PHASE 2 ASSESSMENT OF EARLY STONE AGE SCATTERS ON THE AECI SITE: SOMERSET WEST

PREPARED FOR
AECI (Pty) Ltd.

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EXECUTIVE SUMMARY

The Archaeology Contracts Office (ACO) of the University of Cape Town was commissioned by AECI to undertake a study of dispersed Early Stone Age scatters on AECI property in Somerset West. The land has been set aside for development. Five unselected samples of material were collected then subjected to a preliminary analysis. The findings indicate that the material has characteristics consistent with the earlier half of the Acheulian. Further sampling of the scatters is not required before development activities begin.

1. INTRODUCTION

During the course of a Phase 1 heritage investigation of AECI property in Somerset West, generalised scatters of ESA (Early Stone Age) artefacts were found primarily in the firebreaks and Eucalyptus plantations surrounding the factory and extending up towards the Helderberg. The ESA material occurs in sparse generalised scatters without discrete boundaries[1]. Since this material is to be impacted in the short and long term by development activities, it was recommended that a study of the material be made before hand. AECI commissioned the Archaeology Contracts Office (ACO) of the University of Cape Town to conduct a phase 2 study of the material before development activities begin. This has involved the collection of material and a preliminary analysis. This report provides a general description of the ESA, summarises the findings of the study and attempts to position the material in the prehistoric sequence of southern Africa. Figure 1 shows the location of AECI property in Somerset West.

2. BACKGOUND

The human species evolved in Africa over 4 million years ago. The discovery of a trail of human footprints fossilized in a volcanic deposit in East Africa has been dated to between 3.6 and 3.8 million years old[2]. This has shown conclusively that long ago, hominids were capable of bipedal walking (upright on two legs). The first stone artefacts have been found in archaeological contexts dating to older than 1.5 million years ago. By this time hominids were capable of both abstract thought and physical dexterity in that they were able to modify an object to put it to good use. This presents a significant departure from the behaviour of earlier hominids, who like chimpanzees, probably made use of natural objects found around them (stones, fragments of wood) but did not have the ability to routinely modify a diversity of objects to make them more useful. For the next 1.5 million years, plant materials, stone, animal bone and skin were the main raw materials used by people to manufacture the items they required in their daily lives. Metals only came into use about 9000 years ago with advent of the Bronze Age in the Near East.

2.1 Early Stone Age in South Africa

Remains of fossil hominids in the order of 2 million years old have been recovered from a number of localities in South Africa. South Africa is not only recognised as having some of the world's most important fossil hominid sites, but also a sequence of archaeological material reflecting virtually the entire succession of human cultural evolution.

In Southern Africa, archaeologists divide the Stone Age into three major periods[3]. These are the Early Stone Age (1.5 my. - 200 000 years ago), The Middle Stone Age (200 000 - 40 000 years ago) and the Late Stone Age (40 000 years ago - the beginning of the colonial period). Each of these periods are subdivided further according to changing characteristics of artefacts through time. The Early Stone Age is divided into the Oldowan (very primitive stone tools - bashed cobbles, flakes, cobble choppers) and the Acheulian (the first standardised and planned artefact forms - hand axes, cleavers, and standard core forms). Even within these time periods there are further subdivisions, the precise definitions of which are a matter of constant debates among archaeologists working with this poorly understood period of the past. In general artefact types change through time in that the forms become more refined and the production methods more sophisticated. It is tempting to suggest that these changes parallel the evolution of human cognitive ability. This however, is difficult to test because well preserved archaeological sites and human fossil material from the ESA (Early Stone Age) are very rare.

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[1] Halkett, D.J. & Hart, T.J.G. 1996. An assessment of heritage resources on the AECI site: Somerset West. Unpublished report. University of Cape Town: Archaeology Contracts Office.

[2] Volman, T. 1984. Early Prehistory of Southern Africa. In R.G. Klein. eds. South African Prehistory and Palaeoenvironments. Rotterdam: A.A. Balkema.

[3] Volman, T, 1981. The Middle Stone Age in the Southern Cape. Unpublished Phd Dissertation. University of Chicago.

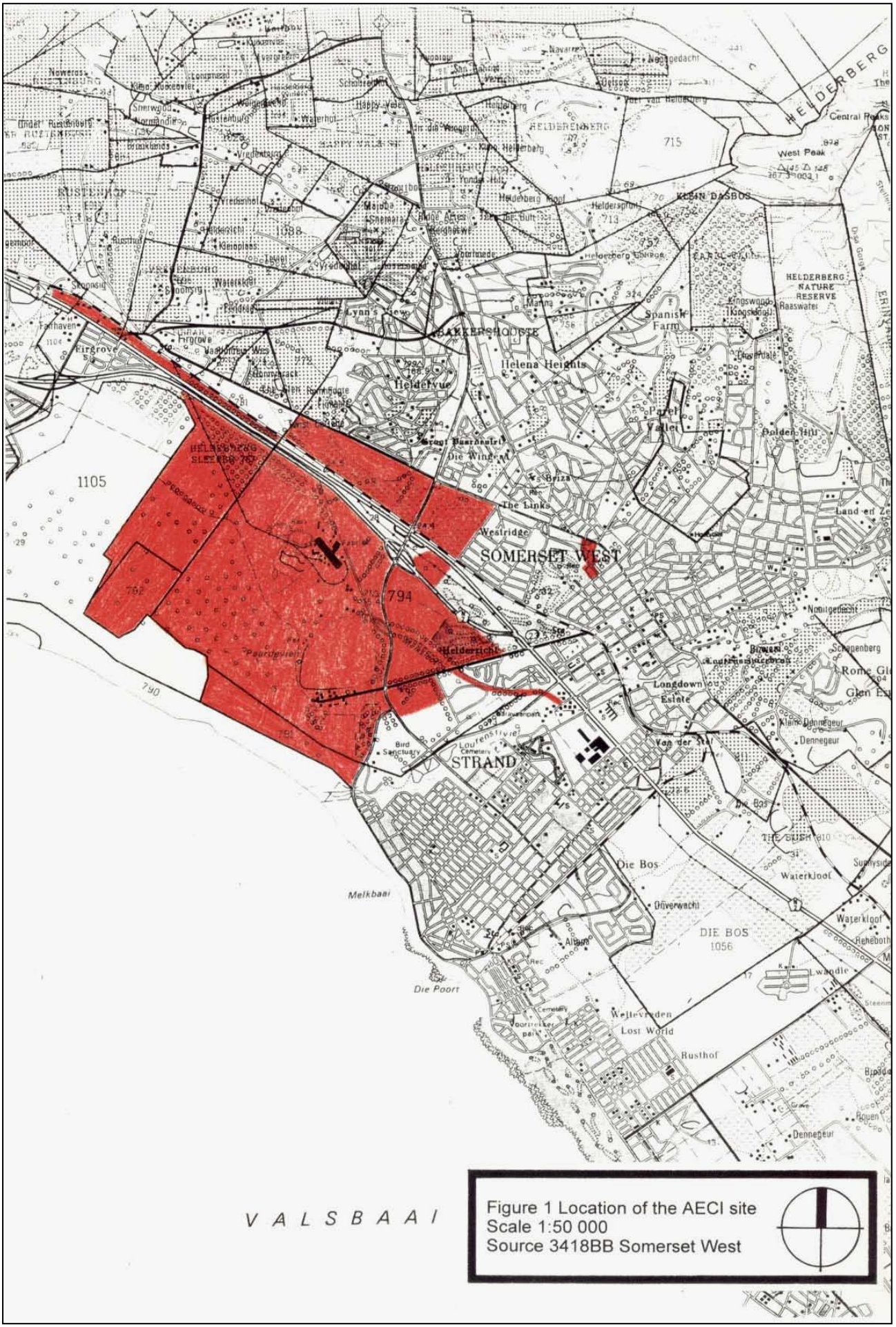


Figure 1 Location of the AECI site
Scale 1:50 000
Source 3418BB Somerset West

Scatters of Early Stone Age material have been recorded in a number of localities in South Africa but few have been subject to unselective collection. Archaeologists have focussed their attention on archaeological sites that contain well preserved sequences with organic remains. Apart from the limestone caverns at Kromdraai, Sterkfontein and Swartkrans in the Transvaal which has attracted the main stream of archaeological research because of the fossil hominids found there, the Early Stone Age has not been consistently studied in South Africa. Despite this, it is acknowledged that broad regional differences in ESA assemblages may provide evidence about prehistoric demography and regional adaptations[4]. Recent advancements in computer data bases and geographical information systems mean that it is a lot more feasible for archaeologists to undertake broad based regional studies than it was a decade ago. The study of ESA open scatters will gain meaning as more unselected collections are made in a variety of geographical areas thus building up the body of regional knowledge necessary for comparative purposes.

3. METHOD

The Phase 1 assessment of AECI revealed the presence of large dispersed scatters of stone artefacts in open land. These were identified as being of ESA origin because the material seen on the surface contained specific artefact forms characteristic of this period. Since the work involved the removal of material from place of context, a permit had to be obtained from the National Monuments Council. In fulfillment of the requirements of the permit, a copy of this report will be submitted to Dr J. Deacon, Archaeologist at the NMC Head Office.

Unlike stone most artefact scatters in other parts of the metropolitan area, the AECI sites have been protected from public access. The sites have not been subject to selective collection by souvenir hunters who often remove the most spectacular stone tools, thus leaving a biased sample which is unusable for research purposes.

Dr J. Deacon of the National Council was consulted to obtain information about what would be a favoured method of study. Because so many artefact scatters have been ruined in terms of their scientific value by selective collection, we decided to make an unselected collection of the AECI scatters. This means that the entire assemblage could be analysed and the proportions of different tool forms quantified.

Five large tracts of land (A-E), which are shown on Figure 2, were selected for archaeological sampling. All of these are in ploughed firebreaks (Plate 1) where artefactual material was exposed. Although there are probably scatters of ESA material throughout much of the area, the dense grass cover makes it extremely difficult to locate and collect.

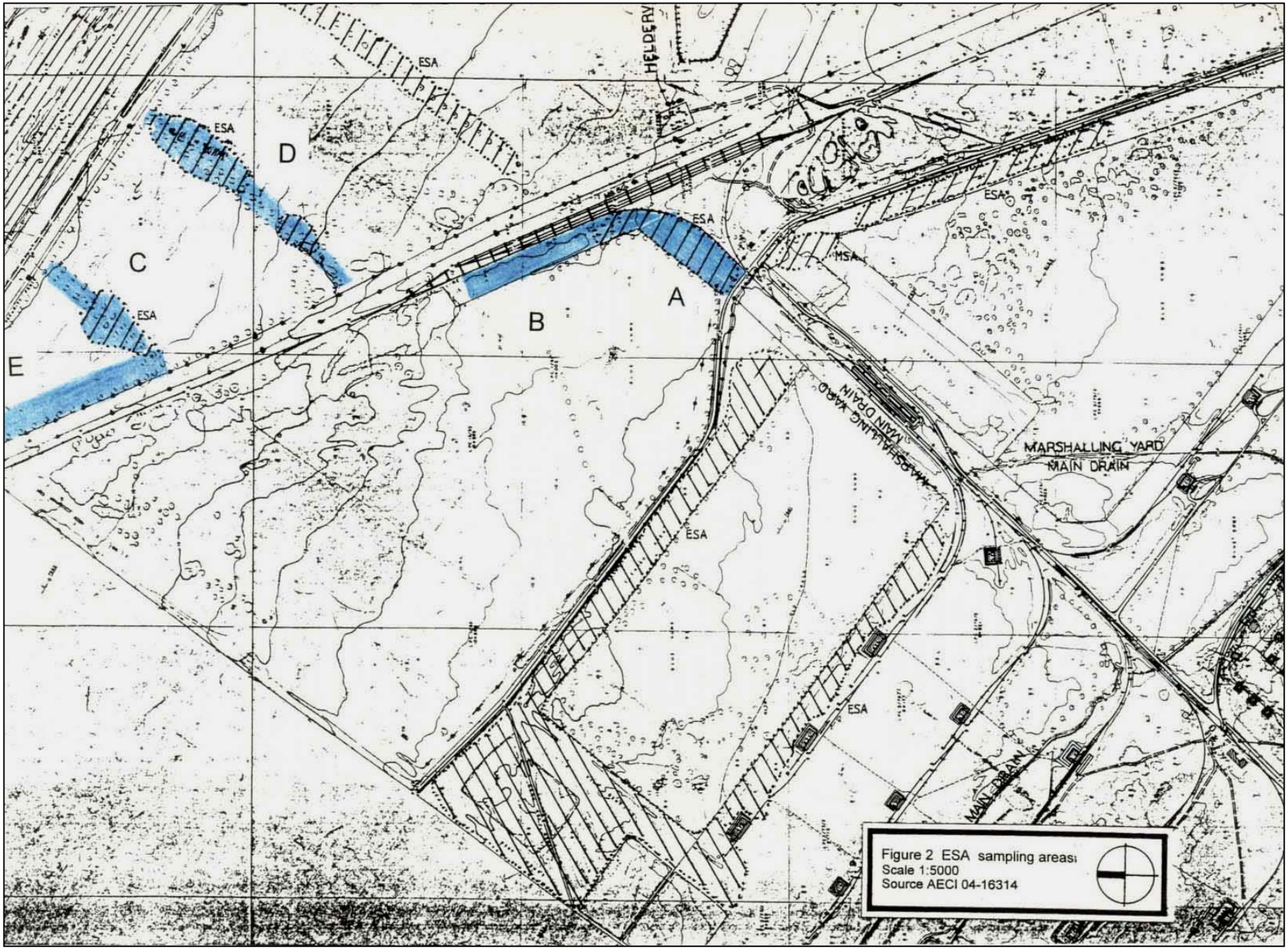
Each tract of land was walked (and double checked) by a team of four people experienced in the recognition of stone artefacts. Any stone that showed evidence of modification was collected, then the samples subjected to a preliminary check to eliminate any obvious non artefactual material. The samples were transported to the University of Cape Town where they were subject to analysis prior to being stored. Samples from each collection area were analysed separately to check that they were similar to each other and therefore generally representative of the ESA of the area.

The method of analysis used was that previously adapted by the Archaeology Contracts Office for the analysis of an unselected collection from Brandsebaai, Vredendal. This was based on Volman's work on the MSA and ESA of Southern Africa[5]. The assemblage was analysed for both formal artefact and waste categories. The categories used are reflected in

[4] Volman, T. 1984. Early Prehistory of Southern Africa. IN R.G. Klein. eds. South African Prehistory and Palaeoenvironments. Rotterdam: A.A. Balkema.

[5] Volman, T, 1981. The Middle Stone Age in The Southern Cape. Unpublished Phd Dissertation. University of Chicago.

Plate 1. Ploughed fire breaks where ESA material is exposed.


ESA
ESA
D
C
ESA
E
HELDERV
ESA
B
A
ESA
MSA
MARSHALLING YARD
MAIN DRAIN
MARSHALLING YARD
MAIN DRAIN
ESA
ESA
MAIN DRAIN
Figure 2 ESA sampling areas
Scale 1:5000
Source AECI 04-16314

Appendix A, a table showing the relative frequencies of artefact types in the five sampling areas. None of the material has been subject to measurement.

4. RESULTS

4.1 General observations

The material was widely dispersed and fairly sparse which meant that we had to cover large areas to obtain a sample. Of particular interest is that fact that scatters were virtually all of ESA origin with little evidence of conflation or mixing with younger assemblages (such as MSA) that is so often a feature of open scatters. It is expected that none of the material represents any single archaeological site as it has been dispersed by erosion (and possibly the Emian marine transgression of 120 000 years before present). In many instances the exterior of the artefacts were quite well rounded and weathered indicating lengthy periods of surface exposure. Although we attempted to obtain an unselected sample of material, the analysis revealed that most of the artefacts were quite large in size with no material falling into the *chip* size (less than 10mm maximum dimension) waste category. It is possible that due to the effects of ploughing and many years of erosion, these small waste fragments are no longer visible.

4.2 Raw Material

From the very earliest times prehistoric people knew about selecting stones that produced a conchoidal fracture when struck by a hammer stone or a wooden or bone artefact. Bed rocks that are close to the surface in the sampling areas are calcretes and shales which do not produce a conchoidal fracture and are not suitable for stone artefact manufacture. The most suitable raw material in the area is Table Mountain Sandstone (a quartzite) which makes up most of the higher mountains of the Cape. Virtually all the artefacts were made from quartzite river cobbles which had probably been collected from streams that ran off the Helderberg. Other raw materials used were silcrete and quartz but these made up less than 1% of the total.

4.3 Artefact forms

Waste: Most of the stone artefacts that are present on any Stone Age archaeological site is waste. These are chips and flakes that have resulted from the manufacture of "formal" tools. Analysis of this waste can provide information about the technical ability of the prehistoric persons responsible for the artefact production.

The artefact forms found on the AECI lands were very similar in each of the five sampling areas. Waste forms dominated with simple flakes and irregular cores and chunks being the most common. Blade flakes were rare. Radial cores and polyhedrons were found in all of the samples. Drawings of typical artefact forms found at AECI are reproduced in Figure 3 and Figure 4.

Formal tools: Formal tools are usually quite rare in proportion to the amounts of waste. On ESA sites these consist of bifacials and handaxes (see Figures 3 and 4), the shapes of which (for reasons not well understood) were standardised throughout Africa and parts of Europe. Cleavers, cobble tools, notched and retouched pieces can usually be found as well. As time progressed these forms became more delicate and refined until a set of more advanced techniques marked the beginning of the Middle Stone Age.

Formal tools were generally scarce in the samples, but were dominated by crude bifacials (handaxes). Other artefact forms present were retouched pieces, cobble tools and rare notched pieces.

4.4 AECI Early Stone Age scatters - cultural affinities

Although the ESA sequence is not well understood and comparative samples are scarce, it is possible to come to some tentative conclusions about the age and attributes of the AECI assemblage. In general terms, the assemblage does not display any of the attributes of advanced knowledge of stone artefact production that is a characteristic of the Middle Stone Age. Blade flakes (which are quite difficult to produce) were scarce as were cores with blade scars. The majority of the flakes collected were simple - there was no evidence of faceted platforms (preparation of cores to produce specific shapes of flake). The bifacials (handaxes) were all fairly crude with small numbers of flake scars which according to Volman[1] is an indicator that these are very early examples of their type. Furthermore, only one of the cores collected were of the Levallois variety. This advanced technique (first documented by French archaeologists) involved substantial pre-preparation of the artefact before it is struck from its core. The levallois technique appears to have been first used in Africa some 230 000 years ago. It was absent in Europe 300 000 years ago but present by 200 000 years ago.[2] This informs us that the technology used by people who left the bulk of the material was not transitional between ESA and MSA, but classically Acheulian and probably from the earlier half of this period - over 500 000 years ago.

If our estimates of the age of the sample are correct, the people who actually made these artefacts were not modern humans (*Homo sapiens sapiens*) or archaic modern humans (Homo sapiens) but an ancient form of human called *Homo erectus*. *Homo Erectus* was an upright walking human with good dexterity who hunted, gathered and probably scavenged for a living. Physical differences to modern humans were largely confined to the shape of the cranium and cranial capacity. In evolutionary terms they were a very successful species in that they existed for over a million years and were the first humans to migrate from Africa. Acheulian handaxes and *Homo erectus* finds have been found throughout Africa as well as southern Europe and parts of Asia.

5. CONCLUSION

The strength of the collection of ESA artefactual material on AECI land at Somerset West lies in the fact that it is an unselected assemblage which can be used for reference purposes by other researchers. We have been able to establish that the assemblages are consistent between the sampling areas. As the scatters lie in restricted land we can be reasonably sure that the material has not been affected by amateur collectors. Furthermore they have not been conflated with later MSA assemblages. Although the material was highly dispersed and it was difficult to obtain a large sample, it is adequate enough to generate some hypotheses about is age and location in human cultural evolution.

6. FURTHER ACTION

No further mitigation of ESA material on AECI land in Somerset West is considered necessary.

7. PROFESSIONAL TEAM

Field work	Dave Halkett Tim Hart Mzwandile Sasa Mzumzima,Mjikeliso
Report	Tim Hart

[1] Volman, T. 1984. Early Prehistory of Southern Africa. IN R.G. Klein. eds. South African Prehistory and Palaeoenvironments. Rotterdam: A.A. Balkema.

[2] Gowlett, J. 1984. Ascent to Civilisation. London: William Collins

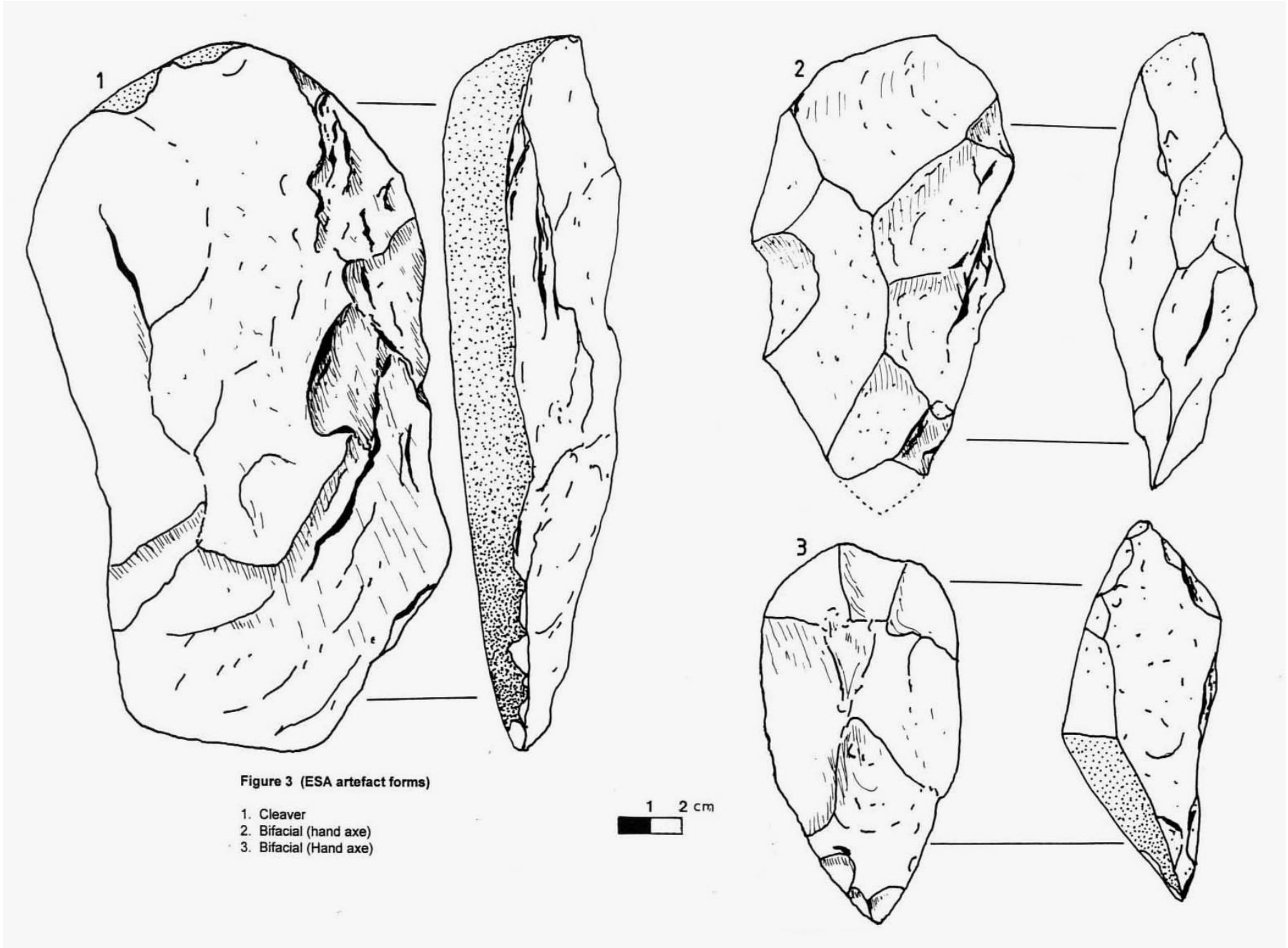


Figure 3 (ESA artefact forms)

1. Cleaver
2. Bifacial (hand axe)
3. Bifacial (Hand axe)

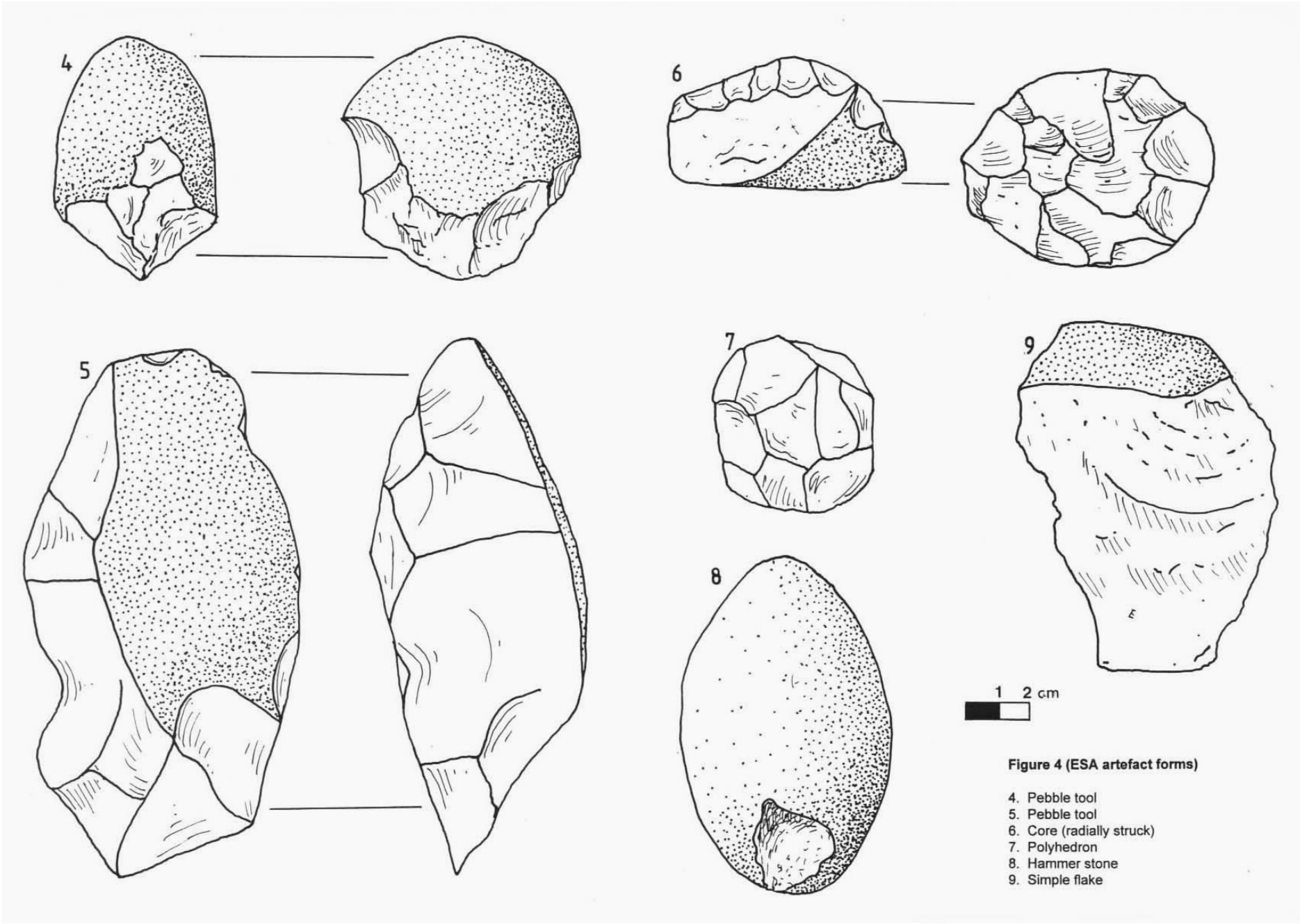


Figure 4 (ESA artefact forms)

4. Pebble tool
5. Pebble tool
6. Core (radially struck)
7. Polyhedron
8. Hammer stone
9. Simple flake

APPENDIX A

STONE ARTEFACTS ANALYSIS (ESA)

SAMPLE NO AECI/	a	%	b	%	c	%	d	%	e	%	TOTAL	%
CHUNKS:	19	8.23	128	23.10	6	11.54	2	4.88	7	8.33	162	16.84
FLAKES:												
MULTIPLE FACETING												
SIMPLE	109	47.19	251	45.31	19	36.54	14	34.15	38	45.24	431	44.80
SINGLE FACET												
BLADE FLAKES:												
MULTIPLE FACETING												
SIMPLE	7	3.03	6	1.08							13	1.35
SINGLE FACET												
RETOUCH: FLAKES												
ALTERNATE												
BIFACIAL												
VENTRAL	1	0.43	5	0.90							6	0.62
DORSAL	2	0.87	3	0.54			1	2.44	2	2.38	8	0.83
PROXIMAL			1	0.18							1	0.10
RETOUCH: BLADES												
ALTERNATE												
BIFACIAL												
VENTRAL			1	0.18							1	0.10
DORSAL			1	0.18							1	0.10
PROXIMAL												
CORES:												
ADJACENT PLATFORM			1	0.18							1	0.10
CORE ON FLAKE	2	0.87	7	1.26	2	3.85	1	2.44	3	3.57	15	1.56
IRREGULAR	58	25.11	97	17.51	18	34.62	18	43.90	15	17.86	206	21.41
LEVALLOIS	1	0.43									1	0.10
MINIMAL	3	1.30	14	2.53			1	2.44	5	5.95	23	2.39
OPPOSED PLATFORM			1	0.18							1	0.10
RADIAL	14	6.06	10	1.81	5	9.62	3	7.32	7	8.33	39	4.05
SINGLE PLATFORM	1	0.43	12	2.17					2	2.38	15	1.56
POLYHEDRON	3	1.30	5	0.90			1	2.44			9	0.94
FORMAL:												
BIFACIAL	4	1.73	4	0.72					2	2.38	10	1.04
BURIN												
DENTICULATE												
DRILL/BEAK	1	0.43	1	0.18							2	0.21
END SCRAPER					1	1.92					1	0.10
HAMMERSTONES	1	0.43	1	0.18					1	1.19	3	0.31
NOTCHED			3	0.54							3	0.31
PEBBLE TOOLS	3	1.30	2	0.36	1	1.92			2	2.38	8	0.83
SIDE SCRAPER												
STRANGULATED FLAKE												
UNIFACIAL	2	0.87									2	0.21
TOTAL	231	24.01	554	57.59	52	5.41	41	4.26	84	8.73	962	100.00