The Archaeological Excavations at Braamhoek Shelter 2

For Eskom: Megawatt Park
Project: Braamhoek Pumped Water Scheme

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EXECUTIVE SUMMARY

Umlando was contracted to undertake the archaeological excavations at BS2. The excavations were phased over a 2.5 year period. A report was submitted at the end of each phase, followed by a meeting at Megawatt Park. The need for the next phase was justified This report serves to finalise the excavation.

The aims of the excavation were to assess the archaeological potential of the site, beyond mere test-pit excavations. The aims of the excavations were to:

- *Excavate 15 squares to a depth of ~2m*
- *determine the full extent of the archaeological deposit, i.e. does it extend beyond 2m in depth*
- *determine the degree of preservation of organic remains through time and space*
- *determine the degree of preservation of features through time and space*
- *determine the significance of the site in relation to other sites in the general area*
- *suggest further mitigation if needed*
- *comply with the South African Heritage Act of 2002.*

The excavations at BS2 consisted of fourteen 1m x 1m squares to a maximum depth of 2.20m. The excavations recovered well preserved organic remains, such as charcoal and faunal remains. There is also a high frequency of stone tools from this site. The formal tools from BS2 consist of 8.2% of the total stone tool assemblage. This is the highest percentage of formal tools from published sites (from a similar period) in Kwa-Zulu Natal.

BS2 is of medium-high archaeological significance and further excavations will be required. We propose that at least half of the site be salvaged as it will be totally covered by the dam water. Half of the site is considered a good sample size. Our management plan sets out a systematic process for the excavations of 30 1 m x 1m squares. We believe that the site will extend at least to 2m below the surface and contain Pleistocene and early Holocene deposits. The sequence from BS2 can be used to compare the core samples taken from the wetland near the cave. That is, the faunal remains and charcoal identification can be used to compare the results from the cores regarding palaeoenvironmental information.

This report describes the above results and notes the legal aspects regarding archaeological sites. The South African Heritage Act of 2002 protects heritage sites. Eskom is required to obtain a permit for the destruction or damage of BSMC, BS1 and BS2. The dam construction may not begin unless a permit from the South African Heritage Resources Agency (SAHRA) is obtained, and this would be part of the ROD requirements. The client may request a peer review of the report via SAHRA.

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INTRODUCTION

Umlando was contracted to undertake rescue excavations of three sites that will be affected by the Braamhoek Pumped Water Storage Scheme, in terms of ROD. These sites will eventually be flooded and thus require some form of mitigation in terms of the South African Heritage Resources Act of 2002.

The mitigation has occurred over several phases. Phase 1 consisted of the initial survey undertaken by the National Cultural History Museum (1998). This survey recorded Bedford Shelter Main Cave (BSMC) [1] and noted that it may have an archaeological deposit and thus require test-pit excavations.

Umlando was requested to undertake the mitigation of BSMC. Phase 2A consisted of the test-pit excavations of BSMC in February 2004. We noted two other sites near BSMC during the course of these excavations. These sites are Bedford Shelter 1 and 2 (BS1 and BS2). The main conclusions from Phase 2A were that BSMC would require further excavations and that BS1 and BS2 should have test-pit excavations to determine their archaeological significance.

Phase 2B included the excavations of BSMC and the test-pit excavations from BS2. These excavations were undertaken over two, two-week 'seasons', in July and August 2004. We were also requested to resurvey the area to be affected by the dam to ensure that other archaeological sites had not been overlooked during the 1998 survey. The conclusions from this phase were that the excavations at BSMC were complete, and BS2 requires further excavations. The test-pit excavations at BS1 were conducted in November 2004 and are complete.

Phase 2C consists of the extended excavations at BS2. These excavations are to determine the depth of the deposit, extent of preservation of organic remains and features, and if further excavations are required. These excavations were placed into two phases. The first phase was to attempt to cover a quarter of the cave's deposit (i.e. 15 squares) to a depth of 2m below surface, or bedrock (whichever occurred first). The results of these excavations would determine if further excavations were necessary.

AIMS

The aims of the current excavations are as follows

- Reach bedrock or 2m of deposit – whichever may occur first
- Complete 15 squares down to at least 2m
- Assess the relative degree of preservation of organic remains in both spatial and temporal terms
- Does the high percentage of formal tools from the test-pit excavations continue through to the larger excavations, and other sites?

[1] The National Site Number for BSMC is 2829BA2.

- Does the site have a higher density of stone tools in comparison to other sites?
- Does a spatial component exist at the site, and does it change through time?
- Does more of the site require further excavations, and if so in which direction should the excavations proceed.

Some factors have affected some of our aims. These are:

- Goats regularly visit the shelter, especially during rainy and cold days. The goats arrive in large groups and stand on the sections, or sides, of the deposit. Alternatively the goats jump across the squares. This activity results in the sides collapsing, even when we had barricaded the surface with boulders and the deposit with sandbags. The nett result is that the section labels are lost as the sides subside. We then need to redraw the sections from our notes and replace the markers.
- Goats also damage the deposit when they break the sections. This needs cleaning up, and if possible, we try and relocate the disturbed areas to a layer or unit. If this is not done, then al artefacts from the collapsed sections have no meaning as they are out of their stratigraphic context.
- Humans have also visited the site and used Sq. A1 as a latrine. This resulted in collapsed sections and contaminated samples. Square A1 will not be excavated in the future.
- Heavy summer rains result in very wet deposits, and the end of 2005 was very wet. This in turn results in two main things. First, the excavated material is more difficult to sieve; Second, the deposit changes colour and features that may be normally observed either change colour or disappear. E.g. Sq. D4 was excavated when it was very wet, and we thought we had new layers. When we excavated the adjacent squares we realised that these were not new layers and that we had, in 2 instances, gone through a layer. We then stopped excavating in this square.
- A large boulder had to be removed by hand (with hammer and chisel) without damaging the rest of the deposit. The manual removal took approximately 1 day per square per person.

METHOD

All excavation squares are in 1 m x 1m squares and were mapped in relation to the cave wall and dripline. The stratigraphies from all of the excavated squares were drawn, although only a few are presented in this report. The section stratigraphy 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. The volumes and densities of artefacts have been not used in this analysis, as it is a basic analysis of the excavations: we refer to percentages within the Unit. The bucket counts are however listed in Table 1 and show the volume of deposit per site.

TABLE 1: VOLUME OF DEPOSIT FOR THE BRAAMHOEK SITES

Site	Small buckets	large buckets	Total buckets	Litres per Small bucket	litres per large bucket	total litres
BSMC	192.91	206.43	399.34	13.50	16.50	6010.38
BS1	111.48	112.70	224.17	13.50	16.50	3364.46
BS2 test	229.48	193.81	423.29	13.50	16.50	6295.79
BS2	0.00	1123.86	1123.86	13.50	16.50	18543.69

STRATIGRAPHY & EXCAVATIONS

BS2 has well defined stratigraphy in most of the squares: ~330 different layers and/or features were removed (appendix A lists these layers). The squares varied in depth: the deepest square was excavated to ~2.2m deep (and bedrock was not reached). Fig. 1 indicates the depth of the excavation for each square. The western squares had a large rock slab across several of the squares. This slab was ~30 cm thick and often covered the entire square. This boulder extends further south and north. This boulder was removed by breaking it in smaller parts with a hammer and chisel (no industrial saws/cutters were available). The boulder effectively divided the site into two sides for the upper 80 cm. Only Sq. E3 was excavated for the outer layers.

The upper and middle units are more complex than the lower units. They have more layers and features that often intrude on each other. The lower units, especially Unit 7, are very straightforward. Thus while the upper units take longer to complete, the lower units can be removed much faster. For example, we removed the most of the GBrWS[2] layers in 5 days from four squares (~60cm of deposit), whereas the upper units may take 2 weeks to excavate this depth.

We have grouped the various excavated layers into eight 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 as further excavations occur.

Figures 2A - B show the various strata in the shelter[3]. These two drawings are along the eastern and northern sections and give representative cross section of the site. Some of the layers do not correspond with the adjacent squares. This is because of the damage to the sections by humans and goats. In some of these instances we preferred to start afresh in a square and correlate the layers at later stage.

[2] All abbreviations in capital letters refer to the names of specific layers.
[3] We have omitted labels for the layers as they would not be legible at this size.

FIG. 1: DEPTH (METERS) OF EXCAVATED SQUARES

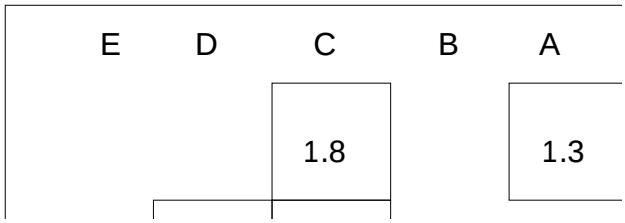


FIG. 2A: EAST SECTIONS OF BS2 – C-LINE

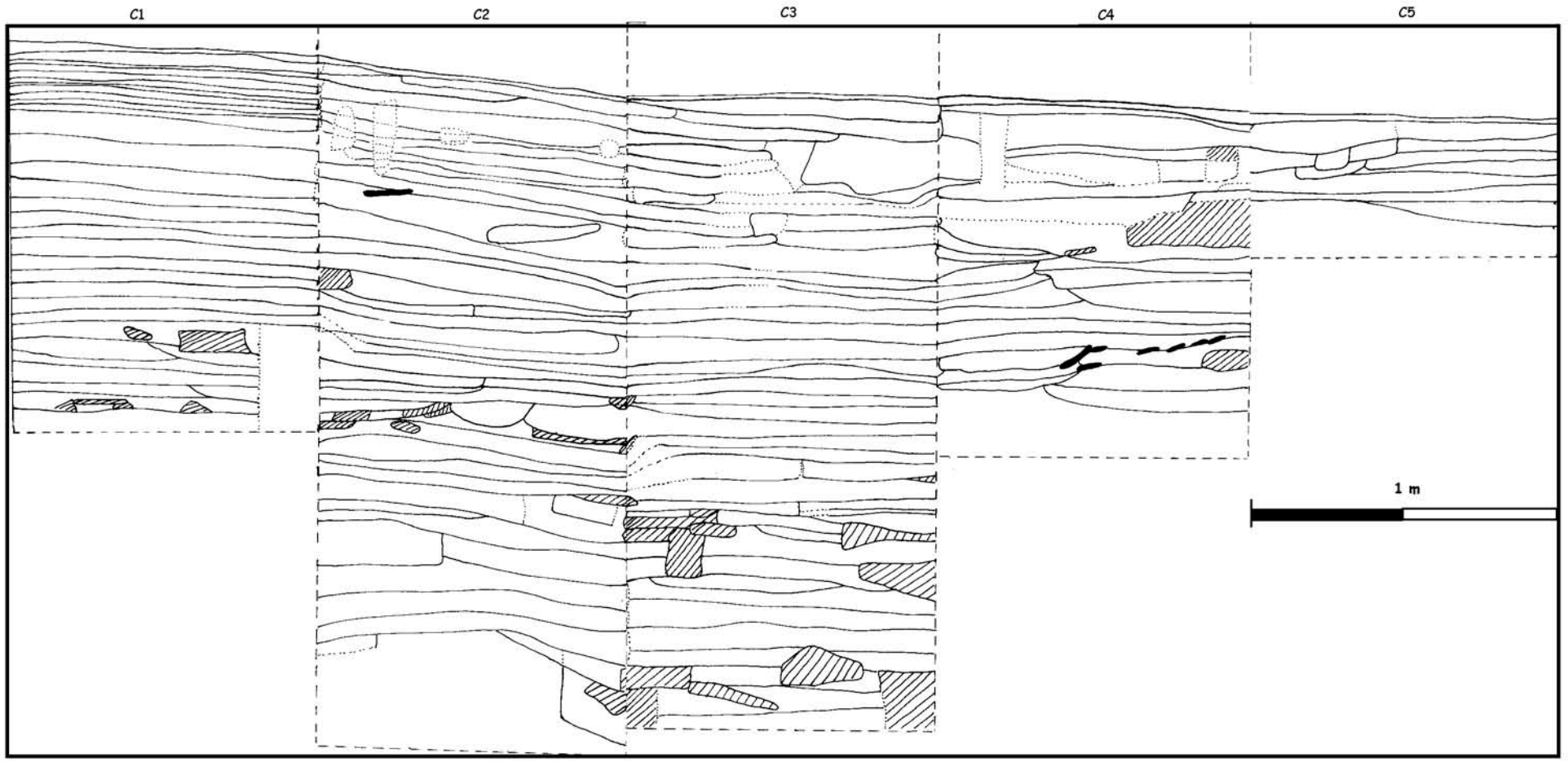
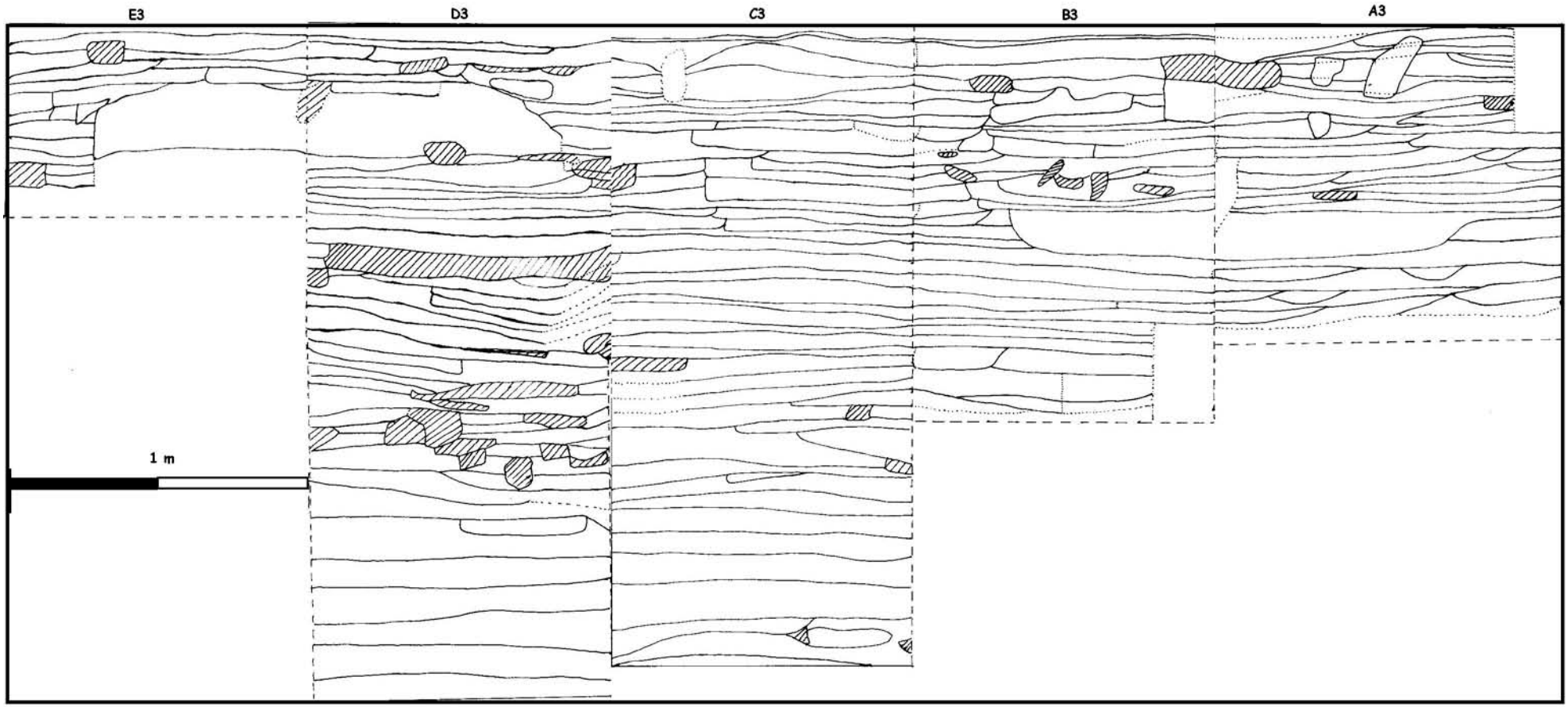


FIG. 2B: NORTH SECTIONS OF BS2 – 3-LINE



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) is a very compacted hard clay like soil, with much rodent dung. 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 and other microfauna.

A few hearths occur in this upper Unit and tend to be restricted to the southern part of the excavations.

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. Smaller lenses surround it, e.g. Soft Black-White Sand: SBWS, (Fine) Soft Brown Sand (FSBS), 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, Rodents, MM^4 and Mickey).

The TBS (Thin Black Sand) and TBSSP (Thin Black Sand with Spalls) layers are related to the SBWS layers, but occur along the western side of the large boulder. These layers are similar to SBWS, however they lack the white/grey ashy sand. These tend to be thin layers of black sand between layers of brown sand. Below the TBS, the layers of spalls replace the brown sand and are called TBSSP.

Several hearths are located in the southern end of this Unit. These hearths tend to be well contained with charcoal and faunal remains as well as stone tools.

The rodent activity tends to stop at the base of this unit. The large boulder lies on the base of this Unit.

These layers lie on Unit 2A.

Unit 2A

Unit 2A is a small unit consisting of 5 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.

Several defined hearths occur in this unit, and tend to be concentrated along the eastern side of the excavations.

Unit 4

Previously all of the LBBS layers were combined, however we have now divided them as the excavations extended. The layers in this unit are mostly the Loose Brown-Black Soil (LBBS) layers. These are LBBS 1 – LBBS5 and a few hearths. One of the main boundaries between Units 3 and 4 is a layer of spalls between Spit 6/BCL 6/ and LBBS/Hard Clay. This layer is called SPALLS2. Most of the LBBS occur 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 LBBS2 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.

[4] MM = Mickey Mouse, not Mike Mentis!

Unit 5

Unit 5 includes LBBS6 – LBBS10. The top of LBBS6 is separated from LBBS 5 by a thick layer of spalls, while LBBS10 is a thick hearth-like layer lying on a virtually sterile layer of OBCYS and LBBS11. The layers tend to be alternating layers of brown to black sand where the black sand is the remains of hearths. Some layers such as LBBS10 are in fact large layers of several hearths that have merged over time. Our strategy in these instances was to divide the square into smaller quadrants and remove each quadrant separately. The soil is damper in these layers and this may relate to the low incidence of organic remains. The LBBS 10 layer has large spalls at the base and appear to be the end of this Unit.

Unit 6

Unit 6 consists of the lower LBBS layers (LBBS11 – 16) and a few large hearths. This unit has an almost sterile brown sandy layer on the top (LBBS11, OBCYS and LBBS13), and rests on the very brown layers of Unit 7. Unit 6 consists of a few large hearths (LBBS14, Hearth 65) between brown sandy layers. While the soil is very wet in these lower layers, the preservation of organic remains is relatively good.

Unit 7

Unit 7 consists of the lowest layers of the current excavations. Unit 7 begins with Gritty Brown Wet Sand (GBrWS) that is substantially different in texture and colour to Unit 6. These GBrWS layers were removed in spits of 5 cm to 10 cm. A few small hearths were removed from these layers. The Unit appeared to be the last unit of the excavations, however Hearth 72 and Hearth 73 occur at its base and are relatively well preserved hearths, with an apparent deeper deposit below.

FEATURES

Most of the features from this site are hearths. We would expect other features, such as bedding, to occur along the cave wall.

A total of 75 well defined hearths were excavated from the site. Other hearths were excavated however they tend to be larger and formed individual layers (e.g. LBBS2, LBBS 10 and LBBS 12). These hearths occurred in all of the units and varied in size. Some hearths, such as Hearth 22 and Hearth 23 were adjacent to each other and may be contemporaneous. Other hearths were on top of each other resulting in alternating layers of ash and charcoal. These hearths were given a hearth number and then followed by a “Below” prefix, e.g. Hearth 27 and Below Hearth 27. Some of the hearths burnt at high temperatures and either left a very white ashy deposit, or they burnt the layer below into an orange colour. Hearth 35 (and 35a) is a large hearth in Sq. A3. It covered just under half of the square and was relatively thick, with a white ashy soil at its base. These larger hearths tend to truncate one or several layers.

Hearths tend to have high concentrations of faunal remains and stone tools adjacent to them. These hearths are thus human foci in the cave.

One hearth was unique: HEARTH in TBS, in Sq. D4, Unit 1. This was a small hearth that had been dug into the large boulder.

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. 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.

Stone Tool Cache

A cache of stone tools was located in SBBS2, Sq. B5. The cache is ~4cm x 8 cm in size and had eight stone tools. These tools are:

- Fossil irregular core
- Fossil single platform core
- Backed blade/flake
- CCS utilised flake
- 2 x CCS Bipolar core
- Fossil adze

BCL3A

BCL3A is located in Sq. B3, Unit 3. BLC3A 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.

LBBS2

LBBS2 is a hearth with the highest concentration of bone of all layers. The bone has been burnt white, and hardly any charcoal occurs. A few stone tools occur in this layer.

Spall Circle

SPALL CIRCLE occurs in Sq. C4. It consists of an upper layer of roof spalls in a semi-circular pattern. Below this is a thicker brown layer of sand, followed by an ashy grey-brown layer. The feature is not a hearth, and appears to continue further down. More of it will be uncovered in future excavations.

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.

FINDS

One of the aims of the report is too assess inter site significance, and not intra-site specific. Thus, artefacts are analysed in terms of their frequencies and percentages in relation to similar finds, and not their relative densities. This is also due to time constraints for the report. More of the upper units have been excavated than the lower units (approximately on a ratio of 2:1), and the numerical results might be doubled for these lower ratios.

The Finds are summarised in Table 2.

BONE

A total of 11kg [5] of faunal remains were recovered from the entire excavations. The bone from BS2 is mostly fragmented and burnt, especially from approximately 30 cm downwards. The upper 30 cm tends to have more complete, and diagnostic, bone that is either burnt or unburnt. Most of the faunal remains appear to be that of the bovid family, and probably of the antelope variety. The bovid remains vary in size from the small bovids (e.g. duiker size) to the larger bovids (e.g. eland and domestic cattle). Medium sized bovids (e.g. oribi) also occur at the site.

Microfauna (e.g. rodents, small reptiles, etc.) do occur in the deposit, but in small amounts, and are probably post-depositional.

Faunal remains and charcoal were weighed on a scale that began at 10g. Smaller amounts of charcoal were thus estimated in relation to the 10g.

Other faunal remains include a variety of birds, fish and (wild/domestic) pig. These are however in low frequencies and would need to be identified by a specialist.

Most of the faunal remains occur in the middle units and in the hearths. These units tend to be the hearth-like units and explain the burnt nature of the faunal remains. LBBS2 (lower) has the highest density of (burnt) faunal remains, and the layer was identified, and noted, for being a thick layer of burnt bone.

The upper units also have a high percentage of faunal remains; however, this is to be expected, as they are more recent. The upper units also have less fragmented and less burnt faunal remains resulting in a heavier weight for faunal remains.

The important point is that the lower units do have faunal remains and that hearths occur here as well. This implies that the preservation of faunal remains may increase for the lower units as one extends to the east.

CHARCOAL

A total of 2kg 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.

Table 2 illustrates the amount of charcoal per unit in relation to the total amount of charcoal. The higher percentages in Units 1, 2, 3 and 4 are a result of the many hearths in these units. The eastern squares also had better preserved hearths and almost double the amount in the first meter of the excavation. Unit 1 and 2 had the highest concentrations of hearths. These were well defined hearths of charcoal and ash and some bone. The hearths from Units 3 and 4 are layers of charcoal-ash, with depressions indicating the location of the hearths. They are thus not as well defined, nor as well preserved, as the upper units.

TABLE 2: FREQUENCY OF ARTEFACTS PER UNIT FROM BS2

Frequency

Units	Bone (grams)	Charcoal (grams)	Ochre	Shell	Bored Stone	Dec. Stone	Soil/dung sample	Stone Tools	Bone Point	Figurine	Ceramics	Beads	Botanical
1	2002.1	395.6	127	0	0	1	3	8832	2	0	80	1	0
2	1803.3	513.3	247	0	1	0	8	10536	0	1	19	3	0
2a	58.5	12.4	6	0	0	0	0	368	0	0	0	0	0
3	2709.1	380.7	288	1	0	0	5	7299	1	1	0	0	0
4	3054.4	475.5	130	0	1	0	11	2712	0	0	1	0	0
5	444.3	118.5	81	0	0	0	0	1562	0	0	0	0	0
6	391.4	36.1	60	0	0	0	0	3001	0	0	0	0	1
7	213.0	27.5	53	0	0	0	1	3960	0	0	1	0	0
unprov	254.0	14.2	0	0	0	0	0	127	0	0	6	0	0
Total	**10929.9**	**1973.7**	**992**	**1**	**2**	**1**	**28**	**38397**	**3**	**2**	**107**	**4**	**1**

Percentage

Units	Bone	Charcoal	Ochre	Shell	Bored Stone	Dec. Stone	Soil/dung Sample	Stone Tools	Bone Point	Figurine	Ceramics	Beads	Botanical
1	18.3	20.0	12.8	0.0	0.0	100.0	10.7	23.0	66.7	0.0	74.8	25.0	0.0
2	16.5	26.0	24.9	0.0	50.0	0.0	28.6	27.4	0.0	50.0	17.8	75.0	0.0
2a	0.5	0.6	0.6	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
3	24.8	19.3	29.0	100.0	0.0	0.0	17.9	19.0	33.3	50.0	0.0	0.0	0.0
4	27.9	24.1	13.1	0.0	50.0	0.0	39.3	7.1	0.0	0.0	0.9	0.0	0.0
5	4.1	6.0	8.2	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0
6	3.6	1.8	6.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.0	100.0
7	1.9	1.4	5.3	0.0	0.0	0.0	3.6	10.3	0.0	0.0	0.9	0.0	0.0
unprov	2.3	0.7	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	5.6	0.0	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

The important point to note is that the middle Units (i.e. Units 3 and 4) has similar amounts of charcoal to the upper units, and that the lower units also have charcoal. This suggests that charcoal remains are preserved in the lower units.

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 ochred roof spalls were observed, however, a few grinding stones had ochre stains. One quartzite flake had ochre stains on it. A few ochre pencils and ochre with cut marks were also observed in the deposit.

Some of the material identified is not ochre *per se*, but material with a high iron oxide content. It can thus be defined as "ocherous"

Unit 3 has the most ochre fragments (29%), followed by Unit 2 (25%), Unit 4 (13%) and Unit 1 (12%) and Unit 5 (8%), Unit 6 (6%) and Unit 7 (5%).

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 hard[6]. 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

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

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: arrowheads or link shafts (the point between the arrowhead 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, and a quartzite bored stone fragment from Unit 4.

A decorated stone pebble was recovered from Sq. A3, Unit 1 (in the hearths). It is a small flat pebble that has several grooves along its edge.

FIGURINE

Two possible figurine fragments were recovered from Sq. B3 (Unit 3), and Sq. A3 (Unit 2). The fragments are ceramic and are either the leg of a domestic bovid or the legs of a pot. The widest diameter is ~3 cm and it is ~4 cm long. These “figurines” suggests that the two layers date 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 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.

Two pebbles that were in the process of becoming stone beads were excavated. Both of these are from the lower layers of Unit 2. One complete stone bead was also excavated.

BOTANICAL

One piece/of wood was recovered from Unit 5. This piece appears to be a wooden link shaft. It is not well preserved.

CERAMICS

A total of 107 sherds were recovered from the excavations. The pottery from the site occurs mostly in Unit 1 (75%) and then Unit 2 (18%). Two sherds (2%) occur in Units 4 and 7. These are smaller sherds and probably entered these lower layers as a result of post-depositional movement.

The sherds are undecorated and thin-walled, and are red, brown or black in colour. This suggests that they date to the Late Iron Age, and thus the last 1000 years. The implication of this is that all Units below Unit 2 at least pre-date 1000 years ago, if not 2000 years ago.

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. There are a total of 39 713 pieces of stone on the site, of which 38 397 are stone tools[7]. This excludes those pieces of stone that could not be placed into any units as a result of collapsed sections. Stone tools were classified according to a standard method of classification (Deacon 1984) 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 may 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
- **Dolerite:** 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. Shale tends to be the softer of the raw materials used.
- **Cryptocrystalline silicates (CCS):** these are agates, chalcedony, jasper, opalines, etc. These are used for all types of tools, but specifically scrapers, utilised flakes, blades and bladelets.
- **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 mostly fine-grained material. Tools made from fossils are mostly irregular and single platform cores, blades, and to a lesser degree scrapers and adzes.

[7] This excludes some stones that are unprovenienced as they are from large section collapses.

- **Other:** This is raw material 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.

A more detailed study would analyse the use of different raw materials for specific stone tools, and the changes of these raw materials through time.

Stone tool categories

Table 3 lists the stone tool assemblage frequencies and percentages per unit and per category. We 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 percentages refer to the frequency of stone tools for that category in relation to the total frequency of stone tools for that unit. These percentages are then compared to other units.

The range of formal tools in the assemblage is typical of Holocene assemblages. The site is atypical in that formal tools constitute 7.6% of the total stone tool assemblage, as opposed to much lower percentages in other sites (discussed below). Units 5 has the highest percentage of formal tools. This is followed by Units 4, 3, 2 and 6, 1, 2A, and Unit 7. The older Units thus have a higher percentage of formal tools than the more recent units. The percentage of formal tools ranges from 5% to 14% per Unit, and an average of 8%.

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 ~50% of all the formal tools. They tend to be made on CCS, followed by dolerite, 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 styles include:

- side scraper (either one or two sides),
- side-end scraper
- gothic arch scraper
- round scraper

TABLE 3: STONE TOOLS FREQUENCIES AT BS2

Frequency	Unit	1	2	2a	3	4	5	6	7	Unprov	Total
Formal	Small Scraper	279	296	7	261	130	87	133	102	0	**1295**
	Med. Scraper	20	51	0	53	31	20	12	35	0	**222**
	Large Scraper	3	3	1	10	8	4	3	3	1	**36**
	Backed Scraper	0	1	0	6	0	3	0	1	0	**19**
	Scraper-Adze	1	15	0	12	9	6	0	1	0	**44**
	Total scraper	**303**	**366**	**8**	**342**	**178**	**120**	**148**	**142**	**1**	**1616**
	Adze	134	206	10	257	86	43	27	18	4	**785**
	Segment	1	3	0	1	1	3	3	2	0	**14**
	MRP	76	85	0	109	46	30	33	40	3	**422**
	Backed Piece	20	38	3	27	15	16	6	6	0	**123**
	Borer/Drill/ Awl	7	8	0	11	3	3	3	3	0	**38**
	Burin	0	1	0	2	0	0	0	0	0	**3**
	Total	**541**	**707**	**21**	**749**	**329**	**215**	**220**	**211**	**8**	**3001**
Utilised	Flake	573	740	27	619	340	231	324	587	12	**3453**
	Blade	38	65	0	65	34	25	27	28	0	**282**
	Bladelet	11	29	0	9	4	7	6	20	0	**86**
	H.E.D.	3	4	0	4	0	0	2	1	0	**14**
	Total	**625**	**838**	**27**	**697**	**378**	**263**	**359**	**636**	**12**	**3835**
Waste	Chips	2267	2070	42	583	181	161	302	684	38	**6328**
	Chunks	1418	1703	59	1342	363	208	474	714	11	**6292**
	Blades	49	77	5	54	27	13	10	9	0	**244**
	Bladelets	55	94	3	37	4	4	12	9	2	**220**
	Flakes	3067	4211	177	3188	1240	600	1433	1516	48	**15480**
	Total	**6856**	**8155**	**286**	**5153**	**1815**	**986**	**2231**	**2932**	**99**	**28513**
Cores	Bipolar	489	454	15	202	49	52	59	53	5	**1378**
	Irregular	136	182	9	254	74	29	79	53	2	**818**
	Single	141	142	7	142	47	14	42	33	1	**569**
	Radial/Disc	0	1	0	2	2	0	1	0	0	**6**
	Bladelet	10	14	1	11	2	1	0	2	0	**41**
	Blade	1	4	0	1	1	0	0	0	0	**7**
	Total	**777**	**797**	**32**	**612**	**175**	**96**	**181**	**141**	**8**	**2819**
MSA	Flake	30	32	2	78	13	2	10	40	0	**207**
	Utilised Flake	3	5	0	10	2	0	0	0	0	**20**
	Core	0	2	0	0	0	0	0	0	0	**2**
	Total	**33**	**39**	**2**	**88**	**15**	**2**	**10**	**40**	**0**	**229**
	Subtotal	**8832**	**10536**	**368**	**7299**	**2712**	**1562**	**3001**	**3960**	**127**	**38397**
Other	Other	20	29	0	34	6	7	7	5	1	**109**
	Ochre	127	247	6	288	130	81	60	53	0	**992**
	Hammerstone	3	0	0	0	1	0	0	0	0	**4**
	Grindstone	6	10	1	25	11	16	17	18	0	**104**
	Manuport	25	17	2	29	7	15	5	7	0	**107**
	Total	**181**	**303**	**9**	**376**	**155**	**119**	**89**	**83**	**1**	**1316**
	GRAND TOTAL	**9013**	**10839**	**377**	**7675**	**2867**	**1681**	**3090**	**4043**	**128**	**39713**

Percentage	Unit	1	2	2a	3	4	5	6	7	Unprov	Total
Formal	Small Scraper	52	42	33	35	40	40	60	48	0	**43**
	Med. Scraper	4	7	0	7	9	9	5	17	0	**7**
	Large Scraper	1	0	5	1	2	2	1	1	13	**1**
	Backed Scraper	0	0	0	1	0	1	0	0	0	**1**
	Scraper-Adze	0	2	0	2	3	3	0	0	0	**1**
	Total Scraper	**56**	**52**	**38**	**46**	**54**	**56**	**67**	**67**	**13**	**54**
	Adze	25	29	48	34	26	20	12	9	50	**26**
	Segment	0	0	0	0	0	1	1	1	0	**0**
	MRP	14	12	0	15	14	14	15	19	38	**14**
	Backed Piece	4	5	14	4	5	7	3	3	0	**4**
	Borer/Drill/ Awl	1	1	0	1	1	1	1	1	0	**1**
	Burin	0	0	0	0	0	0	0	0	0	**0**
	Total	**6**	**7**	**6**	**10**	**12**	**14**	**7**	**5**	**6**	**8**
Utilised	Flake	92	88	100	89	90	88	90	92	100	**90**
	Blade	6	8	0	9	9	10	8	4	0	**7**
	Bladelet	2	3	0	1	1	3	2	3	0	**2**
	H.E.D.	0	0	0	1	0	0	1	0	0	**0**
	Total	**7**	**8**	**7**	**10**	**14**	**17**	**12**	**16**	**9**	**10**
Waste	Chips	33	25	15	11	10	16	14	23	38	**22**
	Chunks	21	21	21	26	20	21	21	24	11	**22**
	Blades	1	1	2	1	1	1	0	0	0	**1**
	Bladelets	1	1	1	1	0	0	1	0	2	**1**
	Flakes	45	52	62	62	68	61	64	52	48	**54**
	Total	**78**	**77**	**78**	**71**	**67**	**63**	**74**	**74**	**78**	**74**
Cores	Bipolar	63	57	47	33	28	54	33	38	63	**49**
	Irregular	18	23	28	42	42	30	44	38	25	**29**
	Single	18	18	22	23	27	15	23	23	13	**20**
	Radial/Disc	0	0	0	0	1	0	1	0	0	**0**
	Bladelet	1	2	3	2	1	1	0	1	0	**1**
	Blade	0	1	0	0	1	0	0	0	0	**0**
	Total	**9**	**8**	**9**	**8**	**6**	**6**	**6**	**4**	**6**	**7**
MSA	Flake	91	82	100	89	87	100	100	100	0	**90**
	Utilised Flake	9	13	0	11	13	0	0	0	0	**9**
	Core	0	5	0	0	0	0	0	0	0	**1**
	Total	0	0	1	1	1	0	0	1	0	**1**
	Subtotal	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Other	Other	11	0	0	9	4	6	8	6	100	**8**
	Ochre	70	0	67	77	84	68	67	64	0	**75**
	Hammerstone	2	0	0	0	1	0	0	0	0	**0**
	Grindstone	3	0	11	7	7	13	19	22	0	**8**
	Manuport	14	0	22	8	5	13	6	8	0	**8**
	Total	2	3	2	5	5	7	3	2	1	
	GRAND TOTAL	23	27	1	19	7	4	8	10	0	**100**

This analyses does not include scraper styles, although it is an option for future research and can be compared with those sites from the Thukela River Valley (Mazel 1990, 1992, 1993, 1997, 1999)

Small scrapers dominate the layers and units, followed by the medium scrapers. Larger scrapers are rare while the backed scraper occurs infrequently. Backed scrapers tend to increase in frequency in the 2000 – 4000 years ago bracket in other sites in southern Africa[8].

Scrapers are the most frequent occurring formal tools in all units except for Unit 2A where they nearly equal the number of adzes.

Adzes are the second most frequently occurring formal tool in the total assemblage. Adzes are most common in Unit 2A, followed by Units 3, 2, 4, 1, 5, and 6. Essentially, adzes occur in similar percentages in the upper units, and decrease significantly in the lower unit. This decrease is expected as adzes tend to occur in the last 4000 years, and unit 7 possibly predates the 4000-year levels. Adzes only occur in the upper 3 layers of Unit 7.

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 7. 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 2, 3, 4 and 5. The scraper-adze does not occur in Units 6 and 7.

Segments are related to arrows and they are often used as "barbs" on the arrow shaft. Segments occur in low frequencies in all units. They are however more common in the lower units.

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). We have collated these formal tools due to their infrequent occurrence. These tools occur in approximately equal amounts in all units except Unit 2A that has 0%.

Backed pieces include backed flakes and blade(let)s. They tend to occur in similar percentages throughout the site. The backed pieces vary in size. The smallest is ~8mm long, while the longest is ~40mm long.

Utilised Stone

Utilised stone are flakes that have no formal retouch, but do show signs of usage. Utilised flakes are the second most frequent stone tool category on the site. They occur in varying percentages throughout the site, but most frequently in the upper units (i.e. last 1000 years). 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 from 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 middle units than in the other units. Chips are more common in the upper and 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, fossil, CCS and dolerite. 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 fossils, dolerite and quartz, quartzite, and CCS (in decreasing order). They tend to increase in percentage in the lower units.

Single platform cores tend to occur in similar percentages throughout the assemblage, except in Units 3 and 4 where they increase and decrease, respectively.

Bladelet, radial (or disc), and blade cores tend to occur in very low percentages throughout the assemblage.

Middle Stone Age

These tools are large flakes on quartzite, shale or dolerite (in decreasing order of abundance), and often have a facetted platform. They are not associated with the other Wilton[9] artefacts. The lower units should

[8] These sites tend to occur in the Western and Eastern Cape
[9] Wilton refers to stone tool assemblages from the last ~4 000 years

have most of these older flakes, as there would be an older deposit as one reaches bedrock. However, it is the upper units that have the higher percentages of MSA tools.

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 smooth, on all sides to form a spear point-like shape. These are unlikely to have been used for spears since the material is very soft. Most of the polished stones came from the eastern squares.

Grinding Stones

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

Manuports

Manuports are unworked pieces of stone that have been brought into the shelter from elsewhere. The most common type of manuport is CCS and fossil. They occur more often in the upper units.

ESTIMATED DATES FOR UNITS

The site can be relatively dated according to the following criteria:

- The ceramics from the site have the characteristic thin-walled sherds and little to no decoration. This is distinctive of the Late Iron Age that post dates 1000 years ago. The occurrence of 1 sherd each in Units 4 and 7 is probably post-depositional.
- Ceramic figurines occur in the last 2 000 years, however, we would suggest the last 1000 years for this site, as discussed previously.
- Glass beads only arrive in this geographical area in the last ~300 years
- Backed pieces tend to occur in high frequencies between 2000 and 4000 years ago, however they tend to occur in similar percentages throughout the site. Unit 2A is an exception.
- Backed scrapers tend to occur between 2000 and 4 000 years ago; however they occur in Units 3 and 5. It is unexpected for Unit 3.
- Segments (which are backed flakes) tend to occur before 2000 years ago.

- ❖ Adzes only occur in the last 4 000 years, and increase in frequency in the last 2 000 years.
- ❖ Other sites in southern Africa indicate that there was a decrease in the density of sites, or human occupation, in the interior, between 4 000 and 8 000 years ago. Thus, there should be a decrease in the numbers of artefacts in these layers. Alternatively the density of artefacts should decrease.

The Units can thus be relatively dated as follows:

TABLE 4: RELATIVE DATES FOR THE VARIOUS UNITS

Unit	Relative Date (years ago)
1	500 – 1 000
2	500 – 1 000
2A	1 000 - 2 000
3	1 000 - 2 000
4	2 000 – 4 000
5	2 000 – 4 000
6	3 000 – 4 000
7	4 000 – 8 000

SPATIAL COMPONENT

We originally believed that any spatial component related to organic remains would be skewed as the preservation of artefacts is better behind the dripline of the cave. That is Sq.'s E and part of Sq.'s D are outside of the dripline. This would thus be a natural spatial feature, and not a human feature. This may be true for the upper units, however it is not the case for the lower units. The organic remains occur in the lower units within the dripline. If the drip line increased the erosion of organic, then one would not expect to find organic remains in these squares at such depths. Thus, the dripline does not appear to affect the preservation of organic remains, and the spatial information from the upper units is valid. Unit 7 currently occurs only in Sq.'s D2-3 and C2-3. These cannot yield much spatial information.

A spatial analysis is used to determine how people organised their lives. This organisation is often related to the social structures of that society. For example, left | back | female | old | gatherer vs. right | front | male | young | hunter. An understanding of the spatial aspect thus informs about that society. Any change in the spatial component thus reflects a change in the society through time. A site becomes significant if a spatial component exists.

The occurrence of charcoal is often indicative of a hearth. Squares with higher concentrations of charcoal thus have larger, or more, hearths (Fig. 3). There is a general trend for hearths, or charcoal

concentrations, to move from the south to the north in the last 1000 years. These hearths tend to occur more frequently in the middle of the excavation between 3000 and 1000 years ago. They then extend westwards between 3 000 and 4 000 years ago.

The faunal remains have a very similar pattern to the hearths (Fig. 4). That is, faunal remains are directly associated with hearths and indicate where people discarded their food remains.

Ceramics occur in the centre of the excavations in both upper Units (Fig. 5). The occurrence of ceramics in Unit 4 and 5 are probably a result of post-depositional factors.

Stone tools (in general) tend to be made, used, or discarded, just outside of the fire area in all of the Units (Fig. 6). The stone tools tend to be concentrated along the northern side of the cave in the upper Units. The middle and lower units tend to have stone tools concentrated in the centre of the cave and slightly westwards. Future analyses should study specific stone tool categories.

The discard, or working, of ochre and ochre-like material tends to happen outside of the dripline area in the upper units (Fig. 7). These materials tend to occur behind the dripline in the 1000 – 4000 period. The lower Units tend to have most of the ochre material outside of the dripline.

In general there is a change in the location of artefacts through time. The spatial analysis also indicates that more artefacts are likely to be located in the posterior of the cave.

DISCUSSION

There is very good preservation of organic remains (faunal and charcoal) throughout the whole deposit, even in the lower and wetter units. Admittedly the preservations becomes poorer the deeper one excavates. This may change if we excavate eastwards as there is generally better preserved remains. 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. This environmental information is even more important as BS2 extends to below ~2m, and thus it may contain Pleistocene-Holocene deposits. That is the BS2 sequence as the potential to yield environmental information for several Periods, especially transitional ones. These can then be used to compare with the core samples taken in the Braamhoek wetland.

BS2 has a very high frequency and density of stone tools, especially formal 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, but of the more notable, and published, sites. The stone tool assemblages for Rose Cottage Cave have not yet been published. The stone tool frequency of BS2 is

dissimilar to the other sites, with the exception of Mhlatuzane Cave, in terms of depth of deposit. Mhlatuzane Cave has a much higher frequency of stone tools, but far lower percentage of formal tools. Furthermore, Mhlatuzane Cave has all of the squares down to 2.5m, while BS2 only has 4 squares to a similar depth. BS2 will likely have similar percentages if a similar depth was reached. The other sites may have higher total stone tool counts, however, BS2 has a much higher, or denser, concentration of formal tools. The significant point of the stone tools is that BS2 (as with BS1) has a very high percentage of formal tools in comparison with the other sites. A more detailed study of raw materials and types of formal tools, and other tool categories, is needed.

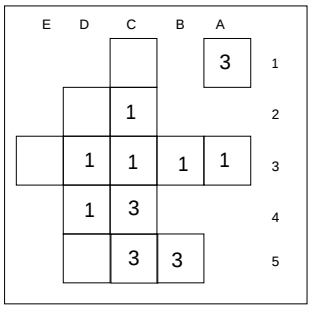
The formal tools percentage for BS2 is four to six times more than the other sites. We initially thought this may change if more squares were excavated, however, it appears to be consistent, even with the deeper deposits. This then it implies that other lower layers may also have high percentages of (formal) tools. This is important as the Pleistocene and early Holocene layers are rare in the area, and tend not to have high percentages of formal tools (see Wadley 2000). BS2 has the potential to change this as the lower units had formal tools percentages ranging from 5% - 14% - although the 14% is from Unit 5 – possibly dating to 4000 year ago. Even the 5% figure is high for these lower units in comparison to other sites.

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. A high percentage of adzes are related to soil physiology: there is a strong correlation between digging sticks, adzes and soil types. The harder soils result in more wear-and-tear on digging sticks, and thus more adzes are produced to make digging sticks. An increase in adzes also implies an increase in plant food gathering, and increase in labour. This increase happens in the last ~1 500 years and is similar to other sites in Kwa-Zulu Natal.

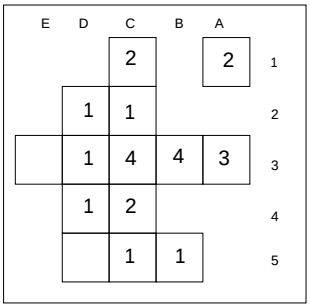
BS2 is also yielding information of scraper styles. (see Mazel 1989; Anderson 1996). Several scraper styles have been noted at BS2, and these will be compared with other sites later. Initially it appears that (small) end scrapers are the norm, or the more commonly occurring scraper style. The small, medium and large scrapers have a temporal connotation: scrapers get smaller through time. However, we noted other styles from the excavation and these are: side, double sided, side-end, Gothic arch, backed and round scrapers.

BS2 is also important in that most of the other excavated shelters in the general area occur below the escarpment, with the exception of Rose Cottage Cave (Wadley 1996). The Kwa-Zulu Natal sites, BS1 and BS2 date to similar periods. BS2 thus has the potential to yield further qualitative and quantitative material comparable to other sites.

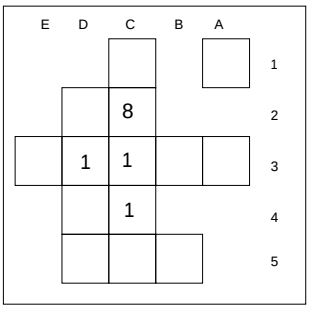
FIGURE 3: SPATIAL ANALYSES OF CHARCOAL REMAINS PER UNIT AT BS2



Unit 1



Unit 2



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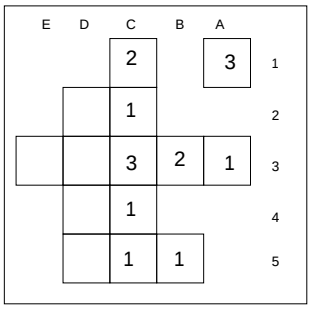

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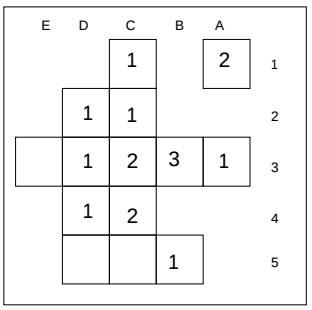

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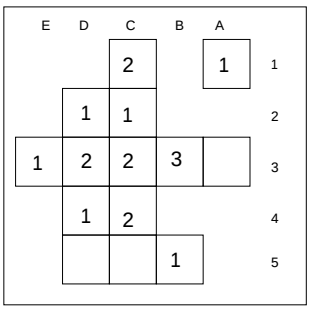

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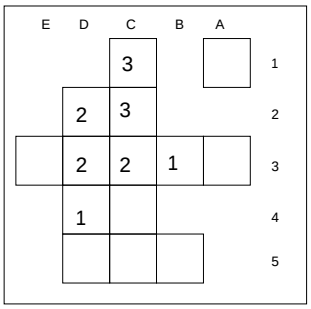

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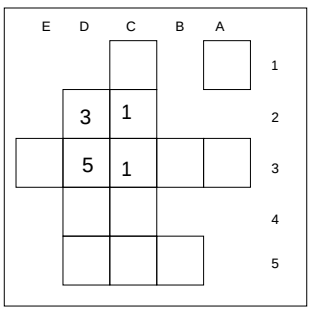
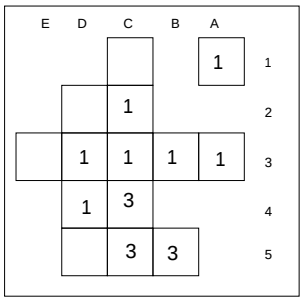


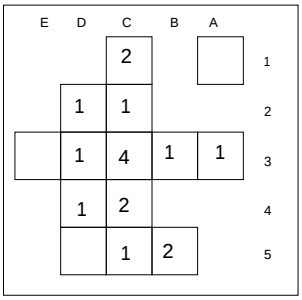
Unit 7

0 - 9% = 1
10 - 19% = 2
20 - 29% = 3
30 - 39% = 4
40 - 49% = 5
50 - 59% = 6
60 - 69% = 7
+70% = 8

FIGURE 4: SPATIAL ANALYSES OF FAUNAL REMAINS PER UNIT AT BS2



Unit 1



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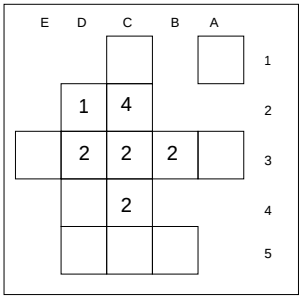
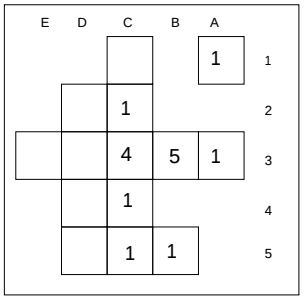


Unit 2A



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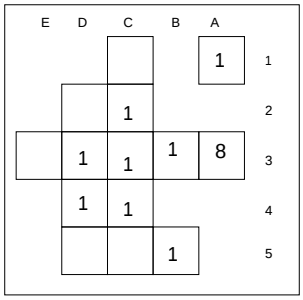

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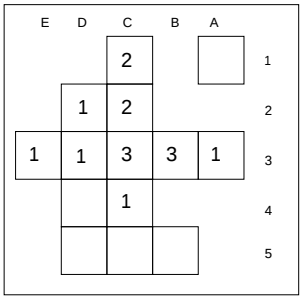

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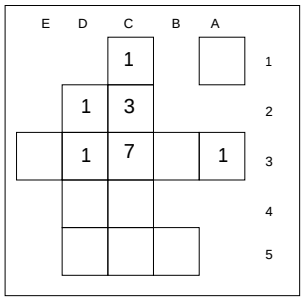
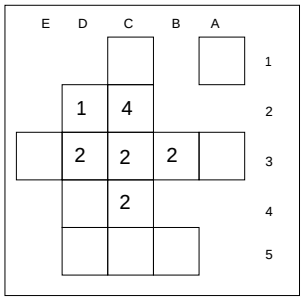


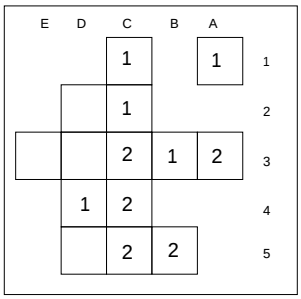
Unit 6



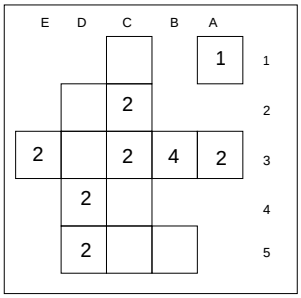
Unit 7

0 - 9% = 1
10 - 19% = 2
20 - 29% = 3
30 - 39% = 4
40 - 49% = 5
50 - 59% = 6
60 - 69% = 7
+70% = 8

FIGURE 5: SPATIAL ANALYSES OF CERAMICS PER UNIT AT BS2



Unit 1



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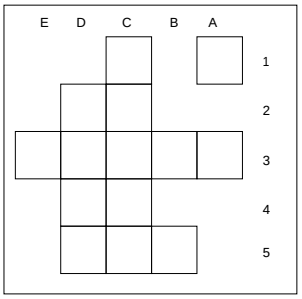

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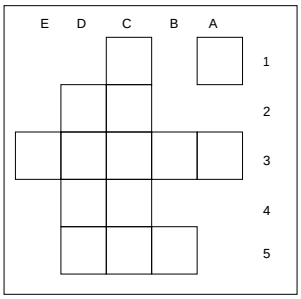

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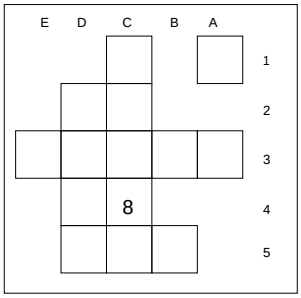

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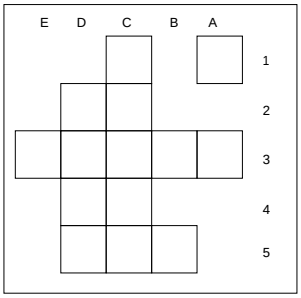

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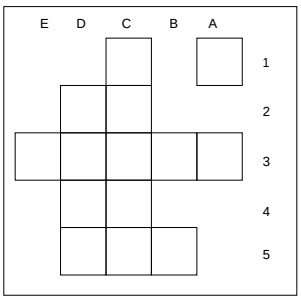
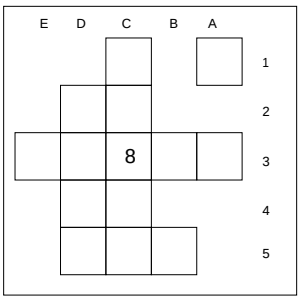


Unit 6



Unit 7

0 - 9% = 1

10 - 19% = 2

20 - 29% = 3

30 - 39% = 4

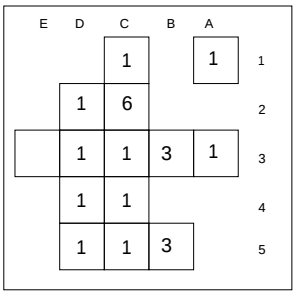
40 - 49% = 5

50 - 59% = 6

60 - 69% = 7

+70% = 8

FIGURE 6: SPATIAL ANALYSES OF STONE TOOLS PER UNIT AT BS2



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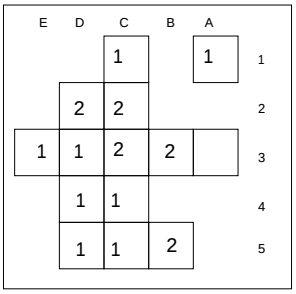

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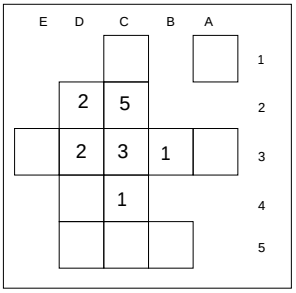
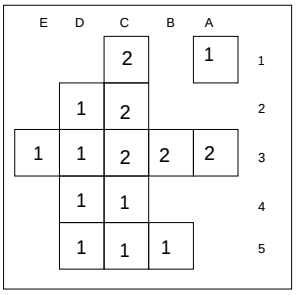


Unit 2A



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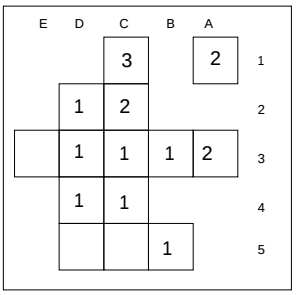

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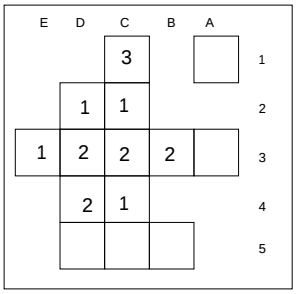
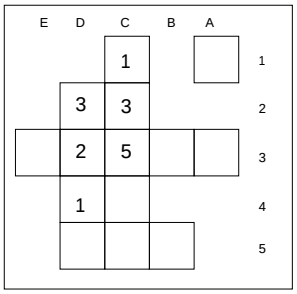
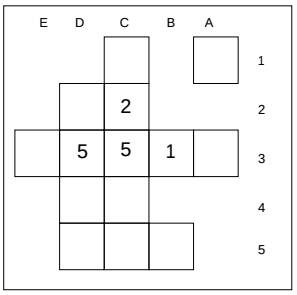


Unit 5



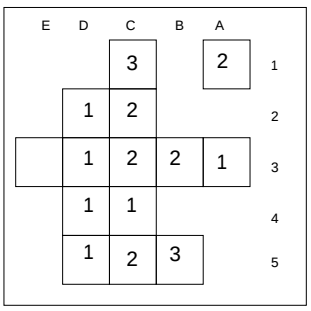
Unit 6



Unit 7

0 - 9% = 1
10 - 19% = 2
20 - 29% = 3
30 - 39% = 4
40 - 49% = 5
50 - 59% = 6
60 - 69% = 7
+70% = 8

FIGURE 7: SPATIAL ANALYSES OF OCHRE PER UNIT AT BS2



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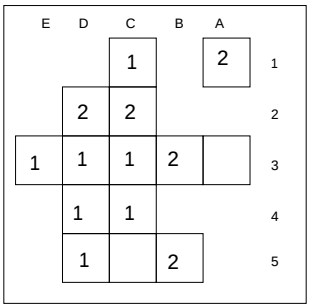

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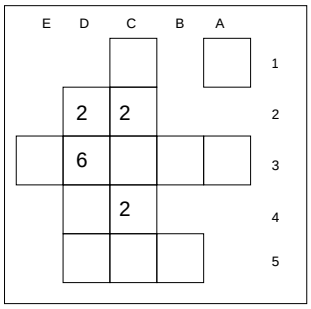
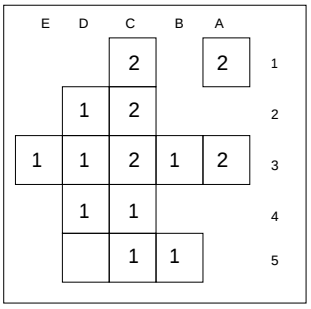


Unit 2A



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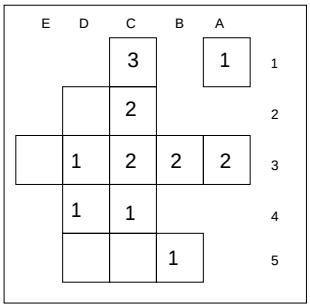

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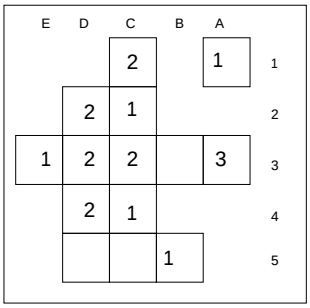

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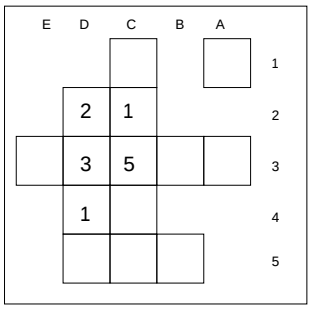

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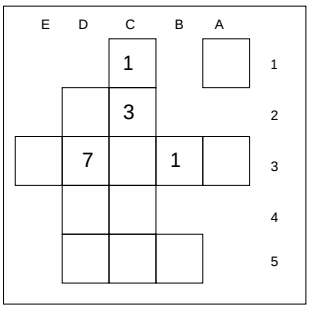

Unit 7

0 - 9% = 1
10 - 19% = 2
20 - 29% = 3
30 - 39% = 4
40 - 49% = 5
50 - 59% = 6
60 - 69% = 7
+70% = 8

Table 5: Comparison of Stone Tools from Sites in Kwa-Zulu Natal and BS1 and BS2

Site	No. of excavated Squares	Max depth of deposit (m)	Total No. of Stone Tools	Total No. of Formal tools	% Formal Tools	Reference
Mzinyashana	**7**	**1.4**	**29713**	**586**	**1.97**	**Mazel (1997)**
Collingham Shelter	**5**	**0.5**	**14012**	**286**	**2.04**	**Mazel (1992)**
Mhlwazini Cave	**8**	**0.7**	**55514**	**491**	**0.88**	**Mazel (1990)**
KwaThwaleyakhe Shelter	**8**	**0.7**	**75332**	**900**	**1.19**	**Mazel (1993)**
Inkolimahashi	**4**	**1.2**	**3952**	**87**	**2.20**	**Mazel (1999)**
Mhlatuzane Shelter	**6**	**2.5**	**958092**	**1849**	**0.19**	**Kaplan (1990)**
Rose Cottage Cave[10]	**2**	**0.5**	**1106**	**25609**	**4.3**	**Wadley (2000)**
BS1	**7**	**1.0**	**8084**	**528**	**6.50**	
BS2	**14**	**0.9 - 2.2**	**38391**	**3001**	**7.82**	

[10] These figures are from the combined Tables 7 – 8 (Wadley 2000)

EXPECTATIONS & RESULTS

We had several expectations for the main excavations at BS2. Some of these have been met; others have not been met. These are as follows:

- Excavate 15 squares down to 2m below surface, or reach bedrock.
  - We excavated 14 squares to various depths: 2.2m to 0.9m. The upper units have a very complex stratigraphy. As more squares are opened, the previous layers need to be correlated with the new layers. This result in slower excavations.
  - The layers (or sections) from each square need to be drawn. As squares get deeper, and more are opened, more drawings are needed. One 1m x 2m section drawing takes ~2 hours to draw.
  - We have previously discussed the impact of goats and humans. This resulted in ~4-5 days lost work, as we had to backtrack with section labels, stratigraphy, etc. In many cases we could only obtain a rough correlation between the squares. A fence needs to be erected to stop goats from further damaging the site.
  - Heavy rains made sieving difficult and the decreasing light made it, at times, impossible to see the deposit, especially in the eastern squares. One day we stopped work at 10 am – 2 pm due to a lack of light.
  - The removal of the large boulders resulted in several delays.
- Determine if organic remains are differentially preserved across space (in the cave) and depth (in the deposit).
  - Eastern squares yielded better preserved material than the western squares
  - We expect even better preserved remains to occur further back in the cave.
  - Organic remains were recorded throughout the deposit.
  - Bedding and botanical remains may occur more eastwards

CONCLUSION AND FURTHER MANAGEMENT

Further excavations would be required at BS2. The test pits and last excavations have yielded enough information to suggest that BS2 be of medium to high significance. The Braamhoek Scheme will be flooding the area, 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. We suggest that this is the case for BS2 and that we continue with the second phase of this project as discussed in the previous report. At least another 15 squares, to a depth of 2m will be required. We will place one square down to 3m (or bedrock) at the end of the next excavation to determine if, or where, the deposit ends.

For us to undertake the above, we will need to excavate squares that are not marked for excavations to at least 70cm below surface. This would ensure that the squares do not collapse and become a risk. All excavations below 1.30m are considered hazardous unless they are supported. The alternative is that Eskom assists in providing the expertise and equipment to support the deeper excavations.

Goats repeatedly damage the site. We have previously requested that a small fence is erected in the front of the site, but this was declined. The damage caused by the goats costs us excavation time, and thus it costs Eskom in time spent not excavating. It would be cheaper, and more responsible, for Eskom to provide the material and labour to erect the fence, than having the site continually damaged.

If the deposit extend beyond 2m (it may change as one moves eastwards or westwards), then further excavations will be required. We will need to discuss this once we have reached this stage.

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APPENDIX A

LIST OF EXCAVATED LAYERS & UNITS

1 BCBS
1 BCBS2
1 Below CBS
1 BH 20
1 BH 22
1 BH 23
1 BH 20
1 BH 21
1 BH 22
1 BH23
1 Brown Sand & Dung
1 CBrS
1 CBrS2
1 CBrS3
1 CBRS3
1 CBS
1 CBS2
1 CBSS
1 CDC
1 Ceanings top 20 cm
1 CFD
1 Cleanings upper 20cm
1 CMBrS
1 DBHSS
1 Dung Crust
1 Dung Crust 2
1 FCBS
1 FCDC
1 FDC
1 GGS
1 Hearth 20
1 Hearth 21
1 Hearth 22
1 Hearth 22-3
1 Hearth 23
1 Hearth 30
1 Hearth 31
1 LCBS
1 MM1
1 MM1:1-25
1 PCBrSS
1 SAGS
1 SARS
1 SARS(Wet)
1 SBRS
1 SBRS 2
1 SBRS4
1 SBRS5
1 SBRS6
1 SBS
1 Section Cleanings upper 50cm
1 SFBrS
1 SMB
1 Surf scrapings
1 Upper Section Collapse
1 WBrS
1 WDBrS
1 WDBrS2
2 Above Hearth 1
2 B.SBRS2
2 BCD
2 BCD2
2 BH 24
2 BH 32
2 Brown/Black Sand
2 Charcoal Circle
2 cleanings ARR1
2 Creamy Sand In Hearth 27
2 DBrSS
2 DBrSOS
2 DBSS2
2 FGBrS
2 FSBS
2 FSBS2
2 FSBS3
2 FSGS
2 Hearth 1
2 Hearth 24
2 Hearth 32
2 Hearth 33
2 Hearth 34
2 HOB1
2 HTBS
2 LOOD
2 MICKEY
2 MSB/BS
2 OBH1
2 OBS
2 OS
2 PBBL
2 PDBr
2 PDBr2
2 Rats
2 RATS
2 RATS2
2 Rodents
2 SB/BS2
2 SB/BS3
2 SBBS
2 SBBSa
2 SBBSa/Spalls
2 SBBSb
2 SBBSc
2 SBWS
2 SBWS2
2 SBWS3
2 SBWS4
2 SBWS4a
2 SBWS4b
2 SBWS5
2 SBWSA
2 Speckled Orange Sand
2 Spit 1
2 TBS
2 TBS 2
2 TBS 3
2 TBS 4
2 TBS 5
2 TBS 6
2 TBS 7
2 TBS 8
2 TBS/SP
2 TBSM
2 TBSSP
2 TBSSP 2
2 TBSSP 3
2 TBSX
2 Under slab
2A
2A
2A
2A
2A
3 AFGBS
3 BCL
3 BCL (north)
3 BCL 2
3 BCL Section cleanings
3 BCL2
3 BCL3
3 BCL3A
3 BCL4
3 BCL5
3 BCL5-6

3 BCL5A
3 BCL6
3 BCL6 (south)
3 BCL6-7 Section Cleaning
3 BCL7 (south)
3 BCLG
3 Charcoal concentration: BCL6
3 Cleanings + BCL 1-3
3 FGBS
3 Hard Clay
3 Hearth 25
3 Hearth 35
3 Hearth 35A
3 Hearth 37
3 Hearth 38
3 Hearth 39
3 Hearth 40
3 KSL
3 MBrD
3 MBrDS
3 OBCS
3 PBCL2
3 PBCL5
3 PCBBS2
3 PFGBS
3 PLBrS
3 SBC
3 SCBS
3 SCBS10
3 SCBS1-4 LBBS1-4 Section Cleanings
3 SCBS2
3 SCBS2
3 SCBS3
3 SCBS3&4
3 SCBS3a
3 SCBS4
3 SCBS4a
3 SCBSS10
3 Spalls
3 Spit 2
3 Spit 3
3 Spit 4
3 Spit 5
3 Spit 6
3 WWBRS
3 WWBrS2
3 WWBRS3
4 BASE OF HEARTH 27
4 Below Hearth 43
4 Below Hearth 44
4 BETWEEN
4 BrPP1
4 BrPP2
4 DLBBS3a
4 Hearth 26
4 Hearth 27
4 Hearth 41
4 Hearth 43
4 Hearth 44
4 Hearth 45
4 Hearth 5
4 HEARTH 80
4 LBBS
4 LBBS 1
4 LBBS 10
4 LBBS 1-3 Section Cleaning
4 LBBS 1a
4 LBBS 2
4 LBBS 2 Lower
4 LBBS 2 Upper
4 LBBS 3
4 LBBS 3/4
4 LBBS 3/SE
4 LBBS 3a
4 LBBS 3a/4 Section cleanings
4 LBBS 4
4 LBBS 5
4 LBBS 5 Section cleanings
4 LBBS 5a
4 LBBS Cleanings + LBBS
4 LBBS Section cleanings
4 LBBS/NE
4 LBBS/NW
4 LBBS/SE
4 LBBS/SW
4 LBBS/SW
4 LBBS2/10 Section cleanings
4 LBBS2c
4 NBrS
4 NBrS 2
4 NBrS 3
4 NBrS 4
4 NBrS 5
4 NBRS Cleanings + NBrS 1-3
4 NGBrS
4 OLBBS5
4 PLBBS
4 PLBBS10
4 PLBBS2
4 PLBBS4
4 SPALL CIRCLE
4 SPALL CIRCLE 2
4 SPALL CIRCLE 3
4 Spit 10
4 Spit 12
4 Spit 13
4 Spit 7
4 Spit 8
4 Spit 9
4 TOP OF HEARTH 27
5 Below Hearth 70
5 BH 51
5 BrSFS
5 BSBRS
5 DLBrS
5 DLBRS2
5 DLBrS3
5 HEARTH 46
5 HEARTH 47
5 HEARTH 48
5 HEARTH 49
5 Hearth 50
5 Hearth 6a
5 Hearth 7
5 Hearth 70
5 HEARTH 71
5 Hearth 8
5 Hearth7
5 LBBS 10
5 LBBS 10a
5 LBBS 10b
5 LBBS 6
5 LBBS 7
5 LBBS 8
5 LBBS 8a
5 LBBS 8b
5 LBBS 9
5 LBBS 9-10 CLEANINGS

5 LBBS a
5 LBBS7a
5 LBBS8 Cleanings + LBBS8
5 LBBS9a
5 MLBBS6
5 OBMS2
5 Spalls 2
5 Spit 14
6 Below Hearth 9
6 Hearth 10
6 HEARTH 6
6 Hearth 60
6 Hearth 61
6 Hearth 62
6 Hearth 63
6 Hearth 74
6 Hearth 9b
6 Hearth 9
6 Hearth9a
6 LBBS 11
6 LBBS 11-13 CLEANINGS
6 LBBS 12
6 LBBS 12
6 LBBS 12 NE
6 LBBS 12 NW
6 LBBS 12 SE
6 LBBS 12 SW
6 LBBS 13
6 LBBS 13b
6 LBBS 14
6 LBBS 15
6 LBBS 16
6 LBBS10cc
6 LBSS 11
6 OBCYS
6 Spalls 3
7 BASE OF HEARTH 12/65
7 BBrWS
7 FIRE PATCH 1
7 GBrWS
7 GBrWS2
7 GBrWS3
7 GBrWS4
7 GBrWS5
7 GBrWS6
7 GBrWS7
7 GBrWS8
7 Hearth 11
7 Hearth 12
7 Hearth 65
7 Hearth 66
7 HEARTH 72
7 HEARTH 73
7 HEARTH 73 LOWER
7 HEARTH 73 UPPER
7 HEARTH 76