

**THE ARCHAEOLOGICAL EXCAVATIONS OF BEDFORD SHELTER MAIN CAVE AND BEDFORD
SHELTER 2**

FOR ESKOM AND ENVIROBIZ AFRICA

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EXECUTIVE SUMMARY

Two archaeological sites were excavated as part of the mitigation for the Braamhoek Pumped Storage Scheme. A third site requires test-pit excavations, while a fourth site may need mitigation if ~~effected~~affected by the construction of the dam wall. The excavation at Bedford Shelter Main Cave (2829BA2) is completed and no further mitigation is required. This is subject to SAHRA approval. BS2 yielded a high percentage of formal tools and organic remains. This site requires further excavations: at least half of the site should be salvaged.

Move Executive Summary to ahead of Contents. Provide a fuller Executive Summary of a couple of pages that should be a substantive digest of the body of the report – the aims, methods, main findings and recommendations.

A note about font. I prefer Times New Roman. I regard it easier to read than Arial. The letters are more distinctive than with Arial. Arial seems to be favoured by scientists and technologists, maybe because it is without frills and therefore neutral and maybe even objective. Whether or not my reasons hold, leading global publications use Times New Roman or similar font. Examples are The Economist and South African Journal of Science. To be less than tactful, Arial is bland and without character.

Compile the report into one consolidated file. Don't expect me or others to be able to do this for you. They will screw up and that will reflect on you. Paste the tables into the document. If necessary edit and adapt the tables to fit the format of the report – portrait or landscape. Insert the pictures. For report purposes pictures do not need to be more than 30 kb each. By all means store original pics at high resolution, and copy to me. The report should be transportable – not more than about 1 Mb.

INTRODUCTION

Umlando was contracted to undertake rescue excavations of three sites that will be ~~affected~~ affected by the Braamhoek Pumped Water Storage Scheme. The sites are situated in a \pm ~~This sign means plus a quantity or minus a quantity. You mean approximately. You can use c for circa (= about or approximately) or the keyboard sign~~ ~100 m radius from ~~each one another (taking the river as a central point).~~ (fig 1; video 1 and 2 in CD ~~The reader is confused about the video. Rather provide a separate section explaining the video and CD).~~

~~Revise this introduction. Explain carefully the sequence of events. Umlando was contracted to undertake a survey of the Bedford Shelter, in terms of ROD. This survey was undertaken in March 2004 (I can't remember the date – check). The main conclusions of this survey were that Then explain where this report fits in, what it covers, etc~~

Our initial test-pit excavations occurred at Bedford Shelter Main Cave (2829BA2). These excavations noted that further excavations would be required. During the course of the survey, we also noted two other sites (Bedford Shelter 1 and 2) that were omitted from the initial survey (Poltech report 1998). We recommended that a further study be undertaken at these two sites in terms of test-pit excavations. We were also requested to resurvey the area to ensure that other sites were not omitted from the initial survey.

~~The excavations at BSMC have been completed and no further work is required in terms of excavations. We suggest that one rock art frieze is removed before the blasting at the shelter. We are currently investigating various methods of removal. The favoured approach is a controlled removal with a qualified geo-engineer. These are findings and conclusions of the present phase of work, and must be shifted to later in the report – Conclusions and Recommendations. The report does not have a Recommendations sections~~

~~The excavations at BS2 yielded a surprisingly deep deposit (over 1.30 m) and a large stone tool assemblage (n = 14083). The analysis indicates that BS2 is of medium-high significance. The test-pit excavations are complete, however further excavations will be required.~~

~~We were supposed to undertake test-pit excavations at BS1. However, consultants were denied access to the properties by the landowner(s) a week before we were to begin at BS1. These excavations still need to be undertaken. These are also findings and conclusions and must be shifted out of the Introduction into Conclusions and Recommendations (see above).~~

This report is a summary of the excavations and brief analyses of the artefacts. The analysis is not detailed since it is not a research report. ~~Explain what the law requires you to do – rescue the stuff and put in safe-keeping so that others might study it.~~

One unrecorded archaeological or historical site was recorded in the survey. The site may (not) be affected by the construction of the dam wall. Mitigation will be required if it is to be affected. ~~Move to Conclusions and Recommendations~~

METHOD

~~Preface this method description with orientation. For example, this study involved excavation of the Bedford Shelter and exploration of BS2. This was undertaken as follows...~~

All excavation squares are in 1 m x 1m squares and were mapped in relation to the cave wall and dripline. The stratigraphies from the excavated squares were drawn, although only a few are presented in this report. The section drawings in the report are used to show a cross section of the site.

All material from the site was sieved with 6 mm and 1.5mm sieves, and then preliminary sorted on site. Preliminary sorting entailed removing unwanted material such as roof spalls and excessive soil; and minimal categorisation of artefacts. Detailed sorting and curation was undertaken at Umlando's offices. Detailed sorting entails cataloguing and analyses of the artefacts according to their categories. These are curated according to the standards of the National Museum, Bloemfontein: the institute where the material is permanently stored.

Bucket counts were kept from all excavations. Bucket counts are used to indicate volumes of deposit, and thus relative densities of artefacts. These volumes and densities have not been used for this analysis, as it is a basic analysis of the excavations. The bucket counts (i.e. indicators of volume and density) are listed in Table 1.

We used matt Ozalid tracing paper to trace the rock art. 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 1910s to 2004, however we did not record any of the graffiti, as we 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. Since the images will eventually be flooded, we removed a larger amount of pigment than would be the norm (see Watchman and Mazel 199xx).

Some of the pigment from the rock art was sampled. This consisted of:

1. Photographing the image before pigment removal
 2. Selecting an area that had no graffiti, little/no environmental effects, such as lichen, leaching of water, etc.
 3. Scraping the pigment off the art onto tinfoil
 4. Tracing the areas of pigment removal onto the original tracing
5. Rephotographing the image.

BEDFORD SHELTER MAIN CAVE

DESCRIPTION OF BSMC

Bedford Shelter Main Cave (BSMC) is a large shelter behind a perennial waterfall and small "dam" (fig. 2). Most of the site has very little, or shallow, archaeological deposit, especially the northern part of the site. Here the deposit is ephemeral and lies directly on the bedrock. The southern side of the site has the main archaeological deposit, however, even here, large slabs of rock appear to lie on bedrock and extend above the surface. A more recent dry stone wall occurs on the southern side of the site. Behind this wall appears to be a deeper deposit. Unfortunately, people using the area as a latrine over many years has damaged the deposit.

BSMC has been used as a picnic and camping site since the early 20th century to the present. This has also resulted in inadvertent damage to the deposit (e.g. sheep/cattle pens, latrine holes, fire pits, fire places, graffiti, etc.).

A total of 21 (1 m x 1 m) squares ~~were~~ excavated over a 15 day period (fig's. 3a - b). While this may appear to be a fast excavation, there were two excavators, each with three sorters, and the deposit was straight-forward. We excavated a total of 399.34 ([Is it necessary to go to 2 decimal places?](#)) buckets of deposit – this excludes the larger roof spalls that were located throughout the deposit.

Square 1 and Square 2 were excavated during the test-pit excavations. Square 1 is now Square E9, and Square 2 retains its own number.

We did not concentrate on the front areas of the cave. Most of this area has either been washed away by the dam and/or waterfall, occurs in the dripline of the waterfall, or has no deposit. Most of the back of the cave was also omitted since there was no deposit and the little soil that was, there rested on the bottom shale layers of the cave. In summary, we concentrated the excavations in those areas with apparent deposit and minimal disturbance.

ROCK ART AND GRAFITTI

We traced and photographed the rock art during the first season of excavations. During the second season, we sampled some of the ochre of selected images. The tracings have not been drawn for this report and we have used photographs to indicate the areas of sampling. Figure 3 indicates the location of the art in relation to the cave wall.

We noted two main friezes:

The first frieze includes one faded red antelope (fig. 4a) one faded orange antelope (fig. 5a), and an orange line (fig. 6a). The antelope appear to be eland. All of the images have been damaged by graffiti. Some graffiti was sampled as a comparison to the art.

The sampled areas are as follows:

- Sample 1: Red eland torso, stomach and back (fig. 4b)
- Sample 2: Red eland hindquarters (fig. 4b)

- Sample 3: Orange eland hindquarters (fig. 5b)
- Sample 4: Left side of orange smear (fig. 6b)
- Sample 5: Red graffiti above the 'C' of GC de Beer (fig. 6b)

The third frieze occurs on the right hand side of BSMC (facing towards the cave) and behind the stone wall. There are two faded orange eland with their heads and necks missing (fig. 7a). 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 (fig. 8a). The head is in white paint, while the horns and body are in red paint. This latter eland is very well preserved.

The sampled areas are as follows:

- Sample 6: Torso area of lower yellow eland (fig. 7b)
- Sample 7: Hindquarters of lower yellow eland (fig. 7b)
- Sample 8: Lower back of red eland – 2 sample areas (fig. 8b)
- Sample 9: White throat/neck area of red eland (fig. 8b)

BSMC probably had more art in the past. However, due to the friable nature of the [geologyrock](#) of the cave, [it is likely that](#) much ~~of this~~ art has disappeared. There are faint traces of possible pigment in various parts of the cave. However, it was difficult for us to distinguish conclusively between pigment and natural oxidation.

The mitigation for the rock art is complete. There is a possibility that the second frieze may be removed before the blasting of the area. We are discussing this option with Eskom, and other rock art specialists as to the benefits of this removal. The South African Heritage Resources Agency (SAHRA) will need to give approval for this, as our current permit does not cover it.

No famous names appear to occur with the graffiti. The earliest graffiti dates to 1906 and was written by C.S. Brockbank, who appears to be a "surveyor and architect" (*sic*). The rest of the names appear to be that of various families (and their descendants) who have visited the area over time. In terms of general interest, we noticed definite writing styles over time, and even the handwriting of specific individuals. That is, one person wrote down several peoples' names.

We photographed the graffiti at BSMC and these records will be housed with the rest of the material from the excavations.

STRATIGRAPHY

BSMC has very well preserved stratigraphy at the back of the cave (Squares C – F). The front of the cave does not have well-preserved stratigraphy (Square K – L). The stratigraphy of BSMC is depicted in figures 9 – 18. Fluctuating water levels and human activities have ~~effected~~[affected](#) the front deposit of the cave. Large roof slabs separate the front and end excavations and could be a factor in the different levels of preservation. In general, the back of the cave consists of a series of large hearths interspersed by layers of roof spalls and slabs.

Squares B3 and D5 appear to be near the cave wall. Only \pm 20 cm of deposit existed before we reached the shale layers seen in the cave wall. Larger roof slabs and/or bedrock occur as one extends more south and north. This suggests that the deposit will be very thin in these areas.

Unit 1

[What is a unit. This must be explained somewhere. Here or under Method.](#) Unit 1 consists of the surface scrapings and dung layers in both the front and back excavations. The dung layers ~~tend~~[appear](#) to be very thick and compacted. The dung layers ~~tend~~[appear](#) to be a series of dung between brown sand and spalls. In some cases, the dung layers alternate between cattle dung and sheep/goat dung layers. The front excavation has a very thick compacted black dung layer. This probably correlates with Dung & Spalls 3, except here the water of the dam has ~~effected~~[affected](#) it. The front excavations have a series of ash-like layers above the compacted dung. These ~~tend~~[appear](#) to be aeolian sand, spalls and some cultural deposit.

Unit 2

Unit 2 consists mainly of Hearth 1, a brown spall layer, and the base of Hearth 1. Hearth 1 and Hearth 5 are the same hearth. BBH1 was originally excavated at its edge. BBH1 became thicker as the excavations progressed. Unit 2 rests on a large spall layer: Spalls 1. The associated levels from the front excavations are the grey ash layers that also rest on a layer of spalls. Most of the deposit from Square Z belongs to unit 2.

Unit 3

Unit 3 begins below Spalls 1 and consists of one main hearth and the associated layers: Hearth 7. These layers rest on a spall layer. The front of the excavations consists of the dark ash layers, Spalls 2 – 3. Unit 3 is the last unit for the front of the excavations before bedrock is reached. Spalls 2- 3- are layers of roof spalls with an almost sterile brown sand below it. This is the case for both excavations.

Unit 4

Unit 4 consists of the basal layers of the back excavations. These include hearths (White Ash, Hearth 2, Hearth 3 and Hearth 6) and the basal spall layers that have smaller hearths and rest on bedrock.

We assume we have reached bedrock at ± 60 cm below surface (on average). The assumed bedrock has a different geology to that of the spalls, and thus it does not appear to be a large fallen roof slab. The exception is for the front excavations that appear to be a collapsed roof. The assumed bedrock is on the same level as the bedrock to the north of the cave that has no, or very little, deposit.

FEATURES

The stone walling

Two stone walls occur in the cave. The walls are dry stone walls made from local shale and sandstone. A mud-clay mortar has been used to cement the stones in position. The walling appears to predate 1910. We 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. We 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.

Hearths

Six large hearths were excavated. Hearth 1/5, Hearth 2, Hearth 3, Hearth 6, Hearth 7, and BBH1 (fig. 16). The hearths tend to be very ashy and grey, cream or white in colour. They have an ashy layer on the top and a charcoal layer at the base. Some of the hearths consist of solid ash (White Ash, hearth 6 and 7). The soil around the hearths tends to be grey and speckled with charcoal. Hearth 7 is more grey than white and is thus different to the other hearths.

Hearth 4

Hearth 4 occurs in Sq. L7. It is a stone lined pit with compacted fine grey ash. It is ± 40 cm in diameter and 19 cm deep.

Hearth in Orange Spalls

This is a small feature of two small hearths in an orange spall layer, just above bedrock. A "circle" of stones surrounds the hearths.

Stone Lined Pit

Stone Lined Pit (SLP) occurs near the base of Sq. L9 (fig. 19). Large spalls have been placed vertically around this pit. The top of the pit is a "rubble" infill but it becomes ashier below and to the base.

ARTEFACTS

Table 2 lists the artefacts from BSMC.

Ceramics

A total of 286 sherds were recovered from the excavations. Pottery occurs in all units, especially the upper units. The pottery is thin walled and mainly orange or brown in colour. Several rims and lips were observed, however none were decorated. The pottery dates to the Late Iron Age.

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.

Worked Bone

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

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. [Does the freshwater mussel occur in the region at present? Check with Johann Rall.](#)

Faunal Remains

The bone from BSMC consists mainly of small and medium bovids. Some large bovid, fish, crabs, microfauna, and one baboon and canid occur. Unit 2 has the highest percentage of faunal remains, followed by Units 1, 4 and 3. The faunal remains are well preserved. Some of the faunal remains have been burnt. The occurrence of bone in the lower units is important as they can be used for radiocarbon dating, since the charcoal weights from these units are too small to date.

Charcoal

Charcoal occurs in all units. Charcoal occurs mostly in Unit 1 followed by Units 2, 3, 4. Most of the charcoal from Unit 1 one can be ignored, as it probably relates to recent (last 100 years) fires.

Ochre

Ochre occurs in small quantities at BSMC. The ochre is red in colour and mostly small fragments.

Soil and Dung Samples

Samples were taken from all units, especially the hearths and dung layers.

Stone Tools

The stone tools at BSMC are virtually non-existent. A total of 29 tools were recorded. Three of these were lower grinding stones. The rest of the stone tool assemblage consists of flakes, chunks, cores and formal tools (in decreasing order of abundance). Only two formal tools were recovered: an adze and a MRP (Miscellaneous Retouched Piece). The tools were made on quartz, quartzite, hornfels, and other.

Ochred Stone

Only two pieces of stone had ochre on them. These are flat slabs resembling roof spalls. No distinctive art could be observed on these spalls.

Worked Stone

One piece of worked stone was recovered from Unit 1. The quartzite stone is fist-sized with a missing nodule in the centre. The centre has been smoothed. This may be natural.

Metal

A few old nails were recovered from the excavations (not included in Table 2). An old tin with an embossed label was found in the top of Unit 2. Only the "...England" sign could be discerned.

Glass Beads

A total of 375 glass beads were recovered from BSMC. The beads are the same types of beads throughout the deposit. The only difference is in the relative densities of different colours. In Unit 1 green and pink beads occur the most frequently. Marine blue and turquoise occur the second most often followed by white, black and lastly translucent red beads. In Unit 2, the marine blue beads are more favoured followed by green, pink, white and black. Turquoise beads almost disappear from the deposit. Unit 4 has mostly translucent red beads followed by pink, black and white beads. It is a near inverse of the upper layers.

DISCUSSION

The excavations at BSMC removed 21 (1 m x 1 m) squares over two weeks. The deposit was straightforward and not very deep. A variety of artefacts were recovered, specifically a good sample of glass beads, ceramics, charcoal and faunal remains. The organic material was also well preserved.

The deposit dates to the Late Iron Age, if not the last 400 – 500 years. The new deposit does not appear to have truncated earlier deposits, nor have the lower deposits been damaged. All of the excavated layers at the back of the cave appear to be in tact. Very little evidence for an earlier occupation exists, apart from the ephemeral stone tool assemblage and mostly faded rock art. It appears that the deposit at BSMC was systematically cleared out, and a new occupation began. Since both BS1 and BS2 have stone tools and other remains, and are much smaller deposits, one would expect that BSMC would have a larger deposit. This is not the case. The removal of the deposit may be due to natural or human factors.

MANAGEMENT PLAN

The excavations at BSMC are complete. We do not believe that more information can be gained from further excavations. We also believe that we have a sufficient sample size of material. Approximately half of the area with well-preserved archaeological deposit has been removed. No further mitigation is thus required.

The removal of the rock art still needs to be discussed. This does however, depend on whom Eskom appoints as the geo-engineer for the project.

BEDFORD SHELTER 2

Bedford Shelter 2 (BS2) was not recorded during the first survey (National Museum 1998), nor did we undertake test-pit excavations during the first season. These current excavations were thus test-pit excavations to determine the full significance of the cave. The aim of this excavation was to determine if the deposit had stratigraphy, well preserved organic remains, features and/or a significant stone tool assemblage.

DESCRIPTION OF BEDFORD SHELTER 2

BS2 is a small shelter, in comparison to BSMC. It is \pm 26m wide, \pm 10m deep, and currently \pm 0.5 m – 1.5 m high (fig's. 20 and 21). There is an extensive talus slope from the shelter extending onto a flat area

before the river (fig. 1). Molerats and fluctuating river levels have ~~affected~~ affected the lower parts of the talus slope. The higher parts of the talus slope are not as ~~affected~~ affected. A perennial stream runs through the rock face along the southern part of the shelter. This stream has removed part of the deposit in this area. Several boulders, and a recent stone wall, have formed a barricade between the stream and the rest northern deposit.

This area has not been used as a camping site and is thus far less damaged by visitors [than MSMC](#).

[The Our](#) excavations began at the front of the cave with the intention of moving in a line backwards and forwards to create a cross pattern. The unexpected depth of the deposit did not allow us to reach the back of the shelter (to investigate possible bedding complexes).

STRATIGRAPHY

BS2 has well defined stratigraphy in most of the squares: \pm 120 layers were removed. The squares varied in depth. The deepest square was excavated to 1.3m deep (and bedrock was not reached). We had to use a step excavation for the squares as the initial squares became too dark to observe any strata. As other squares were opened, the stratigraphy became more visible. The lower deposits, especially the northern squares, tended to have a uniform brown-black soil colour. We used \pm 5 cm spits to remove these layers, however using soil texture and roof spall density and size as indicators of possible changes in stratigraphy.

We have grouped the various excavated layers into six main units. These units refer to a group of layers in the deposit that may relate to a similar period, even if it is over a few hundred/thousand years. These unit groupings are not final and will be reassessed when further excavations continue.

Figures 22 - 25 show the various strata in the shelter.

Unit 1

Unit 1 consists of the upper layers of the deposit such as the surface scrapings, dung crusts, aeolian sands. A general area of rodents' nests is also included in this unit. The main layer (Compacted Black Sand: CBS) was a very compacted hard clay like soil, with much rodent dung. The undulating CBS deposit is illustrated in fig. 26. It appears that CBS may have been a nesting area. The other layers were also compacted but more brown in colour (some of the CBRS layers) and less disturbed by rodents. [Molerats, I assume, and not moles \(which are Insectivores not Rodents\). This is a touchy point because in the history of objections to the Braamhoek Scheme it was claimed that there was a presence of endangered golden moles. I never saw sign of golden mole, though plenty of molerat. These animals are literally \(taxonomically speaking\) orders apart.](#)

Unit 2

Unit 2 consists of several hearths and hearth-like features. The main hearths are surrounded by brown-black soils. These soils tend to have varying amounts of charcoal and bone (some of which is burnt). The main hearth in this Unit is Hearth 1. Hearth 1 is a deep hollow with alternating layers of white ash and charcoal. Below this hearth is a layer of sand that was burnt orange by the heat from the hearth: OBH1.

It is surrounded by smaller lenses, e.g. Soft Black-White Sand: SBWS, (Fine) Soft Brown Sand, Fine Soft Grey Sand (FSGS). These tend to be brown-black sandy layers, with some white ash. The SBWS layers are defined by being layers of brown-black sand with a whiter layer underneath it. Each combination of these two layers was removed as one SBWS layer. The FSBS and FSGS layers were to the east of Hearth 1 and were more brown-ashy than the SBWS layers. A main rodent burrow criss-crosses this unit. These burrows were excavated separately (Rats and Rodents)

These layers lie on Unit 2A.

Unit 2A

Unit 2A is a small unit consisting of 4 layers: SBBS, ABSBBS, ASGC, and Spit 1. These layers have a different texture and colour than those in Unit 2. These layers tend to have less charcoal, are less hearth-like. The ASBSS and ASGC layers are have more spalls and are more compacted than the upper layers.

SBBS appears to be very different from the hearth-like SBWS layers. Spit 1 from Square A1 is probably associated with SBBS in the C-B squares

Unit 3

Unit 3 consists of very black sand, alternating with brown sand in areas. The main layers are the Black Charcoal Lens (BCL) layers and the associated Soft Compacted Brown Sand (SCBS) layers. Spits 1 – 6 from square C1 correlate with the BCL and SCBS layers from Squares C2, C3 and B3.

The BCL layers are characterised by a high concentration of charcoal and bone (fragments) in a dark black soil. The BCL layers extend over a large area of the excavated squares, however the main BCL layer (BCL3) appears to be a hearth pit, with the other BCL layers surrounding it. The BCL layers rest on the SCBS/FGBS/CBRS layers. The BCL and SCBS appear to be two separate layers that abut each other in Square C3.

Unit 4

The layers in this unit are mostly the Loose Brown-Black Soil (LBBS) layers. One of the main boundaries between Units 3 and 4 is a layer of spalls between Spit 6/BCL 6/ and LBBS/Hard Clay. LBBS occurs over the entire excavated squares and does not have the separation of BCL and SCBS layers. LBBS is characterised as being a more loose soil than SCBRS and BCL, less ashy/charcoal and with more spalls. These layers do not appear to be hearths *per se*, but a general deposit. The exception is LBBS2 that is characterised by a layer of burnt (white) bone. They also appear to be much older than the upper layers. Only LBBS5 had a substantial amount of bone. The LBBS layers appear to thicken towards the east of the excavation, as they form a basin shaped feature, e.g. LBBS5/5A. The Hard Clay layer from Sq. B3 is similar to the Spit 6 layer of square A1. Thus Spits 6 – 9 from Square A1 probably correlate with the LBBS layers of squares C3/B3/C3, while Spits 7 – 14 from Square C1 also relate to the upper LBBS layers. The excavations between these squares will be able to correlate these layers.

Unit 5

Unit 5 is mainly restricted to the C and B squares, as Square A1 did not extend this deep. The layers in this unit are the LBBS 7 – 13. The layers appear to have a low density of artefacts (although less volume was removed in comparison to other layers), especially organic material. The soil is damper in these layers and this may relate to the low incidence of organic remains. The lower LBBS layers have large spalls and appear to be near bedrock. These large spalls are however misleading as LBBS 10 – 13 becomes sandier indicating that more deposit exists below these layers.

FEATURES

Few features were excavated in this site, in comparison to the number of layers.

Charcoal Circle

This feature is located in Sq. C3 at the base of SBWS and it extends into SBWS2 (Unit 2). The feature consists of a small round circle of charcoal ± 10 cm in diameter (fig. 27). The charcoal circle itself is 0.5 – 1 cm thick with an ashy layer on the top and a brown soft clay-like deposit below. The feature is 6 cm deep. There is a high density of bone in this feature.

Charcoal Concentration in BCL6

This feature is located in BCL6, Sq. C2 (Unit 3). It is a small area with a high concentration of charcoal. It probably forms part of the BCL hearth complex.

Hearth 1

Hearth 1 is located in Squares B3, C3, C2, in Unit 2. The hearth is a relatively deep hearth with a thick layer of ash inside it. Hearth 1 is ± 50 cm in diameter. Most of the bone has been burnt. Hearth 1 has the largest amount of bone from all of the excavated layers/features (520g) and an average amount of stone tools. Orange Below Hearth 1 (OBH1) is associated feature with this hearth. It appears that Hearth 1 has burnt this layer an orange colour. Above Hearth 1 is a light coloured layer directly above Hearth 1. This may be the upper layer of Hearth 1, but has been ~~affected~~ affected by rodent activity.

BCL3A

BCL3A is located in Sq. B3, Unit 3. BCL3A is a small depression of dark sand along the northern part of the square. It has a low density of artefacts and will probably expand into Sq. B2.

BCL5A

BCL5A is located along the southern sections of Sq. B2. It is a small basin of dark sand with a few stone tools and some bone. It may be the base of BCL5, however like BCL3A, it will probably expand when Sq. B4 is excavated.

General features

The excavated layers, specifically those in Units 2 and 3, tend to be a series of hearths. The hearths are alternating layers of brown-black sand and lighter ashy sand: the SBWS layers. The BCL layers tend to have a higher concentration of charcoal and bone, and less ash.

ARTEFACTS

Table 3 lists the frequency and percentages of artefacts from BS2

Bone

A total of 4949.15 grams ([Is the precision to 2 decimal places warranted?](#)) of faunal remains were recovered from the entire excavations. Most of the bone is fragmented, however there are several identifiable fragments. Bovids are the most frequently occurring [species-type](#) in the faunal collection. These are mostly small or medium bovids. The fragments are mostly from the long bones, although several mandible and teeth fragments do occur. There are a few large bovids as well. Some fish bones occur in the deposit as well as crab appendages. The latter tend to be burnt. Microfauna occur in most of the layers, however these are probably post depositional occurrences. Only a few of the microfauna bones have been burnt and these are a result of hearths.

Unit 3 has 50% of the bone from the site. This is followed by Unit 2 (22%). Unit 1 (11.2%), Unit 4 (7.6%), Unit 2A (7.2%), and Unit 5 (1.1%).

While the lower units have small amounts of bone, these are from much smaller areas of excavations, and the relative densities have not been analysed yet. The upper units have three excavated squares, while Units 4 and 5 have only one excavated square. If similar volumes were excavated then they would have a much higher percentage of faunal remains. The important point is that organic remains do occur in the lower levels, and that more remains would occur if the site [was/were](#) excavated further.

In general, the faunal remains are relatively well preserved and occur in [adequate/sample \(Adequate for what?\)](#) quantities.

Charcoal

A total of 1204.2 grams of charcoal were recovered from the excavations. Charcoal is important for radiocarbon dating and tree species identification (and thus environmental reconstruction). Most of the charcoal occurs as small fragments, less than 10 mm. Larger fragments do occur, and these tend to be removed directly from the excavations and sampled. That is, as little as possible external contact is made with the charcoal.

Unit 3 has the highest percentage of charcoal (34.7%), followed by Unit 2 (31.5%), Unit 4 (16.5%), Unit 1 (13.8%), and Unit 5 (0.9%). The BCL layers, from Unit 2, have most of the charcoal. Hearth 1, the largest hearth from the excavations, had very little charcoal. The most charcoal from unit 2 came from SBWS4. Unit 4 has approximately half of the charcoal from the above two units, while Unit 5 has substantially less charcoal. This is expected as these units have smaller excavated deposits, and thus the relative densities may be misleading. As with the weights from the faunal remains, the charcoal may increase in the lower units if further excavations occurred.

In general, the charcoal remains are relatively well preserved and occur in adequate quantities.

Pottery

Pottery mainly occurs in the upper two units of the site. One piece was recovered from Units 2A and 3. The pottery is thin-walled and either red, black or brown. Some have a burnish, especially the black pottery. The pottery probably dates to the Late Iron Age (i.e. last 900 years).

Ochre

Ochre is defined as material that has a high iron oxide (yielding a red or yellow colour) or (possible) manganese dioxide (yielding a black colour) content. These nodules vary in their geological composition.

Most of the ochre at BS2 occurs in small nodules. A few pieces are larger (± 10 cm in diameter) and these tend to be proper (red) ochre. These larger pieces tend to have cut marks on the nodules and/or smoothed sides. No ochre roof spalls were observed, however, a few grinding stones had ochre stains. One quartzite flake had ochre stains on it.

Unit 3 has the most ochre fragments (44.3%), followed by Unit 2(25.3%), Unit 4(16.3%), Unit 1 (9.6%) and Unit 5 (2.7%).

The occurrence of ochre at the site is interesting, especially the worked nodules. This may indicate that paintings may have occurred at the site but have now disappeared. Alternatively, ochre was processed at the site and used elsewhere, e.g. at BSMC.

Shell

Only one piece of *Unio caffer* was recorded at BS2, in Unit 3. Other shell does occur but these are from *Achatina spp.* and are post-depositional. No worked *Achatina spp.* was observed.

Soil Samples

Soil, dung and charcoal samples were taken from selected squares and layers. These samples were removed as they contain, amongst other things, palynological samples. We only took soil samples on days when the wind was not blowing very hard¹. More soil samples will be taken in future excavations. Dung samples were also taken. Dung contains nitrates that can be used for palaeoenvironmental reconstructions. A few charcoal samples were removed as well for radiocarbon dating purposes. These may be used if they exceed 10 g.

Worked Bone

Three bone points were recorded at the site. Bone points are used as: arrow heads or link shafts (the point between the arrow head and the shaft). The bone tends to be from long bones and have been worked and smoothed into an oblong shape. All bone points were broken.

Worked Stone

One shale bored stone fragment was recovered from Unit 2).

Figurine

One figurine fragment was recovered from Sq. B3 BCL (Unit 3). The fragment is ceramic and is either the leg of a domestic bovid or a pot leg. The widest diameter is ± 3 cm and it is ± 4 cm long. This "figurine" suggests that BCL dates to the last 1700 years, although probably the last 1000 years (discussed later).

Beads

Two beads were recovered from the excavations. A stone bead is associated with Sq. C3, CBS (Unit 1). This is a small bead made from shale and has split in the middle. A drawn glass bead was recovered from Rats in Sq. B3 (Unit 2). While Rats is a rodent burrow, the bead was in the area of Hearth 1/OBH1, and thus

¹ Most of the days were very windy during the BS2 excavations. Wind would spread modern pollen remains into the deposit.

may be associated with one of these features. This bead is ± 0.5 cm in diameter and is a light blue in colour. This bead differs in size and style from those recovered from BSMC.

Stone Tools

The stone tools from this site are significant in that there is a very high density of tools in such a small excavation. Stone tools were classified according to a standard method of classification with a few variations, e.g. 'chips' excluded flakes less than 10 mm in length with a positive bulb of percussion. The report does not take into account different raw materials for stone tool production, although these were noted in the analyses. The raw material variability will be shown in the final report of the project. *

Raw Materials

There are eight main types of raw materials used for stone tool production at BS2:

- Quartzite: mainly for flakes, especially large flakes and large cores
- Quartz: for small flakes, bipolar cores
- Hornfels: for a variety of flakes, formal tools, irregular and single platform cores, and utilised flakes
- Dolerite: for a variety of flakes, formal tools, irregular and single platform cores, and utilised flakes
- Shale: for a variety of flakes, formal tools, irregular and single platform cores, and utilised flakes. Many adzes are made from shale, especially older shale flakes.
- Cryptocrystalline silicates (CCS): these are agates, chalcedony, jasper, etc. These are used for all types of tools, but specifically scrapers.
- Fossil: Fossil trees were used for a variety of tools. These fossils are locally available (within a 20km radius) and provide a raw material similar to the CCS, i.e. a fine grained material. Tools made from fossils are mostly irregular and single platform cores, and blades.
- Other: This is a raw material that does not fit into the above categories and occurs in very small frequencies. Most of these are fine grained materials similar to the CCS and fossil category. They are either black or red in colour. Other are used for cores, flakes, and a few formal tools.

Stone tool categories

Table 4 lists the stone tool assemblage frequencies and percentages per unit and per category. I use the various excavations from Mazel (1990, 1992, 1993, 1997, 1999) and Kaplan (1990) as comparisons for (formal tool) assemblages. These assemblages occur in various parts of Kwa-Zulu Natal, but mostly in the Thukela River Valley, and are thus comparable with BS2. Formal tools and utilised tools form the more important part of the assemblage, as these have been actively used. The other categories are, in essence, debitage and only inform regarding stone tool production.

Formal Tools:

The formal tools constitute 8.2% of the total stone tool assemblage. Unit 5 has the highest percentage of formal tools, followed by Units 4, 3, 2A, 2 and 1. That is the percentage of formal tools decrease through time.

Scrapers are used for hide working; i.e. the removal of fat from animal hides. Scrapers are the most common formal tools in the formal tool assemblage and total $\pm 50\%$ of all the formal tools. They tend to be made on CCS, followed by hornfels, shale, other and quartz. The most common type of scraper is the small end scraper, followed by the medium end scraper. Other types of scrapers include side scraper, side-end scrapers. Scrapers are the most frequent occurring formal tools in all units except for Unit 3 where they nearly equal the number of adzes.

Small scrapers dominate the upper layers, while large scrapers occur more frequently in the lower layers.

Adzes are the second most common occurring formal tools in the assemblage. Adzes tend to date to the last 3000 years, but are more common in the last 2000 years. Adzes are specifically used for woodworking. Approximately 50% of the adzes are used on new flakes, while the other 50% are used on older/MSA flakes. That is, larger flakes, from the Middle Stone Age (MSA) or early Late Stone Age were re-used in the late Later Stone Age. This is a usual occurrence since these older flakes tend to be larger and more appropriate for woodworking. Adzes include normal single sided adzes, slugs (adzes with adze "retouch" on both sides)

and spoke shaves (adzes with adze “retouch” on three sides). The most common raw material for adzes is hornfels, dolerite, shale and CCS.

Adzes are most common in Unit 3, followed by Units 2, 2A, 5, 2A, and 2. Essentially, adzes occur in equal abundance in most of the units, except for Unit 3.

Miscellaneous Retouched Pieces (MRP) are stone tools with retouch flaking, but have no definitive use/shape. MRP’s are the third most common formal stone tool in the assemblage. They occur in almost equal percentages in all Units, but are most abundant in Unit 5. Some of the MRP’s may be broken adzes or scrapers that are too small to be classified with the latter categories.

Scraper-adzes are formal stone tools that have scraper retouch on the distal end of the bulb of percussion (i.e. end scrapers) and adze “retouch” on one or both sides. These are relatively uncommon tools in the assemblage. However, they are most abundant in Units 2A, 4 and 3.

Segments are related to arrows. Segments occur in low frequencies in all units except Unit 5.

Borers/Drills/Awls are in essence the same type of stone tool in terms of function. These tools are used to perforate garments and/or shell (for beads). I have collated these formal tools due to their infrequent occurrence. These are most common in Unit 5, and then occur in approximately equal amounts in units 1, 2, 3 and 4.

Backed pieces include backed flakes and blade(let)s. They are most common in the lower units: Unit 5, then 2A, 4, 2, 1 and 3. Backed pieces tend to be more abundant in the pre1700 assemblages, according to the literature,

Utilised Stone

Utilised stone are flakes that have no formal retouch, but do show signs of usage. Utilised flakes form the lowest percentage of tool categories for the whole site. Utilised flakes are the most common occurring category, followed by blades and bladelets. Heavy edge-flaked pieces occur infrequently in this assemblage and only in the upper layers. These tools are large quartzite flakes that have one side of scar flaking from use.

Waste

Waste refers to the debitage of stone tool making, or flakes that have not yet been used. Waste occurs in all raw material types. Flakes (including blades and bladelets) occur the most frequently in all units. They are more common in the lower units than the upper units. Chips (debitage shorter than 10mm) occur more frequently in the upper units, than the lower units. Chunks (stones with 1 – 3 negative bulbs of percussion) occur in relative equal amounts throughout the site.

Cores

Cores are pieces of stone that are used to make flakes. They only constitute 9.6% of the total assemblage. Bipolar cores are the most common occurring core and made mostly from quartz, hornfels, CCS and dolerite (in decreasing order). Bipolar cores result in a high percentage of small flakes.

Irregular cores are the second most common type of core. These cores have no systematic pattern for stone tool manufacture, and are used to provide a variety of types of flakes. Irregular cores occur most commonly on Hornfels, fossils, shale, other, quartzite, quartz and CCS (in decreasing order).

Older

Older refers to stone tools that date to the MSA, or early LSA. They are large flakes on quartzite, shale or hornfels (in decreasing order of abundance), and thus not normally associated with the other Wilton² artefacts. The lower units tend to have older flakes. This is expected, as there would be an older deposit as one reaches bedrock.

² Wilton refers to stone tool assemblages from the last ± 4 000 years

Many older flakes were used in the upper units and reworked. They were used either for adzes or as cores. This was especially the case in Sq. A1 that has the highest number of older flakes in the upper units.

Smoothed/Polished Stones

There are two main types of stones in this category. The first are small (quartzite) pebbles that have been smoothed by use or rubbing. The second type refers to polished stone: either shale or soapstone. These are large pieces that have been polished, or rubbed smoothed, on all sides to form a spearpoint-like shape (fig. 28). These are unlikely to have been used for spears since the material is very soft.

Grinding Stones

Both lower and upper grinding stones were recovered from the excavations. They tend to occur more frequently in the middle units than other units.

Manuports

Manuports are unworried pieces of stone that have been brought into the shelter from elsewhere. The most common type of manuport is CCS and fossil.

DISCUSSION

Spatial Information (Why do you now change the style of headings?)

No spatial information could be discerned from the excavations due to the small number of squares.

Relative Dates

The artefacts give a relative date to the site. The occurrences of high numbers of pottery in the upper units suggest that these units date to the last 900 years. Units 2A and 3 may date to either the Early or Late Iron Age. Alternatively, these fragments may be intrusive.

Adzes tend to date to the last 4000 years. All Units have adzes, and thus probably date to the last 4000 years. The occurrence of large scrapers tends to be associated with older layers. They do occur in Wilton assemblages, but tend to occur more in the early and mid-Wilton assemblages.

The above suggests that the site dates, so far, to the last 4000 years. Radiocarbon dates will verify this. Eskom has agreed to pay for two radiocarbon dates for this site.

Significance of BS2

BS2 has medium to high archaeological significance for a number of reasons.

There is very good preservation of organic remains (faunal and charcoal) throughout the whole deposit, even in the lower and wetter Units. The faunal remains are important for reconstructing subsistence patterns and local environments. The charcoal can be used for radiocarbon dates and tree species identification, and thus palaeoenvironmental information. BS2 has a good sample of these, and more will be found if further excavations were undertaken.

BS2 has a high frequency of stone tools. Table 5 compares BS2 with a few shelters in the Thukela River Valley and Mhlatuzane Cave (±40 km inland from Durban): these do not comprise all of the excavated sites in the area. The stone tool frequencies are similar to other sites, with the exception of iNkolimahashi ([What? Where? Give short qualification.](#)), if one takes into account the number of squares and depth of deposit excavated. The significant point of the stone tools is that BS2 has a very high percentage of formal tools in comparison with the other sites. The formal tools percentage for BS2 is four to eight times more than the other sites. This suggests that more formal tools will occur at BS2.

Formal tools are important since they yield technological and social information. The technological information is in terms of hide and wood working, hunting and gathering strategies, etc. The social aspects refer to scraper styles (see Mazel 1989; Anderson 1996). BS2 has the potential to yield such information.

BS2 is also important in that most of the other excavated shelters in the general area occur below the escarpment. The Kwa-Zulu Natal sites and BS2 date to similar periods. BS2 thus has the potential to yield qualitative and quantitative material comparable to other sites.

MANAGEMENT PLAN

Further excavations would be required at BS2. The test pits have yielded enough information to suggest that BS2 is of medium to high significance. The Braamhoek Scheme will be flooding this whole site, and thus it will destroy the site in its entirety. The norm would be to salvage **at least half** of the site if it will be destroyed in its entirety. ~~We~~ suggest that this ~~be is~~ the case for BS2. The previous report (see Appendix A) suggested a staged approach, i.e. excavations occur for two weeks and the site is re-assessed. This will be costly since the reassessment entails ~~a~~ brief analyses of the material, report writing, and meetings with Eskom to discuss possible further management. ~~We~~ do not believe that this is viable in terms of time and money. This paragraph is not clear. Spell out the options, and their merits and demerits.

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Further excavations would occur from the talus slope leading towards the cave wall (west to east), as well as running along a north-south axis. Fig. 29 illustrates the proposed excavations. Spatial information may be obtained if a wider area was excavated. We suggest at further 30 1 m x 1 m squares be opened. Details for this excavation are given in a separate document, as this is information between Eskom and Umlando, and not part of the public document.

ARCHAEOLOGICAL SURVEY

The archaeological survey consisted of resurveying the area to be covered by the dam. This was undertaken since the original survey missed BS1 and BS2, and Umlando and SAHRA were concerned that other sites may occur in the area that were not recorded.

One area that high archaeological potential, site four in our first report (Not coherent. Fix wording). This area has a waterfall and a shelter behind it. No rock art was observed at this shelter. Only two stone tools were observed on the floor of the shelter. The shelter has minimal deposit and appears to consist mainly of roof spalls and sand from the shelter itself. The floor also slopes downwards. I do not classify this as a site and no further work would be required.

One archaeological/historical site was observed near the vicinity of the dam wall (S 28° 14' 22.7", E29° 34' 59.2"). The site consists of several stone walls amongst the boulders and at least two graves. The stone walls are very low. This suggests that they are either old (historical or archaeological) or have been "robbed". "Robbed" refers to people using the stonewalling from one site for another site.

Significance: The site is of high significance because of the graves. The stonewalling may yield spatial information when plotted.

Mitigation: The mitigation depends on the age of the site and if the site will be ~~effected~~affected by the construction of the dam wall. If the site will not be ~~effected~~affected then no mitigation will be required. If the site will be ~~effected~~affected by the dam wall construction then the following will need to occur:

1. Eskom will need to determine if the family nearby the site, or others claim the graves as ancestral graves. If the graves are claimed then Eskom and this community will need to negotiate the removal of graves. This will also provide an estimate of the age of the site.
2. If the graves are not claimed then they will need to be removed by an archaeologist.
3. The stonewalling, graves and surrounding boulders need to be mapped according to archaeological standards. This will need to be done if they are older than 60 years.
4. Test-pit excavations should be undertaken to determine the nature of the deposit. This will need to be done if they site is older than 60 years.

CONCLUSION

Umlando undertook a rescue excavation at BSMC, and test-pit excavations at BS2. The BSMC excavations removed 21 (1 m x 1 m) squares, while the BS2 excavations only removed four squares. Both excavations occurred over the same number of days. Similar volumes of deposit were however removed (Table 1). The BS2 excavation was more complicated as it had more stratigraphic layers, and a more fragile deposit. More time would be required to complete each square at BS2 since we have not reached bedrock yet. Bedrock may occur at ± 2 m, if not more. This calculation is estimated by looking at the base of the main talus slope and drawing a straight line to the shelter.

We were not able to begin the test-pit excavations as all consultants were denied access to the farm by the landowner(s).

Both excavations yielded interesting results and high densities of certain artefacts. BSMC yielded many glass beads, while BS2 yielded a very high percentage of formal tools. Both sites have well preserved organic remains and thus allow for radiocarbon dates. Samples will be sent for dating once all of the sites have been mitigated and/or bedrock has been reached at BS2. Eskom has paid for two dates per site.

The excavations at BSMC are completed and no further mitigation will be required. The test-pit excavations at BS2 indicate that the site has medium-high significance. Since the dam will flood the entire site, we suggest that at least half of the shelter is salvaged. This would entail the excavation of ± 30 squares.

The archaeological survey recorded one site that may (not) be ~~effected~~affected by the construction of the dam wall. The site will require mitigation if it is ~~effected~~affected.

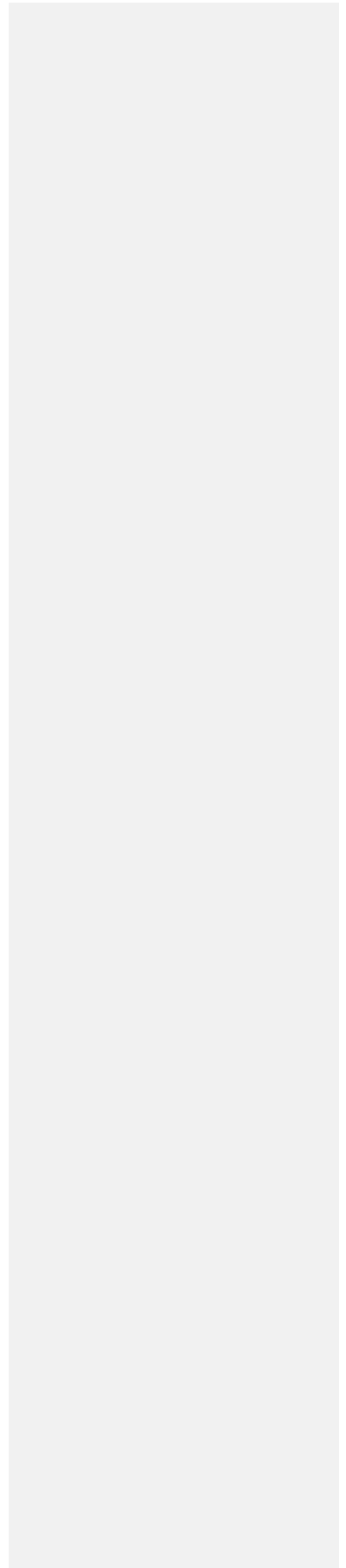
All excavated material will be stored and curated at the National Museum, Bloemfontein.

Eskom will need to apply for a permit to destroy/damage the archaeological sites from the South African Heritage Resources Agency (Cape Town branch). This permit is required before any blasting or flooding occurs. [The procedure here warrants spelling out in detail so it is known exactly what needs to be done.](#)

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APPENDIX A
Archaeological report for BSMC test-pit excavations (without figures and tables)



EXECUTIVE SUMMARY

The Braamhoek Pumped Storage Scheme will effect 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 near 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.

INTRODUCTION

Umlando was contracted to undertake the preliminary archaeological mitigation for one site (2829BA2) that will be affected by the Braamhoek Pumped Storage Scheme, the upper reservoir of which 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)³ 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 has 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

³ 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 ± 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 1910s to 2004, however we did not record any of the graffiti, as we 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). 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 and sandstone](#). A mud-clay mortar has been used to cement the stones in position. The walling appears to predate 1910. We 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. We 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.

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 ± 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 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 (± 2 mm in diameter)
- Pink (1 mm – 1.5 mm in diameter)
- White (± 1 mm in diameter)
- Dark green (± 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 quartzite⁴.

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 the size of sheep, duiker, klipspringer or oribi. ~~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.

⁴ 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

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 dating⁵.

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 palynological⁶ samples.

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

⁵ 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.

⁶ Palynology is the study of pollen found in various types of deposits. Pollen is species specific and thus has environmental implications.

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 intact 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 ± 6 m deep, 10 m wide and a front area extending for ± 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 shelter has an archaeological deposit that may be ± 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 ± 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, we 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 1m² per day⁷. 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.

SURVEY AND POSSIBLE EXCAVATIONS AT A FOURTH SHELTER

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A fourth shelter exists near the shelters in the report. This fourth shelter may have been omitted from original survey and will be affected by the Scheme. The shelter may have rock art and/or an archaeological deposit. I suggest the site be surveyed for archaeological significance. If rock art and an archaeological deposit exist at this site, then mitigation would occur immediately. That is the rock art would be traced, and a few test-pit excavations would be undertaken. The results and management plan would be written in the Phase 1 report of the forthcoming excavations.

⁷ This excludes the number of people required for sieving and sorting for each excavator.

Table 1: Estimate required time for mitigation

Shelter	Square meters for half of the cave with deposit	Excavation squares per day for 1 excavator	No. of days required for excavation with 2 excavators	Recommended days for Phase 1
BSMC	92	92	46	14
BS1	20	20	10	7
BS2	40	40	20	154
Total	152	152	76	365