

**THE ARCHAEOLOGICAL SURVEY OF THE BRAAMHOEK PUMPED  
STORAGE SCHEME**

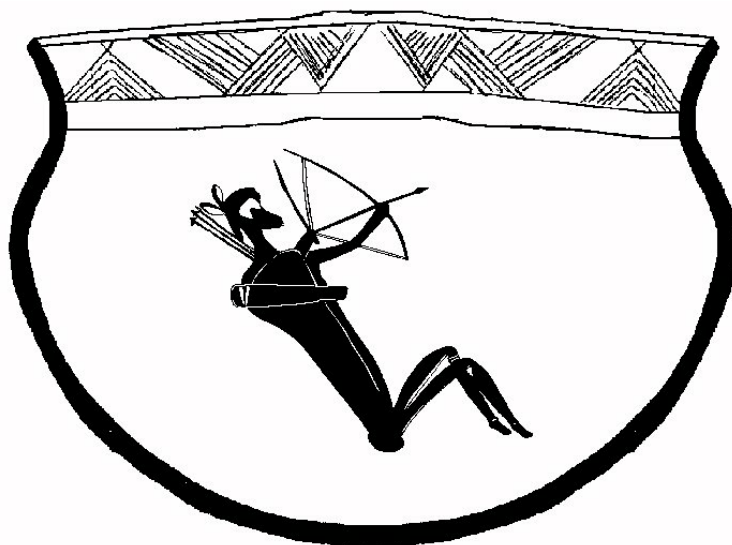
**FOR ESKOM AND ENVIROBIZ AFRICA**

**DATE: 6 MARCH 2004**

**BY**

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**UMLANDO: ARCHAEOLOGICAL TOURISM AND  
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## EXECUTIVE SUMMARY

*The Braamhoek Pumped Storage Scheme will Affect Bedford Shelter. The preliminary archaeological survey indicated that further mitigation should occur before the scheme is completed. Umlando: Archaeological Tourism and Resource Management undertook this mitigation. The mitigation included the recording of the rock art images as well as test-pit excavations at the main shelter. The excavations were to determine the full significance of the deposit. The recording of the rock art images has been completed. The archaeological excavations uncovered well preserved features and artefacts, and further excavations will be required. These excavations should cover at least half of the shelter. Two other shelters in the vicinity of the main shelter were observed during the initial mitigation. These shelters have archaeological deposits as well as a range of artefacts. Both of these shelters will require further mitigation.*

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## INTRODUCTION

Umlando was contracted to undertake the preliminary archaeological mitigation for one site (2829BA2) that will be effected by the Braamhoek Scheme. The Braamhoek Scheme is an Eskom dam that will flood the archaeological site. The initial survey report (National Cultural History Museum 1998) recommended that 2829BA2 have “controlled sampling and/or mapping of the site”.

It appears that the original archaeological survey did not observe two sites adjacent to the main shelter. Alternatively, they did not appear in the report. These two shelters are extensions of the main cave and are discussed below.

The terms of reference for the initial mitigation was:

"The Consultant shall carry out a detailed archaeological survey of the cave in the upper reservoir basin. The stipulations of the National Heritage Act, 1999 (Act 25 of 1999)<sup>1</sup> must be adhered to."

The “survey” includes the conduction of test-pit excavations and the photographing and tracing of the rock art. The aims of the survey are to determine:

- If the cave have an archaeological deposit
- The extent of the archaeological deposit
- The degree of preservation of artefacts and organic remains in the deposit
- The degree of preservation of features in the deposit
- To determine if spatial features exist in the deposit
- The degree of preservation and value of the rock art

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<sup>1</sup> The KwaZulu-Natal Heritage Act of 1997 for KwaZulu-Natal and the South African Heritage Resources Act of 2002 now replace this Act.

## METHOD

The shelter is divided into three distinctive areas (fig. 1). The main cave is located behind the waterfall, and is referred to as Bedford Shelter Main Cave (BSMC). The other two shelters occur on the left and right hand side of BSMC and  $\pm 50$  m in front of the waterfall. Bedford Shelter 1 (BS1) is located on the right-hand side (facing out of the cave) and BS2 is located on the left hand side. Only the rock art at BS1 and BSMC were recorded, and test-pit excavations were only undertaken at BSMC, as per the Terms of Reference.

The site was first mapped according to standard archaeological techniques (Fig. 2). The mapping of the cave places all of the art and excavations on a fixed line for future reference.

The rock art was traced with matt Ozalid tracing paper. This paper is used, as it does not leave residues on the art. The rock art was traced and photographed. The graffiti on the cave dates from the 1910's to 2004, however I did not record any of the graffiti, as I do not believe that it contains any historical significance. The graffiti consists of several names of people who have visited the caves and signed their names on the cave wall, often at the expense of the rock art.

Two test-pit excavations were undertaken in the main cave. The first excavation occurred near the back of the cave, while the second near the front. This would give an indication of the relative preservation of archaeological features and artefacts in the cave.

### The Rock Art

Three main friezes were observed:

The first frieze occurs at BS1. The rock art consists of a solitary animal in faded yellow paint. The animal appears to be a feline and is possibly a lion or leopard (fig. 3).

**Fig. 1: View of Bedford Shelter 1/2 & Bedford Shelter Main Cave**

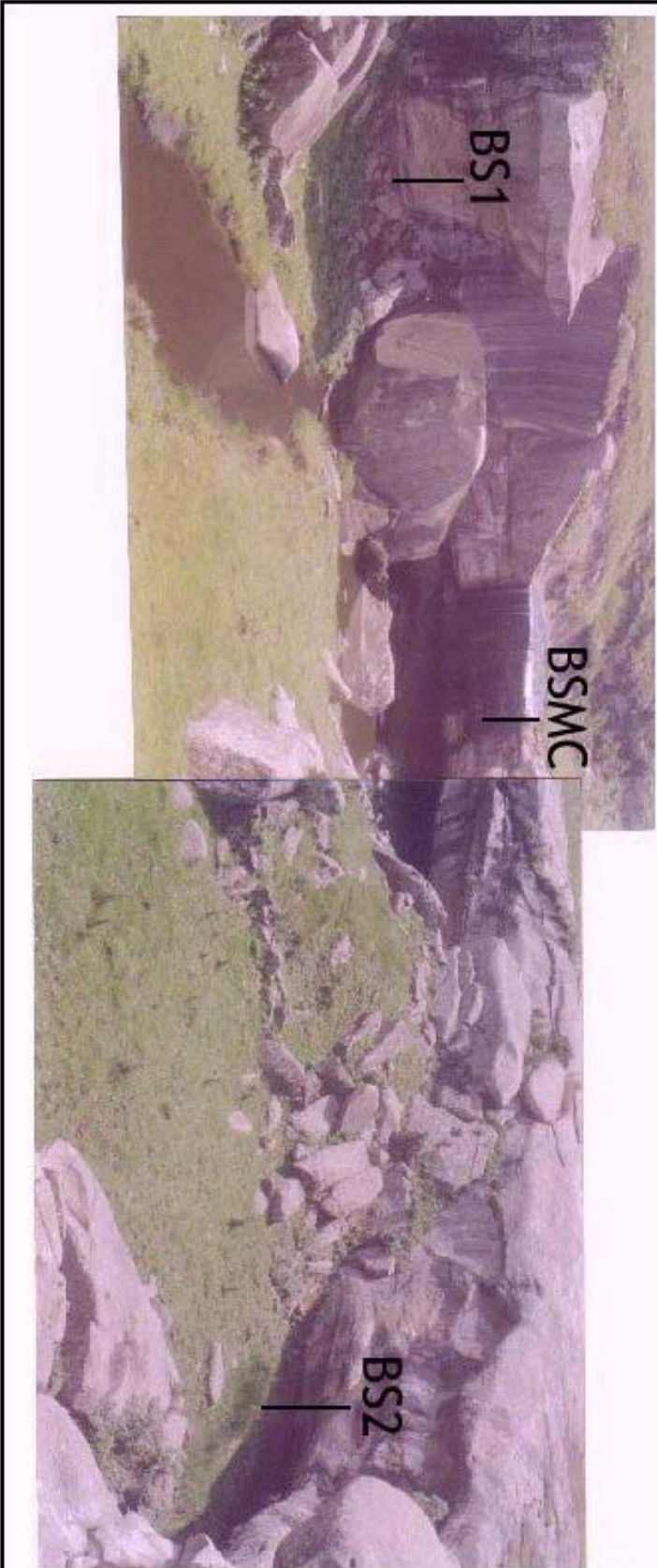
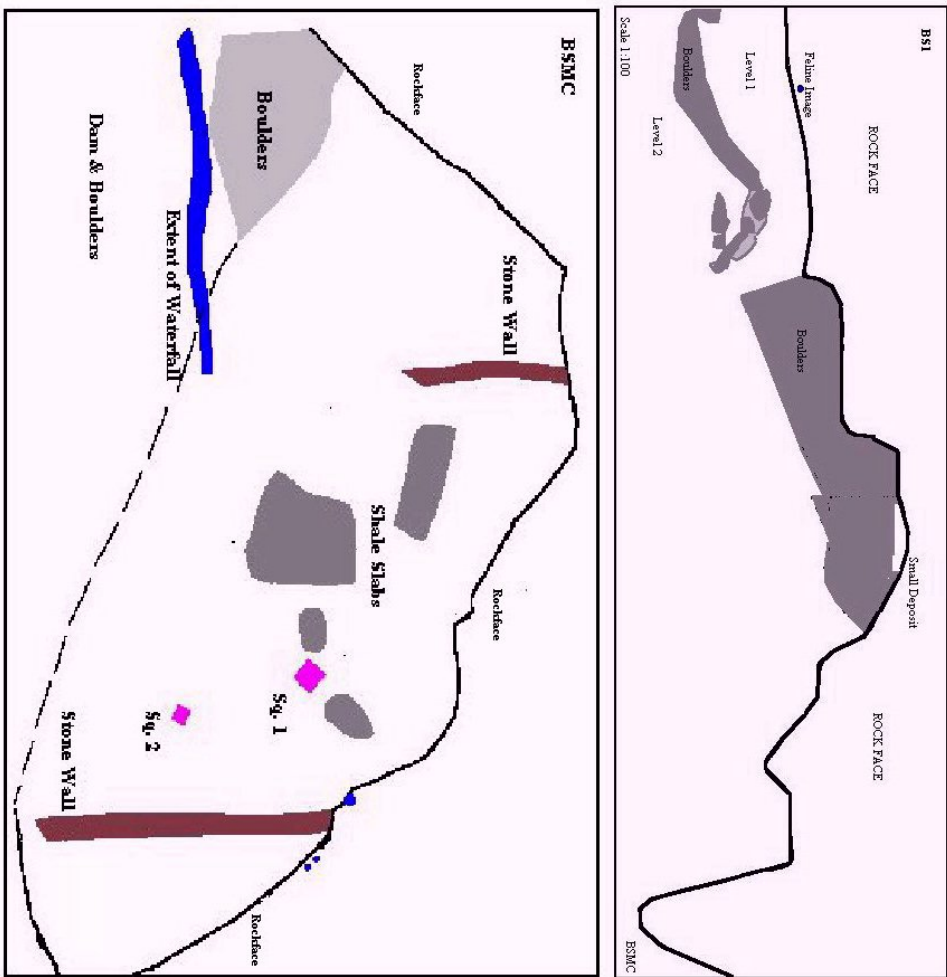
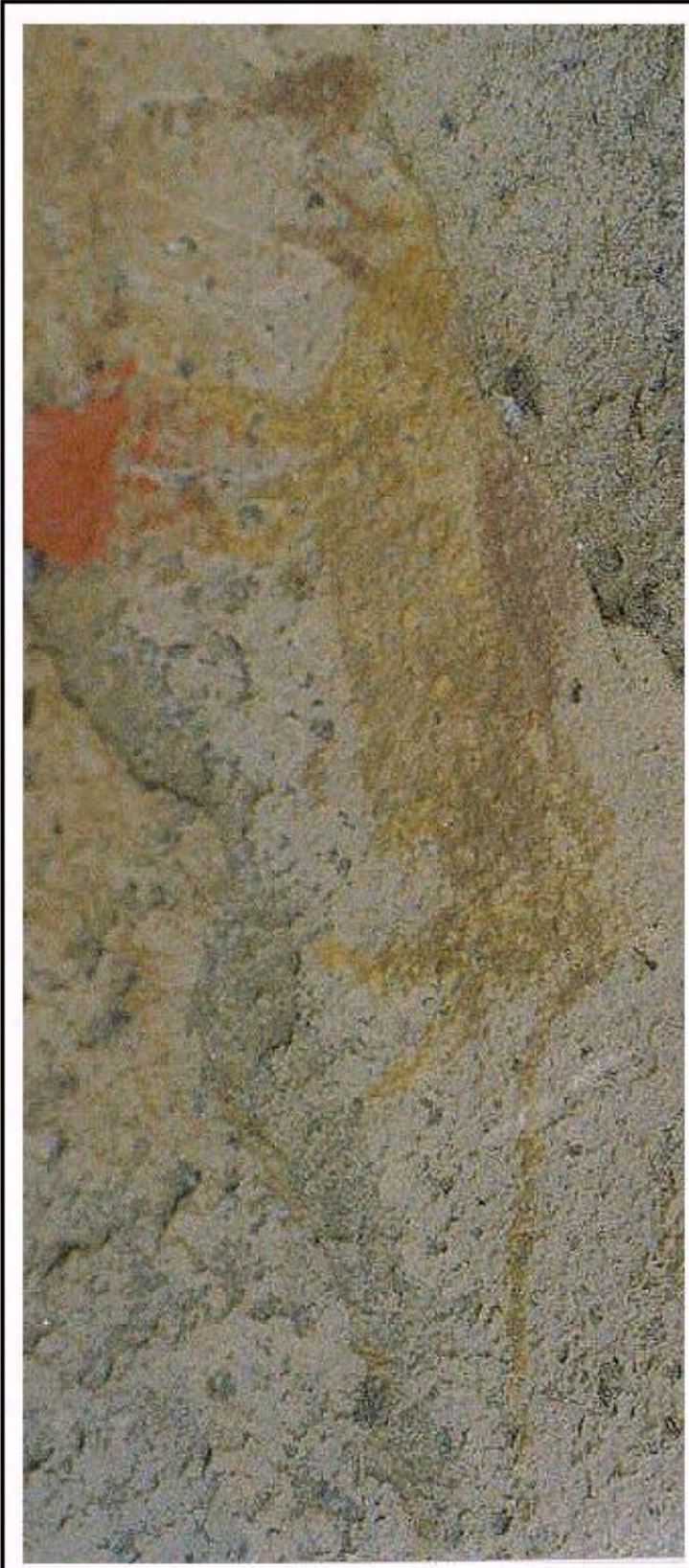


Fig. 2: Map of BSI and BSMC







**Fig. 3: Possible Feline at BSI**



Graffiti occurs near the front legs of the animal. If the animal is a lion or leopard, then it is a rare image.

The second frieze occurs at BSMC (fig. 4). The frieze consists of one faded red antelope (fig. 5), one faded orange antelope (fig. 6), and an orange line (fig. 7). The antelope appear to be eland. All of the images have been damaged by graffiti.

The third frieze occurs on the right hand side of BSMC (facing towards the cave) and behind the stone wall (fig. 8). There are two faded orange eland with their heads and necks missing. The heads and necks were originally painted in white but have now completely faded. To the right is a bi-chromatic eland in red and white. The head is in white paint, while the horns and body are in red paint. This latter eland is very well preserved.

The pigment in rock art paintings can be used for dating the art, as well as undertaking chemical analyses to determine the ingredients used for the paint. A chemical analysis also has the potential to source the ochre used in the pigment. One cannot assume that ochre was locally available. A few of the images have well preserved pigment, and these may be used for research.

### **The stone walling**

Two stone walls occur in the cave. The walls are dry stone walls made from local shale. A mud-clay mortar has been used to cement the stones in position. The walling appears to predate 1910. I assume this date since the right hand side walling has blocked the visibility of the art at frieze 3. The only graffiti at frieze three is similar to that of the 1910 writing and a date of 2003. I assume that since the art has very little graffiti it was not seen during the years of the recent graffiti (i.e. from 1910 onwards).

The walling has no special features or attractions and is a very standard wall.

**Fig. 4: General Art at RSMC**



**Fig. 5: Faded Red Amelope**



**Fig. 6: Kaddal Orange Anulekups**



**Fig. 7: Orange Time**







**Fig. 8: Orange and Bichromatic Eland**

## The excavations

Two test-pit excavations were placed at BSMC. The first square is a 1 m x 1 m square near the back of the shelter. The second square is a 0.5 m x 0.5 m near the front of the shelter. These squares were placed in these locations to note potential differences in the type of artefacts, features, and stratigraphy.

## Stratigraphy

Square 1 has well preserved stratigraphy and features (fig. 9). The upper third of the stratigraphy tends to have deposits that are more recent over the last 100 years. These layers tend to be mixtures of sand, roof spalls and dassie/goat dung. The next layer, Brown Sand with Spalls (BSS) is a soft sandy layer mixed with roof spalls. Below BSS are several ashy layers and hearths. Layers of roof spalls separate these layers. The two main hearths (Hearth 1 and White Ash) tend to be clearly separated. They have a thick layer of white ash at the top with well preserved charcoal at the base.

The base of the excavations occurs  $\pm 60$  cm below the surface. The base is a large stone slab that may be the bedrock; alternatively, it is a large slab that has fallen from the roof. If the latter, then more deposit may occur below it.

Square two consists of six gritty sandy layers intermixed with roof spalls. The lower layers have a slight ashy component, but are not proper hearths.

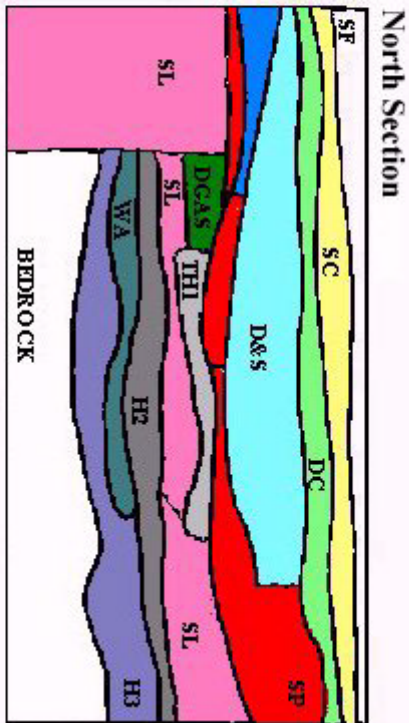
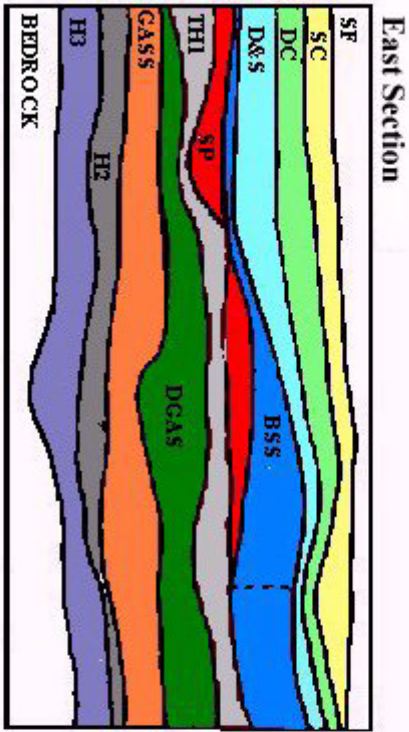
Each square has a small animal burrow. These are, however, near the surface and do not appear to have affected the main deposit.

## Finds

### Pottery

Pottery occurs in all layers of Square 1, except in Hearth 3. The pottery only occurs in the upper layers of Square 2. The pottery is characterised by being mostly thin-walled

**Fig. 1: Bedford Shelter Main Cave Stratigraphy from Square 1**



1mm : 1mm

**Key**

- SF = Surface
- DC = Dung Crust
- BSS = Brown Sand with Spalls
- SL = Roof Spall
- DGAS = Dark Grey Ashy Soil
- H2 = Hearth 2
- WA = White Ash
- SC = Surface Scrapings
- D&S = Dung & Spalls
- SP = Spalls
- TH1 = Top of Hearth 1
- GASS = Grey Ashy Soil with Spalls
- H3 = Hearth 3

with a brown or black burnish. Two rims and lips were recovered but they were undecorated.

This type of pottery dates to the Late Iron Age, however due to the lack of decorated pieces; they cannot be attributed to a specific phase in the Late Iron Age, nor to a specific group of people.

The occurrence of the pottery suggests that parts of the cave were inhabited to at least the last 500 years.

### Glass Beads

Over 50 glass beads were recovered from the excavations. The beads tend to be less than 2 mm in diameter and occur in most of the excavated lenses except for the lower hearths of Square 1 and the basal layer of Square 2.

The beads can be divided into five colour types (in increasing order of abundance):

- Light blue (less than 1 mm in diameter)
- Black ( $\pm 2$  mm in diameter)
- Pink (1 mm – 1.5 mm in diameter)
- White ( $\pm 1$  mm in diameter)
- Dark green ( $\pm 2$  mm in diameter)

The beads need to be analysed by an expert to obtain information on their origin and relative dates. However, the beads tend to occur in the same layers that have pottery sherds, and can thus probably be dated to within the last 300 years. While the pottery has a wider time period, the beads suggest a more recent period.

### Stone tools

The excavated stone tools from BSMC tend to have a very low density, however one must acknowledge that only two squares were excavated. In general, the stone tools tend to be informal tools comprising mostly of chips, chunks (including split pebbles) and flakes on quartz and quartzite<sup>2</sup>.

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<sup>2</sup> Chips are flakes less than 10 mm, and chunks are cores less than 10 mm. These remains tend to be referred to as debitage from stone tools production



One adze (for woodworking) and irregular core were recorded from the basal layers. Both artefacts are made from cryptocrystalline silicates.

#### Faunal Remains

Faunal remains were recorded in all of the lenses. The majority of these remains belong to the small bovid class; that is *Raphicerus spp.*, although some may be sheep/goat. The next most frequently occurring faunal remains are micromammals, followed by fish and lastly large bovid (the size of domestic cattle).

The bovid faunal remains tend to be represented by the long bones, followed by teeth and lastly cranial remains.

The bone is well preserved in all of the lenses. Some of the bone has been burnt in the hearths.

Four crab antennae were recorded from White Ash.

#### Worked Bone

Only one piece of worked bone was recorded. This artefact is a bone spatula (fig. 10).

#### Botanical Remains

The botanical remains tend to be well preserved. The most common remains are twigs and corm casings (*Iridaceae spp.*). A few seeds, bark, fragments of wood and leaves occur in the deposit at most levels as well.



A few worked pieces of botanical remains occur in Square 1. The most common artefacts are woodshavings. These are produced when digging sticks, arrow shafts, etc. are made. One piece of twine was recovered from Square 1, BSS (fig. 11).

### Shell

Only one species of shell occurs in the excavations and observed at BS1. The shell is probably a freshwater mussel (*Unio caffer*) which is common throughout southern Africa. These shells were most common in the hearths of Square 1, although a few did occur in the middle layers of Square 2.

### Ochre

Ochre only occurred in the lower lenses of Square 2. The ochre is red and may correlate with the pigments of the rock art (see RECOMMENDATIONS). Some manganese dioxide may occur in the lower lenses as well, however this still needs to be identified by an expert.

### Charcoal

Charcoal occurred in all lenses of both squares. Only the charcoal samples from below the Dung Crust layers were kept, as anything above these layers are either intrusive or from recent fires.

Most of the charcoal fragments were very small, however Hearths 2 and 3, and White Ash yielded larger fragments. White Ash has the highest concentration of charcoal. These fragments are important for tree species identification and radiocarbon dating<sup>3</sup>.

### Soil Samples

Soil samples were taken from the lower lenses, i.e. those lenses below the “dung layers”. These included samples from the hearths and ashy deposits. Soil samples are important for palynological<sup>4</sup> samples.

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<sup>3</sup> Approximately 100g of charcoal are needed for a radiocarbon date. Larger fragments result in a lower chance of contamination from other levels. Species identification is important for environmental reconstruction as well.

<sup>4</sup> Palynology is the study of pollen found in various types of deposits. Pollen is species specific and thus has environmental implications.



## Features

The hearth features are the most striking features from Square 1. Hearth 1 was surrounded by several roof spalls to form a contained fireplace. White Ash is not surrounded by hearth stones, but does occur in a small depression.

The hearths are well preserved and do not appear to be contaminated/mixed with the other lenses. These hearths represent individual fires as well as the associated debris. The hearth features are restricted to Square 1, although ashy-like lenses occur in Square 2. In the past people used shelters for different reasons. Similarly, the location of hearths at different levels and places indicates that a spatial component does exist at BSMC. The spatial component can only be further resolved with further excavations.

## Observations at BS1 and BS2

BS1 has an archaeological deposit of  $\pm 20 \text{ m}^2$  and averages between 50 cm – 100 cm in depth. Furthermore, there are two levels of deposit. The first level occurs at the base of the shelter where one crossed the stream. In this area, scrapers, adzes, blades utilised flakes and cores were observed along the animal path. The second level occurs at the top of the path leading into the shelter. While human and animal activity has disturbed some of the deposit, areas have in tact deposit. I observed freshwater mussel in this deposit as well as stone tools and pottery. The stone tools from both levels tend to be on cryptocrystalline silicates or dolerite, and a few quartz flakes. European ceramics occur on the surface.

The occurrence of the above artefacts on the surface and slopes suggests that there is an archaeological deposit, and that artefacts will occur in this deposit.

BS2 is a low shelter  $\pm 6$  m deep, 10 m wide and a front area extending for  $\pm 4$  m. The archaeological deposit covers  $\pm 40 \text{ m}^2$  of the shelter. The eastern part of the cave has a small stone wall that protects the rest of the cave from a small waterfall. The main part of the shell has an archaeological deposit that may be  $\pm 50$  cm deep. Many stone tools were observed in the dripline of the shelter, and on the talus slope. These stone tools include thumbnail scrapers, adzes, a drill, utilised flakes, and cores. It appears that there is a higher concentration of stone tools in this shelter than the other two shelters. No pottery

was observed on the surface, however a few European ceramics did occur at the southern end of the cave.

BS2 appears to differ from the other shelters mainly because of the high stone tool content. These tools suggest that parts of the deposit may date to the lower level of BS1, but older than the deposit at BSMC.

In general, there appears to be a continuation of archaeological deposits, through time, between the three shelters. The lower levels of BS1 and most of BS2 appear to have similar artefacts recorded in KwaZulu-Natal. These probably predate 1000 years ago, while BSMC probably dates to the last 500 years.

Both BS1 and BS2 are of medium-high significance and should have further mitigation.

## CONCLUSIONS

The initial archaeological mitigation at Bedford Shelter is complete. The mitigation was divided into two parts: recording of the rock art and assessment of the archaeological deposit. The recording of the rock art included photographing the art and tracing the images according to standard archaeological methods. The rock art images have pigments that may be used for chemical analyses. The art is not of any great significance.

Two test-pit excavations were conducted to determine the significance of the archaeological deposit. The test-pits occurred in the front and back of the main cave to obtain a range of potential features and preservation of artefacts.

The criteria for testing the significance of the deposit were:

1. If the cave has an archaeological deposit
2. The extent of the archaeological deposit
3. The degree of preservation of artefacts and organic remains in the deposit
4. The degree of preservation of features in the deposit
5. To determine if spatial features exist in the deposit

These criteria can be answered as follows:

1. The cave has an archaeological deposit that covers  $\pm 80\%$  of the shelter.
2. The archaeological deposit is currently  $\pm 60$  cm deep, although it may be deeper when the larger slabs are removed. Sites of this size tend to have a Middle Stone Age deposit at their base, and this was not observed in the shelter. This implies either that the basal layers were reached, or that more deposit may occur below the slab.
3. Artefacts and organic remains were relatively well preserved. The more friable faunal remains such as fish, microfauna, and small bovids do occur in the deposits especially the hearths. Furthermore, twine and worked bone was recorded as well. The ash from hearths tends to preserve these remains. A large sample of charcoal is present in the deposits.



4. The posterior excavation yielded well preserved features in terms of a succession of hearths. The anterior excavation did not yield features *per se*, rather a mixture of ash and sand. This may be due to the anterior being more affected by the water from the waterfall and dam.
5. The excavations are too small to determine if spatial features exist in the shelter. However, given the degree of preservation of the deposit, I would suspect that spatial features would exist.

The occurrence of two other shelters, BS1 and BS2, add a chronological sequence to the main shelter. The deposits of these two shelters were not investigated as it was not part of the scope of the initial investigation. Both shelters do have archaeological deposits as well as artefacts. They would require further mitigation.

## RECOMMENDATIONS

### EXCAVATIONS

The three shelters require further excavations. I believe that since the shelters will be flooded, at least half of each shelter should be salvaged. A standard research excavation would only excavate half of a site to obtain an adequate sample size. The flooding of these sites will permanently damage the shelters and thus as much information as possible should be recovered.

Table 1 summarises the number of days required per excavator working on the assumption that one will be able to excavate 1m<sup>2</sup> per day<sup>5</sup>. This is a very lengthy excavation and I propose that a phased approach be used.

Phase 1 will consist of the following:

- Two weeks of excavations at BSMC
- Two weeks of excavations at BS2
- One week of excavations at BS1

After Phase 1 has been completed, the each shelter will be reassessed according to the artefacts and features recovered. A report should be written explaining the finds and justify if any further excavations will be required. Phase 2 will be dependant on the results of Phase 1, and include further excavations.

### ROCK ART

The rock art images should be sampled for chemical analyses. The removal of some of the pigment for future analyses will not harm the art, since flooding will destroy these images. It should not take more than one day to sample the art.

### RADIOCARBON DATES

It is normal research practice to obtain at least 2 – 3 radiocarbon dates per excavated site for publication. The developer is not obliged to pay for radiocarbon dates in salvage archaeology. It would be a good gesture if the ESKOM paid for at least two radiocarbon dates for each site. This will allow

the excavation material to be placed in a chronological sequence and thus aid other research, and in turn a better understanding of the site in relation to other sites.

## **PUBLIC RELATIONS**

It would be good public relations if ESKOM allowed the media to be involved with the excavations. I have, with other companies, organised a single day for the media to visit the site and be given a brief talk on the significance of the site. ESKOM representatives, as well as selected IAPs, should be onsite for the “media day”. In this way, the IEMP can be explained.

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<sup>5</sup> This excludes the number of people required for sieving and sorting for each excavator.

**Table 1: Estimate required time for mitigation**

<b>Shelter</b>	<b>Square meters for half of the cave with deposit</b>	<b>Excavation squares per day for 1 excavator</b>	<b>No. of days required for excavation with 2 excavators</b>	<b>Recommended days for Phase 1</b>
<b>BSMC</b>	92	92	46	14
<b>BS1</b>	20	20	10	7
<b>BS2</b>	40	40	20	14
<b>Total</b>	<b>152</b>	<b>152</b>	<b>76</b>	<b>35</b>

## **REFERENCES**

National Cultural History Museum 1998. A survey of cultural resources for the proposed Braamhoek Pumped Storage Scheme, Free State/KwaZulu-Natal Border Area. Report to Poltech Gauteng. (report No. 98KH03).