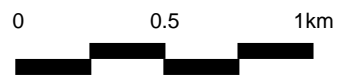
Location of archaeological sites





5

Location of archaeological sites



5.2 Bloeddrift

(also sometimes called Auchas, the Nama name, or Daberas)

5.2.1 Site location

Of the areas examined by us, Bloeddrift contains by far the greatest concentration of archaeological material. Most of the sites consist of engravings on dolomite surfaces, while a number of occupation sites are also present on the flood plain along the river. The large number of engravings is surely related to the amount of exposed dolomite here, where a vein of this material has manifested itself in the form of koppies and ridges. Figures 6, 7, and 8 show site locations.

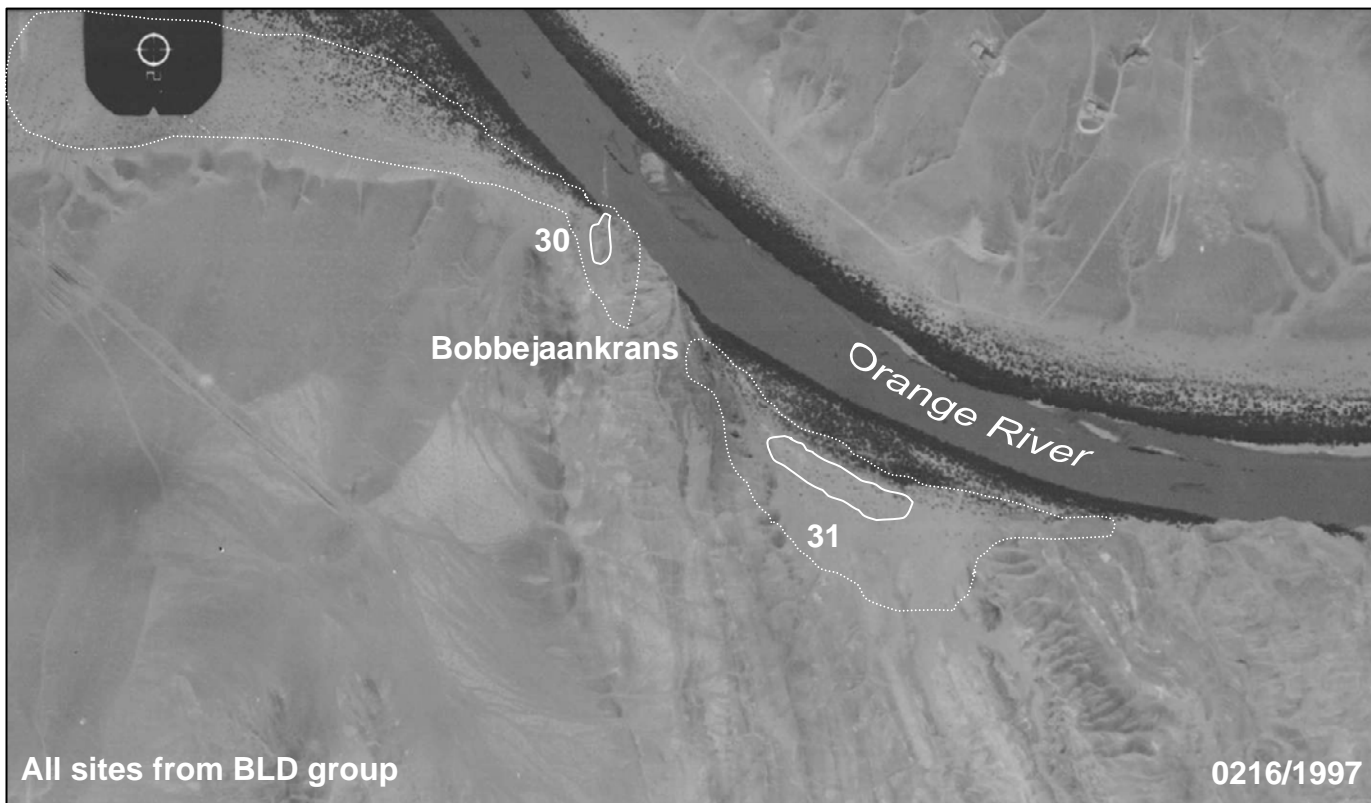
As was the case at Reuning, we have noticed that the large herder encampments (post 2000BP)(BLD21, BLD23, BLD32) (Figure 8) tended to be on the upper terrace along the Orange river close to dry watercourses (Plate 7). Most of these were observed to be eroding out from beneath columns of slackwater sediments (Plate 8) , while pre-ceramic sites occur close by in small deflation hollows (BLD22, BLD24, BLD25, BLD33, BLD37, BLD38) (Figure 8). These contain formal artefacts made on siliceous materials and also include small ostrich eggshell beads. This pattern is virtually the same near Jakkalsberg in the Reuning area. Two large water courses enter the Orange at Bloeddrift and a concentration of sites is found close to these. One of these dry channels is the Annis River, and it is probably no co-incidence that travelling up the course of this river leads to the small Nama village of Khubus. The river bed is used at present as a route to take herds of goats down to the Orange. The other major water course in the area has cut deeply into the bedrock between two of the prominent koppies and many engravings are found on the polished dolomite slabs in the bed.

The only rock shelter that we observed that contained any sign of occupation lies close to Bloeddrift at a prominent rock outcrop known locally as Bobbejaankrans (Plate 9). Modern Nama use of the shelter for penning goats has disturbed the earlier deposit, but potsherds and stone artefacts can be found on the talus slope. Engravings are present close by. On a subsequent visit we were informed by Mr. Tokkie Louw, that there are other rockshelters in the area, apparently with occupational deposits. We have unfortunately not been able to confirm this report yet.

5.2.2 Site types and age

While we have found occupation sites in the vicinity of engravings, it is not yet possible to directly link the engravings to either the pre or post 2000BP sites. Obviously there are some images i.e. those depicting horses and riders, wagons and oxen, and women in dresses that can be dated to the colonial period (Plates 10 and 11), as can recent graffiti, but these are in the minority. Some images are clearly older than others and show a lot of weathering. These can only be seen when the light strikes them at the right angle (Plates 12 and 13). A single image at Bloeddrift, consisting of a finely pecked male human figure, closely resembles painted examples from the Cederberg Mountains (Plate 13A). The painted examples are believed to have been executed by San hunter/gatherers and it may be the case with the engraved figure as well. The majority of engravings at this stage though, remain undated and the content enigmatic (Plates 14 and 15).

Sites containing MSA and ESA artefacts have been located on top of two of the koppies (BLD34, BLD40) (Figure 8) and one or two areas of engraving are present at this altitude as well. There is both patinated and unpatinated artefactual material visible. A single handaxe was observed at BLD 40. A pre-ceramic LSA site found closer to the river



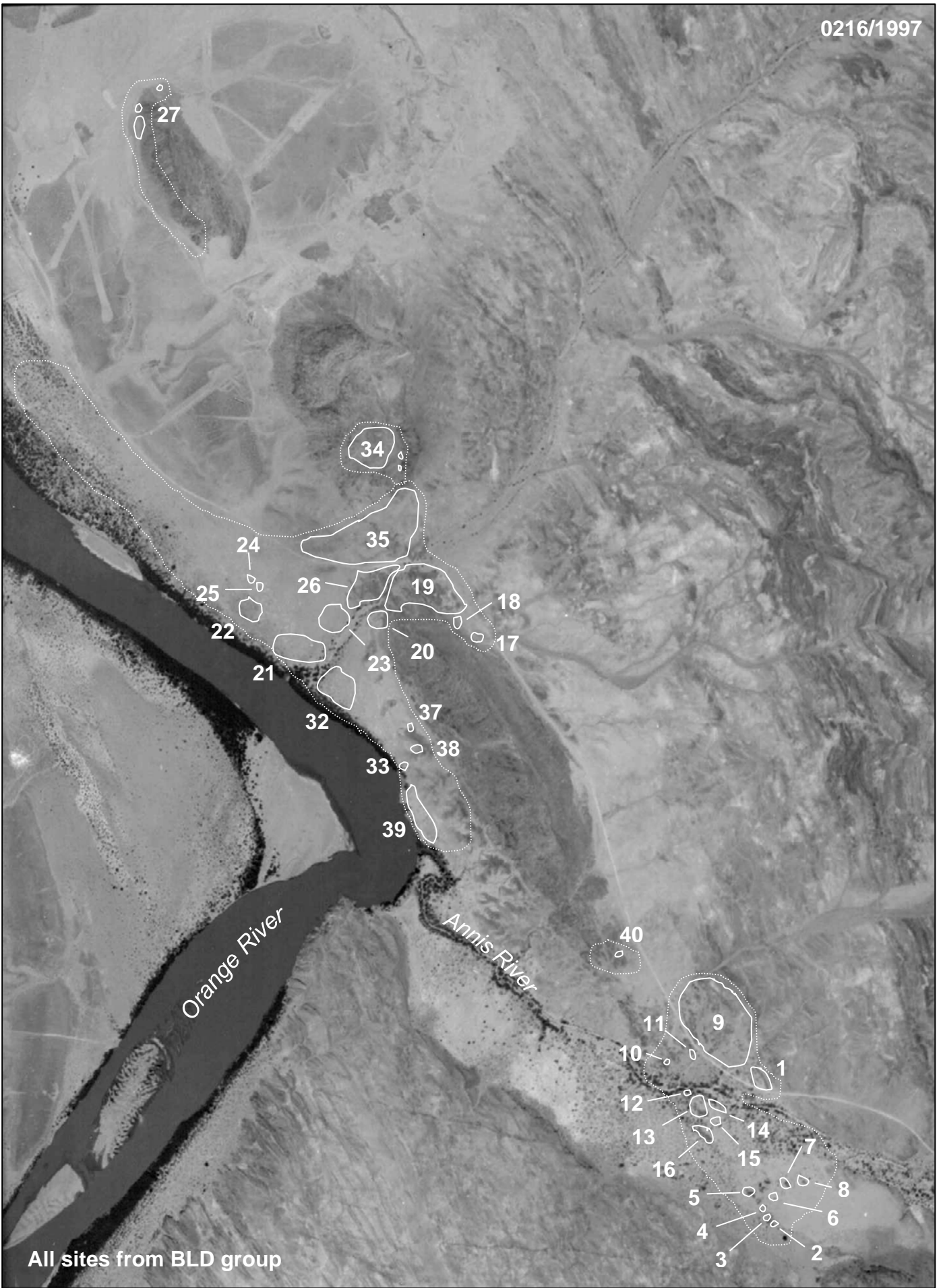
6 Location of archaeological sites

0 0.5 1km



7 Location of archaeological sites

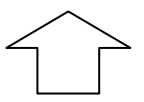
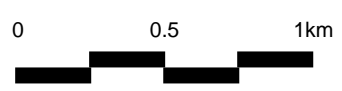
0 0.5 1km



All sites from BLD group

8

Location of archaeological sites



(BLD37) (Figure 8), contains clear evidence that flakes and blades of MSA age have been re-utilised for the production of artefacts and it may be that the MSA site on top of the koppie was raided from time to time for raw material. This seems unusual as siliceous raw materials are abundant in the river gravels. Perhaps it was not the material *per se* that was desired but rather the large flakes and blades that were the target?

During Early June of 1999, additional work was undertaken as part of a research exercise on site BLD23. The site was gridded and contents of the site recorded spatially by quadrant. Items such as beads, decorated pottery, lugs, hearths and manuports were plotted and one of the hearths was excavated to determine the thickness of the ash and to acquire a sample for radio carbon dating. Some identifiable bone was collected for purposes of identification. These observations will be published later in the year.

5.2.3 Comments

While there is not much literature specifically covering archaeology of the Richtersveld, when one does come across something it usually mentions the engravings at Bloeddrift. It seems that one specific site (BLD 28) (Figure 7) was well known, but visitors failed to recognise the presence of many others, even though it seems that they would have to have been passed by *en route* (Fock 1974: 118-120, Carstens et al 1987: 34-35,144). Today the road to the diamond diggings passes within a few meters of many engravings and the observant driver can see them from the car.

This suggests that there is indeed a concentration of engravings here which have been recognised by both locals and scholars who have passed through the area. While it may be reasonable to believe that this means that similar concentrations do not occur elsewhere in the area (because surely local knowledge would have highlighted the presence of others in different locations had they been there), this is not necessarily so. I have been informed by Mr. Robert Slingsby, an artist who has been interested in the engravings for many years, that he is aware of only one other major area of engravings, and that is to the west of Vioolsdrif (Slingsby, pers com).

Given the short time that we were in the area and the relatively small area that we were able to search, we found many more engraved sites than we were led to believe existed. It is therefore possible that other more remote areas contain similar engravings. Perhaps it is the case that, as with painted sites in the western Cape, there is general disinterest in them from the local community. There may be longstanding political reasons for this disinterest, not least being denigration of indigenous peoples to the extent that locals have possibly deliberately avoided tracing ancestry back to the first inhabitants of the area.

The greater proportion of the sites that have been located in this area do not appear to be threatened by mining at present. Past mining activities though have resulted in debris being dumped over engraved slabs (Plate 16), and engraved boulders were pushed away from their original locations during the preparation of a landing strip. It is possible that other engraved slabs were lost during this process. Because of the large amount of dolomite occurring in the area, great care must be taken when opening new mining areas, and in the location of spoil heaps and processing plants and related mining infrastructure. Borrow pits for road maintenance should also be carefully located.

5.3 Koeskop

5.3.1 Site location

This is perhaps the most heavily mined of the areas that we have looked at where mining takes place relatively close to the Orange River. In broad terms, the geomorphology of the area adjacent to the river is similar to both Bloeddrift and Reuning i.e. a vegetated belt and older silty floodplains inland. Perhaps one difference might be that the floodplains are not as elevated as they are at the other two locations. The positions of the sites are shown on Figure 9.

5.3.2 Site types and age

Only 3 sites have been located in this area. One site is a relatively modern graveyard (KK3), while the other two sites are pre-colonial, with KK2 suggesting that it was a herder encampment and like others of this type, is eroding out from below silty flood deposits. The location of the pre-colonial sites (KK1 and KK2) closely corresponds to a prominent dry water course and we are of the opinion that both post date 2000BP.

5.4 Areas not containing sites

The dotted areas shown in Figures 3 – 9, indicate approximate areas that have been searched. It can be seen from these that quite large areas are devoid of traces of occupation but equally quite large areas remain unsearched. A number of quick forays were made into the hills to the east of the main road between Reuning and the Five Sisters. No sites were located.

6. DISCUSSION OF OBSERVATIONS

This study has not involved a comprehensive look at every piece of the landscape in the mining area. First and foremost, this has been an exercise to understand where sites are located in the landscape and to establish for the mining company, where they may have to embark on programs of mitigation. While most of the sites that we have located are close to the river, this does not mean that our searching was limited to this part of the landscape. We have looked at some inland areas, but in all cases were unable to locate any sites, apart from those at Bloeddrift. As mining is generally located closer to the Orange river our efforts have had to be primarily focussed there.

From our own observations and those of others it would seem that the archaeology is confined to two types of sites, namely open occupation sites and rock engraving sites. Only a single instance of minor occupational debris in a rock shelter was observed although it has been brought to our attention that other rockshelters are found in the dolomite hills around Bloeddrift. Open occupation sites are made up by two distinct types, each of which contains a different range of artefacts. While it is possible that these different assemblages represent coeval, but culturally different groups (see Smith 1995:302), it is more likely that the observed differences are time related and therefore represent the layering of human occupation of the area since the mid-Holocene (c5000BP). The excavations of Jakkalsberg A and B, herder sites, have produced radiocarbon dates of 1330±60, 1300±25, 1420±25 and 1380±50 (Webley 1997). Excavations of a herder site at Arrisdrift by Eric Wendt produced similar dates 1200±50, 1250±130, 1300±50, 1280±40 (Vogel & Visser 1981).



9

Location of archaeological sites



The artefactual remains on the herder sites observed by us, is consistent and is corroborated by Webley. These sites contain large amounts of indigenous ceramics, informal quartz assemblages, large ostrich eggshell beads, bone (sheep, fish noticeable) and hearths and/or ash heaps. Similar assemblages have been noted by Wendt at Arrisdrift and Robertshaw on the northern bank of the Great Fish River (Robertshaw 1978:149-163).

The apparent close association between areas of “dense” human occupation and rock engravings seems unequivocal, although we cannot establish any direct links between the two at this early stage of investigation. Some of the engravings depict aspects of colonial life and thus must date to the 18th, 19th or early 20th centuries, while most other engravings are more enigmatic, consisting of geometric shapes and areas of pecking that are difficult to date based on the subject matter alone. Beaumont et al (1995:248) suggest that pecked engravings post date fine line engravings (of which none have so far been observed in this study) and most likely were made after 2000 BP. There seems to be a strong suggestion that engravings are only found where suitable outcrops or exposures of dolomite are found. Outcrops such as these are numerous at Bloeddrift and not surprisingly this is where most engravings are to be found. Minor occurrences of engraving have been found on other dark, non-dolomitic rock types (near Nxodap) but these seem to be the exception rather than the rule.

Perhaps the most widely accepted explanation for the geometric shapes that are so common in the Richtersveld, and other sections of the arid interior, is that they represent entoptic hallucinations (Dowson 1992). In simpler terms, it is believed that these geometric shapes are seen by shamans during trance states, and are engraved on the rocks for ritual purposes. Clouds of dots, grids and spirals are suggested to be stage one hallucinations (Dowson 1992), with different patterns being observed during other stages. The beautifully engraved human figure at Bloeddrift (Plate 13A) suggests that other forms of engraving were practiced, but why so irregularly remains a mystery. Perhaps more of these exist to be found with more extensive exploration. While one or two animals have been noted at Bloeddrift (at least one ostrich and one or two other indeterminate quadrupeds), identifiable species such as gemsbok and rhino have been seen in the Sperregebiet Area 1 on the opposite side of the river where the dolomite exposed at Bloeddrift continues. Observations in the Sperregebiet seen during a recent visit, and examples of engravings in Hellskloof near Violsdrif shown in Dowson’s book (1992), show great similarities to those of this study area. It was these very Hellskloof engravings that inspire the art works of Robert Slingsby, who has some alternative explanations for the meaning of the images (Slingsby 1998). His interpretation, is that there is a cosmic connection and that crop circles, which appear in wheat fields in Europe, bear many similarities to the engravings. This explanation is unlikely to find favor among the more conventional scientific community but are nevertheless mentioned as they represent another point of view.

The conclusion that must be drawn from the site locations that we have, is that settlement focussed on the river. This seems to be the case for all types of sites and pertains particularly to those dating to the mid/late Holocene. Reasons for sites locating close to the river could be the availability of numerous resources including food (game attracted to the water, fish, freshwater shellfish, crabs, various plants), wood (for fires and for making hut spars and other items), and, procurement of fine grained, siliceous materials and quartzites found in the river gravels that were used for the manufacture of stone artefacts. Although it does not appear that people lived within the vegetation belt (a situation that seems to persist to this day – although the belt may have shifted with the meanderings of the river), both shade and grazing for goats is provided here. A reason for this may be that

prior to the building of the dams on the Orange, flash floods would have occurred. Although we cannot speculate extensively on the reasons at this stage, it appears that the herder encampments are, more often than not, located immediately adjacent to prominent dry water courses, usually running perpendicular to the Orange River. Similar site locations are noted on the Namibian side of the river.

In most cases herder sites have been found to be eroding out from beneath deposits of silt. This implies that periodic high floods have covered them. The fact that spatial patterning still seems to be preserved on some sites (hearths and ash heaps) seems to further imply that flooding reaching up to the area where the sites occur is of reasonably low energy and is a depositional rather than an erosional environment. In general, flooding seems to have been confined to the lower terraces and flooding on the upper ones must have occurred at times of exceptionally high rains inland (see Zawada et al, 1996).

Since the building of the dams upstream, regular high flood levels seldom occur. This has meant that the silt covering the sites is not being renewed. Erosion of the silts has exposed the sites, and while this is good from the point of view of site visibility, they are now extremely vulnerable to further erosion. Another serious flood could remove all trace of these sites. Given that the settlement history of the area is so sparse, loss of any occupation sites for any reason, be it natural or man-made would constitute a serious loss in archaeological and historical terms.

7. HERITAGE MANAGEMENT LEGISLATION

There is often a misconception that history is based on written texts alone. In actual fact, the history of humankind is preserved in many other forms as well. While written texts in their various forms do indeed provide invaluable information, buildings, art, antiques and many other artefacts, are also aspects of history which in themselves tell a tale.

It is common knowledge that written texts document only a small fraction of the trajectory of human history, and the balance must be inferred from the remains of activities which people have left behind. This is particularly true in Africa where the human species evolved some 4 million years ago, but written records have only existed in some areas for last few hundred years. The bulk of this history must therefore be gained from examining the remains of human activity in all its forms which are preserved on archaeological sites. The perception that old buildings and archaeological sites are irrelevant is therefore clearly misguided.

Historical buildings, archaeological sites and other artefacts are non-renewable and once destroyed can never be replaced. This realisation has resulted in the formulation of statutory controls for the preservation of such resources in many countries in the world today. The International Council on Monuments and sites (ICOMOS), of which South Africa is now a member along with 84 other countries, seeks to apply the highest principles of conservation to the Monuments and Sites of the world (Deacon ed. 1996).

South Africa has always had an appreciation of its past and for years has had legislation to protect aspects of it. Legislation has in the past unfortunately tended to neglect the full spectrum of heritage, a shortcoming that has been rectified with promulgation of new legislation. The following sections deal with the legal aspects surrounding heritage resources.

7.1 Background to South African heritage legislation

Certain archaeological sites in South Africa have been afforded legal protection since 1911 when the Bushmen Relics Protection Act became the first body of legislation that specifically protected artefacts and sites of 'South African Bushmen or other aboriginals'. The first South African conservation authority, the Commission for the Preservation of Natural and Historical Monuments of the Union, was established in terms of the Natural and Historical Monuments Act of 1923. This body was more commonly known as the Historical Monuments Commission. In 1934, previous Acts were replaced by the Natural and Historical Monuments, Relics and Antiquities Act (see also Deacon and Pistorius 1996). This was superseded in 1969 with the creation of the National Monuments Council and formulation of the National Monuments Act. Various amendments have since been made to the Act, with the most recent amendment being in 1986. The legislation which currently applies to heritage material in its various forms is known as the National Monuments Act No. 28 of 1969 (as amended).

The National Monuments Council was invested under this legislation with powers to protect a variety of heritage resources as well as to declare national monuments and conservation areas. At present, archaeological, palaeontological, historical sites (including shipwrecks) and structures, and certain antiquities are protected. Destruction, damage, alteration, excavation or removal from the original site of a feature considered to be a heritage resource without permission from the Council is considered an offense (see also Pistorius 1996).

The Environment Conservation Act (Act 73 of 1989) and the Environment Conservation Amendment Act of 1992³ forms the latest body of legislation that potentially supplements the National Monuments Act through the Integrated Environmental Management procedure. Although many archaeological sites have been identified and mitigated through this procedure, the existing National Monuments Act of 1969 (as amended) remains the primary piece of legislation in heritage management. The Minerals Act (Act 50 of 1991) and the Minerals Amendment Act (Act 103 of 1993) require plans for the conservation of the environment at, or in the vicinity of, any mine or works, to be detailed in an environmental management programme (EMP). The EMP must indicate how the natural and 'man-made' environment will be protected and rehabilitated during and after the mining.

After 1994, the National Monuments Act no longer reflected South Africa's changing priorities for cultural heritage conservation and in 1996 a White Paper on Arts, Culture and Heritage⁴ outlined a new policy and vision for heritage in South Africa. New legislation was however needed to implement it. As the new Constitution gives concurrent powers to National and Provincial government for 'cultural matters', a new legislative framework was necessary to accommodate the new administrative system and to define the responsibilities of heritage authorities at national and provincial level. To fulfill these goals, a completely new set of legislation has been drafted and was tabled before the 1999 sitting of parliament. The new act will be known as "the National Heritage Resources Act of 1999". It is far more comprehensive than the existing body of legislation and introduces some fundamental changes to the *status quo*. It provides for the establishment of the South African Heritage Resources Agency (SAHRA) which will replace the existing

³ The Government Gazette, 26/6/92. No 14075. Substitution of section 22 of Act 73 of 1989.

⁴ Department of Arts, Culture, Science and Technology. 1996. Draft White Paper on Arts, Culture and Heritage, June 1996. Pretoria: Government Printer.

National Monuments Council. The 6 current regional offices of the NMC will be transferred to the respective provinces where they will form the cores of provincial heritage authorities.

Until the implementation date of the new legislation is decided, the provisions of the National Monuments Act of 1969 (as amended) will continue to apply.

7.2 The National Monuments Act of 1969 (as amended)

In this section we have reproduced specific portions of the National Monuments Act which apply specifically to archaeological and historical material. A full copy of the act is reproduced in Appendix A.

The main clauses are as follows:

12(2A) No person shall destroy, damage, excavate, alter, remove from its original site or export from the republic-

- a) any meteorite or fossil; or
- b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by Bushmen; or
- c) any drawing or painting on stone known or commonly believed to have been executed by any other people who inhabited or visited the Republic before the settlement of Europeans at the Cape; or
- d) any implement, ornament or structure known or commonly believed to have been used or erected by people in paragraphs (b) and (c); or
- e) the anthropological or archaeological contents of graves, caves and rockshelters, middens, shell mounds or other sites used by such people; or
- f) any historical site, archaeological or palaeontological finds, material or object; except under the authority of and in accordance with a permit issued under this section.

An historical site is defined in the Act as any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 50 years.

12(2B) No person shall destroy, damage, excavate, alter, remove from its original site or export from the republic-

- d) any wreck or portion of a wreck, or any object derived from a wreck, known or generally accepted to have been in South African territorial waters longer than 50 years;
- e) any burial ground or grave referred to in section 3A (2) [war graves] except under the authority of and in accordance with a permit issued under this section.

12 (3)(a) The provisions of subsection (2A) shall not apply to the removal of anything other than deposits in any cave or midden, in the normal course of mining, engineering or any agricultural activities: Provided that anything referred to in section (2A) is found in the normal course of the said activities, the finder thereof or the owner of the land where it is found or the person who performs such activities, shall report the fact immediately to an institution referred to in the Cultural Institutions Act, 1969 (Act No. 29 of 1969).

12(4) On application by any person in the manner prescribed by regulation under this Act, the council may at its discretion, but subject to the directions of the minister, issue such a person free of charge a permit to destroy, damage, excavate, alter, remove from its

original site or export from the Republic any monument or any object referred to in subsection (2) or (2A), specified in the permit.

7.2.1 Application of the National Monuments Act

Where there is a perceived threat to sites as defined in the Act, assessment is possible through a Phase 1 study (impact assessment). Groups capable of carrying out such work now exist at most universities and museums, and some private organisations have also been established. Payment for these investigations is the responsibility of the applicant (developer or landowner). If it is found during the Phase 1 that important sites are present then a Phase 2 program of mitigation is usually recommended, also at the cost of the applicant (developer or landowner). A report describing the finds is sent to the client and the NMC. Permission for rezoning, or to proceed with the development or other activities may be refused if these studies have not been undertaken. Numerous archaeological sites have been successfully mitigated in this way. On rare occasions, a resource of such value may be found that would prevent any new activity. There is no procedure prescribed in the National Monuments Act for applying the law.

7.3 New legislation: National Heritage Resources Act of 1999

All that is required before this becomes law is for the date of implementation to be set. Extracts from the new act are reproduced below. A copy of the full draft bill is included as Appendix B and should be read in conjunction with the following points.

The main clauses are as follows:

Definitions

2. In this Act, unless the context requires otherwise-

- (i) "alter" means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means;
- (ii) "archaeological" means-
 - (a) material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
 - (b) rock art, being in any form of painting, engraving or any other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years, including any area within 10m of such representation;
 - (c) wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3,4, and 6 of the Maritime Zones Act, 1994 (Act No.15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; and
 - (d) features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found;

Relating to what is protected:

General protections

Structures

34. (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Archaeology, paleontology and meteorites

35. (4) No person may, except under the authority of a permit issued by a responsible heritage authority-

- a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
- c) Trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological material or palaeontological material or object, or any meteorite; or
- d) Bring onto use at an archaeological or palaeontological site any excavation equipment or any equipment which assists in the detection or recovery of metals or archaeological or palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. 3(a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority -

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

7.3.1 Application of the Heritage Resources Act

Unlike its predecessor, the new legislation contains procedures for implementation of the law. These are contained within Chapter II, Part 2 and Part 3 of the act. Sections with particular relevance are presented below.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as –

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of

- linear development or barrier exceeding 300 m in length;
 - (b) the construction of a bridge or similar structure exceeding 50 m in length;
 - (c) any development or other activity which will change the character of a site –
 - (i) exceeding 5000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more existing erven or subdivisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - (d) the re-zoning of a site exceeding 10 000 m² in extent; or
 - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.
- (2) the responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1) –
- (a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
 - (b) notify the person concerned that this section does not apply.
- (3) The responsible heritage resources authority must specify the information to be provided in a report required under subsection (2)(a): Provided that the following must be included:
- (a) the identification and mapping of all heritage resources in the area affected;
 - (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
 - (c) an assessment of the impact of the development on such heritage resources;
 - (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
 - (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
 - (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
 - (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.
- (4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide—
- (a) whether or not the development may proceed;
 - (b) any limitations or conditions to be applied to the development;
 - (c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
 - (d) whether compensatory action is required in respect of any heritage

resources damaged or destroyed as a result of the development; and
(e) whether the appointment of specialists is required as a condition of approval of the proposal.

(5) A provincial heritage resources authority shall not make any decision under subsection (4) with respect to any development which impacts on a heritage resource protected at a national level unless it has consulted SAHRA.

(6) The applicant may appeal against the decision of the provincial heritage resources authority to the MEC, who—

(a) must consider the views of both parties; and

(b) may at his or her discretion—

(i) appoint a committee to undertake an independent review of the impact assessment report and the decision of the responsible heritage resources authority; and

(ii) consult SAHRA; and

(c) must uphold, amend or overturn such decision.

(7) The provisions of this section do not apply to a development described in subsection (1) affecting any heritage resource formally protected by SAHRA unless the authority concerned decides otherwise.

(8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environmental Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

(9) The provincial heritage resources authority, with the approval of the MEC may, by notice in the *Provincial Gazette*, exempt from the requirements of this section any place specified in the notice.

(10) Any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this Part, but any existing heritage agreements made in terms of section 42 must continue to apply.

Heritage agreement

42. (1) (a) SAHRA, or a provincial heritage resources authority may negotiate and agree with a provincial authority, local authority, conservation body, person, or community for the execution of a heritage agreement to provide for the conservation, improvement or presentation of a clearly defined heritage resource: Provided that the consent of the owner of such resource must be given.

(b) Such a heritage agreement must be in the form of a binding contract.

(2) A heritage agreement may include such terms and conditions as the parties think fit, including provision for public access, and provision for financial or other assistance from the heritage authority concerned.

(3) Without limiting subsection (2), a heritage agreement may be expressed to have effect in perpetuity or for any specified term, or to terminate upon the happening of a specific event.

(4) A heritage agreement may, with the consent of the owner of the resource

concerned, be varied or cancelled by agreement between the parties.

(5) The consent of the owner of the resource concerned to the heritage agreement or any variation of the heritage agreement may be given, subject to the inclusion in the heritage agreement of any additional provisions or modified provisions, or to the deletion of such provisions, as the owner giving the consent considers necessary.

(6) Nothing in this Act requires a heritage resources authority to negotiate or agree with any person or authority to enter into or execute any heritage agreement.

(7) A heritage agreement in respect of a place attached to the land is binding on the owner of the place, as at the date of execution of the agreement, while the agreement remains in force.

(8) The owner of a national heritage site, a provincial heritage site or a place listed in a heritage register may, by a heritage agreement entered into with the heritage resources authority or local authority responsible for the protection of such place, or any person or body approved by such authority, appoint the heritage resources authority or the local authority or the person or body concerned, as guardian of the place.

(9) The heritage agreement referred to in subsections (7) or (8) may provide for—

(a) the maintenance and management of the place;

(b) the custody of the place and the duties of any person who may be employed in connection therewith;

(c) the occupation or use of the place by the owner or otherwise;

(d) the restriction of the right of the owner or occupier to do certain acts or things on or near the place;

(e) the facilities of access to be permitted to the public and to persons deputed by the guardian to inspect or maintain the place;

(f) the presentation of the place;

(g) the notice to be given to the guardian in case the owner intends to offer the land on which the place is situated for sale, lease or other disposal, and the right to

be

reserved to the guardian to have first refusal of such sale, lease or other disposal;

(h) the payment of any expenses incurred by the owner or by the guardian in connection with the maintenance of the place;

(i) any other matter connected with the protection or management of the place which

is agreed to by the owner and the guardian;

(j) the duration of the agreement, with provision for the earlier termination thereof by any party thereto; and

(k) the procedure for the resolution of any dispute arising out of the agreement.

(10) The owner of a place which is under guardianship shall, except as expressly provided by this Act, continue to have the same estate, right, title and interest in and to the place as before.

(11) Every heritage agreement has effect according to its tenor but subject to the provisions of this Act: Provided that—

(a) the execution of a heritage resources agreement in respect of a heritage resource must not prevent the heritage authority responsible for its protection from exercising any powers in this Act in relation to that resources; and

(b) nothing in terms of any heritage agreement shall permit or allow any person to carry out any act contrary to the provisions of this Act.

Incentives

48. (1) On advice from SAHRA the Minister, in concurrence with the Minister of

Finance, may publish regulations on financial incentives for the conservation of heritage resources which form part of the national estate, or otherwise promote the purpose of this Act.

(2) An MEC or a local authority may in planning schemes or in by-laws under this Act or by other means provide incentives for the conservation of heritage resources as provided for in subsection (1).

Presentation of protected resources

49. (1) Heritage resources authorities and local authorities must, wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 for public enjoyment, education, research and tourism, including—

- (a) the erection of explanatory plaques and interpretive facilities, including interpretive centers and visitor facilities;
- (b) the training and provision of guides;
- (c) the mounting of exhibitions;
- (d) the erection of memorials; and
- (e) any other means necessary for the effective presentation of the national estate.

(2) Where a heritage resource which is formally protected in terms of Part 1 of this Chapter is to be presented, the person wishing to undertake such presentation must, at least 60 days prior to the institution of interpretive measures or manufacture of associated material, consult with the heritage resources authority which is responsible for the protection of such heritage resource regarding the contents of interpretive material or programs.

(3) A person may only erect a plaque or other permanent display or structure associated with such presentation in the vicinity of a place protected in terms of this Act in consultation with the heritage authority responsible for the protection of the place.

7.4 Sources of Impact

We generally identify two major sources of impact on heritage material. These are defined as primary sources which are often large scale organised activities which modify the landscape, and secondary impacts which are of an *ad hoc* and usually more limited nature.

7.4.1 Primary sources of impact on archaeological material

The activities identified below are generally responsible for the most damage to heritage resources.

- Development of land as a result of a structure plan
- Development of land as a result of a rezoning application
- Development of land as a result of a subdivision
- Establishment of housing developments not subject to conditions of 1,2,3 above.
- Establishment of townships
- Establishment of resorts
- Any development on undeveloped land
- Mining, prospecting and quarrying activities
- Construction of airports

- Construction of dams
- Construction of ports, harbours and marinas
- Laying of pipelines
- Construction of major sporting facilities
- Flood control schemes, canals, aqueducts, river diversions
- Any major landscaping, excavation or land remodeling projects
- Construction of roads
- Construction of railway lines
- Illegal demolition of structures over 60 years old
- Agricultural activity

7.4.2 Secondary sources of impact on archaeological material

These impacts can be as serious as those caused by large developments but are usually of more limited nature and occur on an *ad hoc* basis. They are generally associated with any increase in human activity resulting from the proximity of, for example, residential areas and recreational facilities. Primary impacts which lead to the increase in human use of an area will usually be accompanied by secondary impacts. Impact assessments must also consider these additional factors resulting from development activity. The *ad hoc* nature of the impact makes it difficult to control beyond educating the public as to the sensitivity of archaeological resources. We have identified some of the secondary impacts on archaeological sites below:

- Illegal collection of artefactual material or vandalising of sites
- Indiscriminate use of off-road vehicles
- *Ad-hoc* creation of dirt tracks or tracks for off-road vehicles
- Establishment of informal parking areas
- Establishment of Informal camp sites and picnic areas
- Dumping
- Unplanned footpaths
- Erosion resulting from any of the above or any other source.

7.5 Heritage management mechanisms

The procedures that need to be adopted have been highlighted above as they form part of the legislation. Nevertheless, two management strategies are likely to be with us for some time. The first, a reactive style is undesirable and should be avoided. In reality though, specialists will always need to be able to deal with this for reasons which are more fully explained below. The second, proactive style of management is favored for reasons explained below.

7.5.1 Reactive management

Many heritage assessments or rescue excavations take place reactively because the archaeological potential of development is seldom taken into account at the initial planning stage. In many cases management can be characterised as knee-jerk responses, with mitigation procedures carried out as a result of the intervention of an authority or lobbying by interest groups and members of the public, or if a find of significance is exposed during the course of earthmoving.

Whilst the reactive approach will always be a component of heritage resource management, it should not be seen as an acceptable mechanism for dealing with heritage issues. We realise that in some instances there will be no indication that important finds will be uncovered and the reactive approach therefore becomes unavoidable. This way of carrying out mitigation has many disadvantages for both the archaeologist and developer alike. One of the major disadvantages is in terms of delays to the development which can be extremely costly. In addition money will not have been budgeted for the purpose of mitigation and may mean that the archaeologist is forced to complete the task unsatisfactorily. Secondly, should any conservation worthy features be found, it may not be possible to preserve these for posterity.

7.5.2 Pro-active management

The process consists of two phases of assessment, which we believe greatly lessens the need for the reactive approach to be adopted. These procedures are described below:

7.5.2.1 Phase 1

The heritage resource professional (archaeologist, architect, historian, palaeontologist) needs to be approached as early as possible in the planning phase of a project. The project is initially assessed as to whether it is likely to impact heritage resources. This stage of assessment is usually based on the knowledge of particular locations and recently has taken place during the submission of plans to the National Monuments Council Regional Planning Committee, but may also occur through more informal inquiries. If it is considered that impacts will occur, a Phase 1 investigation will be recommended. This is a more detailed study which will usually involve fieldwork and/or interrogation of archival material and other documentary sources, depending on the age of the remains. These investigations are paid for by the applicant. If no impacts are identified during the Phase 1 study, recommendation would be that no further mitigatory work need take place. A copy of the recommendations is sent to the client and NMC for implementation.

Recommendations may include a number of actions. Firstly, if no impacts are identified, permission will be granted to proceed with activity. If impacts are identified, the applicant has the option to avoid the resource through re-planning, or to mitigate the impact by removing it, or a sample of it. In some cases a resource may be of such a nature that it cannot be removed. Re-planning will be unavoidable under these circumstances. The latter process will usually be negotiated between the developer and the NMC.

7.5.2.2 Phase 2

Recommendations are usually implemented during what is known as a Phase 2 program and require further involvement of a heritage professional at the applicants cost. Permits usually need to be issued for material to be moved, sampled or documented. Provided that the mitigation is carried out satisfactorily, the applicant will be given permission to proceed, and will be allowed to remove the balance of material after issue of a permit from the NMC. The results of a Phase 2 study are presented as a report to both the client and the NMC. Apart from allowing the NMC to assess the thoroughness of the mitigation, the report documents what has been found. As it is not always possible to carry out detailed research on excavated material at the Phase 2 stage because of the cost involved, the report allows other researchers who may wish to take the study further to know what is available.

7.5.2.3 Additional phases of work

The completion of Phase 1 and Phase 2 studies is often where specialist archaeological intervention ends. A growing trend however exists to use the information derived during such studies to produce signage that informs the general public of the significance of archaeological sites. This is often done to add value to a development or to an area and can, if so desired, be used to generate publicity and to engender a sense of community involvement. The increase in what is known as eco-tourism has provided excellent incentive to make use of archaeological information. Examples of such use are Nelson Bay Cave on the Robberg peninsula at Plettenberg Bay, Matjies River Rock Shelter at Keurboomstrand, Wonderwerk Cave near Kuruman, where displays have been erected in the caves. Rock paintings can be visited in caves in the Giant's Castle region of the Drakensberg, and rock engravings are on display at Nooitgedacht near Kimberley (Deacon & Deacon 1999:198). These are some of the more well known examples, but numerous smaller sites all over South Africa can now be visited. If planned properly, local community involvement can be used to help manage access to such sites and in so doing provide employment opportunities.

7.6 Management of public access to heritage resources

Most archaeologists would agree that it is important to facilitate access by the public to sites of archaeological or historical interest. In the ideal world, all this would require would be a few sign boards. In reality though, if sites of interest, or museums were run in this way, there would be nothing left to see. The problems with vandalism and theft require measures to be in place to ensure controlled access while at the same time not making a site look like a prison and thereby ruining its initial attraction.

In the future, planning with regard to allowing access to heritage sites will have to be done in consultation with SAHRA (or the responsible provincial heritage resources authorities) in terms of Section 44 (2) of the Act.

8. CONCLUSIONS

Most of the sites that have been located date to the later stone age and are primarily situated on the recent floodplains of the Orange River. Both herder and older hunter gatherer camps are recognised. At Bloeddrift, in addition to the old encampments on the floodplains, many petroglyphs are located on the numerous dolomite exposures.

As with the natural environment, archaeological sites also suffer from the impacts of mining and related activities. The task of this assessment has been to identify possible impacts, both negative and positive, which may result from ongoing mining. In an attempt to lessen the negative impacts, a number of recommendations are made at the end of the report. These recommendations take into account the fact that most heritage sites are finite resources which, once destroyed, can never be recreated.

At present, although the new legislation has been signed by the state president, it is not expected to become policy for at least another year. Until such time the old legislation remains in use.

9. RECOMMENDATIONS

Proposed Heritage Management procedure for Trans Hex

The results of the survey have shown that there is a need for a system to be in place for the ongoing management of heritage material along the Orange River. As these heritage resources are finite, once destroyed, they can never be recreated. Management should however be relatively straightforward, as the number of sites is low, and they tend to occur in fairly predictable localities. The following site categories and generalised locations have been recognised;

- Early stone age (gravel terraces and koppies)
- Middle stone age (gravel terraces and tops of koppies)
- Late stone age (silty river banks near tributaries/gulleys, dolomite outcrops)
(Pre- 2000BP hunter/gatherer sites, engravings?, graves , Post- 2000BP pastoralist sites, engravings?, graves)
- Colonial period (river bank)
(buildings, graves)

A framework for ongoing management of the resources is proposed below.

9.1 Suggested management procedures for heritage sites

9.1.1 Early stone age sites (ESA)

While ESA material is often found on gravels which are mined, the dispersed and reworked nature of the sites does not seem to warrant any mitigation. No mitigatable sites were found in any areas that were searched.

9.1.2 Middle stone age sites (MSA)

Although some material in the gravels may be of MSA origin, the only sites of definite MSA age found within the searched areas, were atop koppies at Bloeddrift. This is clearly not in an area that will ever be mined and so no mitigation is necessary.

9.1.3 Late stone age sites (LSA)

9.1.3.1 Old herder and San camps

Late stone age sites are most likely to be impacted through mining. Our observations suggest that they occur mainly on the silty river terraces. No mining or related activity should occur at or near areas where sites have been identified until mitigation has been undertaken.

If mining or related activities are to take place on similar areas of river bank which have not yet been investigated, Phase 1 investigations should be undertaken there.

The prospecting activities near to Jakkalsberg (in the area of the witgat boom) pose the most immediate threat to old herder occupation sites, old San camps and graves of any of the mining activities that were observed. The sites should be demarcated so that they are easily visible. If sites are determined to be in the path of mining, they can be removed by archaeologists with the necessary permissions from the relevant heritage authorities.

9.1.3.2 Graves

In many cases stone mounds found on the river terraces mark pre-colonial graves. These also constitute sites and should not be disturbed by mining or related activities. In cases where they may be in the way, they can be removed by archaeologists with the necessary permissions from the relevant heritage authorities.

Graves should be identified and demarcated in areas where mining or related activities are likely to occur. Some graves have already been fenced by the mine (Plate 20).

9.1.3.3 Engravings/Petroglyphs

It has been determined that engravings occur on dolomite outcrops and are vulnerable to mining and related activities. Most engravings observed during the investigation are found at Bloeddrift, where it was noted that some of the engravings have been damaged by past activities such as the dumping of rock (Plate 16), and construction of infrastructure (Plates 17 and 18). Mining activities have also led to an increase in the number of people staying in the area and some engraving sites are suffering from ongoing vandalism by way of graffiti (Plate 19).

Engraving sites at Reuning occur on vertically bedded dolomite exposures. Vegetation was noted growing in the cracks could eventually lead to the flaking off of large slabs of dolomite and may along with erosion of the bank by the Orange River be responsible for the slabs of material on the slope below. The presence of vegetation should be monitored and where it threatens engravings, be dealt with.

All dolomite outcrops should be considered sensitive and should be checked before mining or related activities that are likely to cause impact take place. This can easily be done by geologists or other staff of the mine. If engravings are found that will be in the path of mining, permission may be granted by the relevant heritage authorities to move them. A facility to house them may have to be set up for the purpose of housing them. The relevant heritage authorities should be consulted in this regard. Where possible though the preferred method of dealing with sites would be to leave them *in situ* and demarcating them so that they can be avoided.

The often unwitting vandalism of the sites by people carving names and other unsavory depictions onto the rocks must be dealt with by Trans Hex. These sites could one day be made available for tourists to the area, which will presumably be advantageous to the local community. All workers must be made aware of the heritage value of the engraving sites and urged not to damage the sites in any way. Perhaps a campaign of posters or leaflets could be undertaken for the information of all Trans Hex employees and sub-contractors. If designed in the right way, such a campaign for the preservation of the engravings could be extended to include local communities and the National Parks Board, and form the core of a public relations exercise showing Trans Hex's commitment to ongoing conservation of the natural environment..

9.1.3.3.1 Public access to rock engraving sites in the Richtersveld

The mine has expressed an interest in making some engraving sites at Bloeddrift accessible to the public. While we support this concept, we urge that it be done with caution given the fragility of the resource. In allowing public access to sites, a number of points must be considered and these are presented below.

Sites that should be made accessible must satisfy the need for conservation, the needs of the public (tourists), of the local community and of the applicant (mining company);

- Requirements of the public;
 - they would require a good view of the engravings (to allow photographs to be taken) and the viewing position and the angle of sunlight and best time of the day for viewing need to be considered
 - they would also require adequate information about what they were viewing in the form of leaflets or sign boards
- The requirements of the landowner (in this case the mining company);
 - ensure compliance with the legislation applying to heritage sites
 - ensure that access does not interfere with the mining or breach the security of a diamond mining operation. In this case only sites that are far removed from the active mining would probably be considered.
 - ensure that while on the property, members of the public are safe
- From the conservation point of view;
 - sites that are easy to control are preferred i.e. there should be no small, easily moved slabs containing engravings at, or near the area, as these could potentially be stolen.
 - the robustness of the sites must be considered when allowing access as at some sites the surfaces are exfoliating and could be further degraded if walked on. Adequate controls should be in place to prevent damage. In general terms the more valuable or unique the site, the more physical control measures that need to be in place.

9.1.4 Colonial sites

9.1.4.1 Buildings

A single building with potential heritage significance was located between Jakkalsberg and Reuning. This is possibly the remains of the Sendelingsdrift Mission Station. The site should be identified and demarcated and not be disturbed by mining or mining related activities.

9.1.4.2 Graves

A number of graves can by virtue of their shapes and presence of headstones be dated to within the last 300 years. As with pre-colonial graves these should not be disturbed. Any intention to move them if they lie in the way of mining must be preceded by certain legal steps required for exhumation where living relatives may still exist.

These graves should also be identified and demarcated.

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11. PROFESSIONAL TEAM

Report and photography
Fieldwork

Dave Halkett
Dave Halkett
Tim Hart

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PHOTOGRAPHS

Remains of the old Sendelingsdrift mission church.



Engraved slabs of dolomite north of Reuning - dislodged from the main outcrop by natural agents. Graffiti is present on the slab at center (Ochta Hotel).



Engraved slab of rock near Jakkalsberg several kilometers from any outcrops.



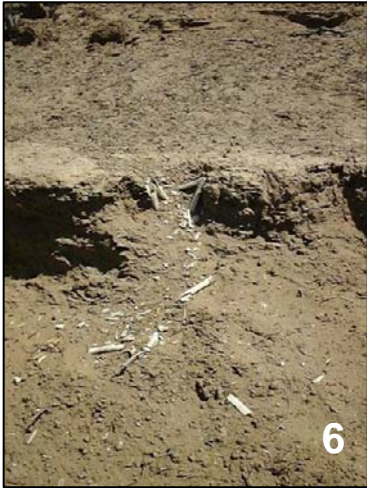


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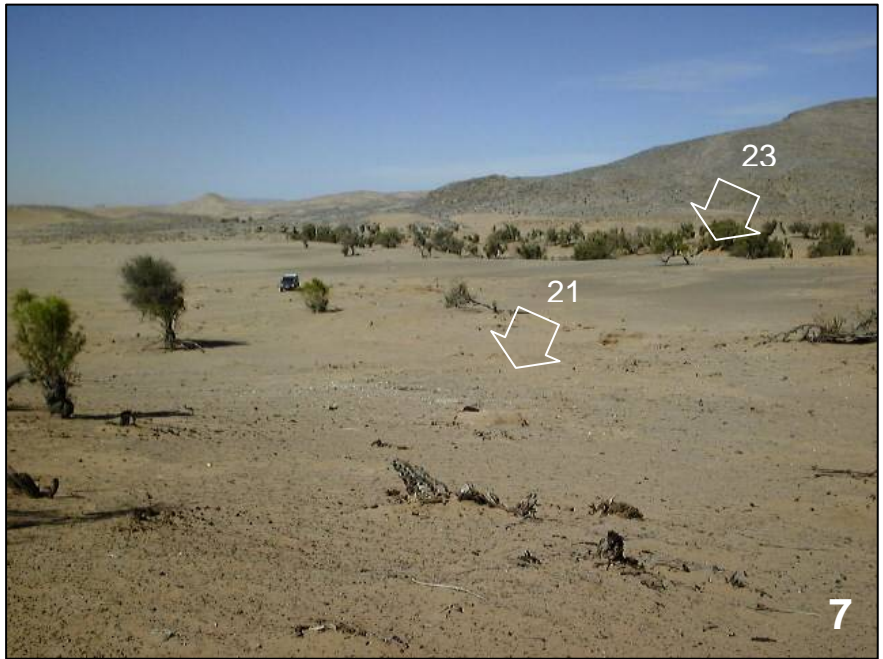


Different types of graves 4, 5, 6

5



6



Two old herder encampments at Bloeddrift – dry gully at right marked by trees.

7



Lens of archaeological material eroding out of silt deposit.

8



View from the summit of Bobbejaankrans showing one of the few rockshelters located during the survey.



Engraving of an ox wagon and human figures at Bloeddrift– these clearly date to the colonial period.



Engravings of horses and riders at Bloeddrift – also from the colonial period. Infilled circles appear to be of similar vintage.

Older, heavily patinated engravings (top of rock) with recent engravings below – Bloeddrift



Older, heavily patinated engravings (partially obscured by sand) with recent engravings above – Bloeddrift



Finely pecked human figure at Bloeddrift



Enigmatic engraving of a type found on many rocks at Bloeddrift



Enigmatic engravings - Bloeddrift.



Engraved slabs of dolomite surrounded by dumped rubble – Bloeddrift.



Engraved dolomite slabs and the remains of flood damaged buildings – Bloeddrift.



Dolomite ridge with many engravings with a road built over a part of it – Bloeddrift.



18

Heavy graffiti covering older engravings – one of the problems that may arise if sites are opened to the public without the necessary control measures being in place.



19

Graves demarcated by fencing erected by Trans Hex – this certainly prevents accidental damage.



20